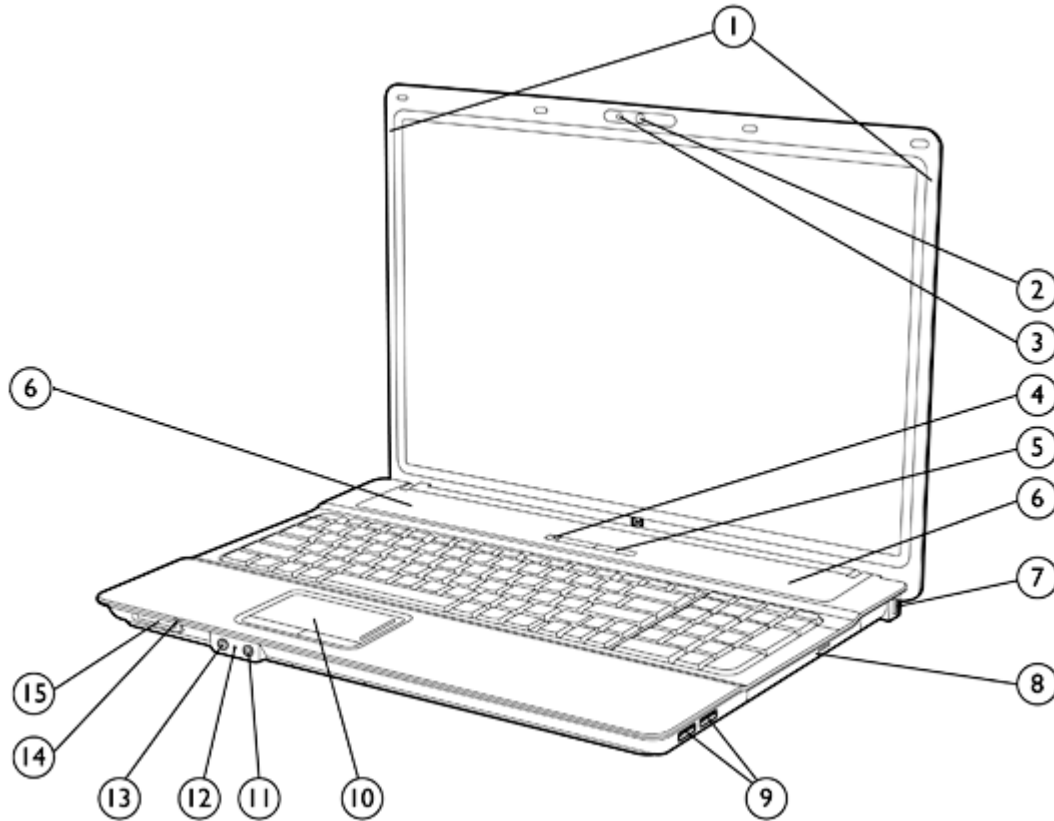


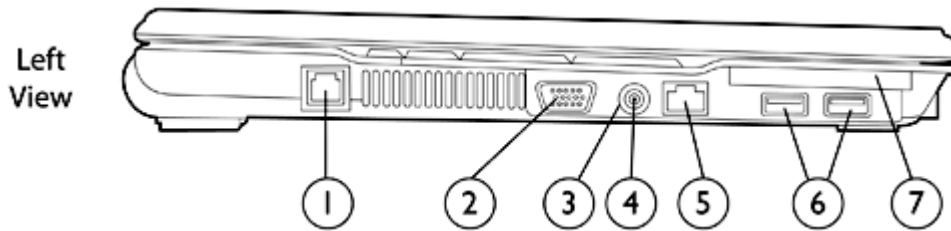
### Overview

HP recommends Windows Vista® Business

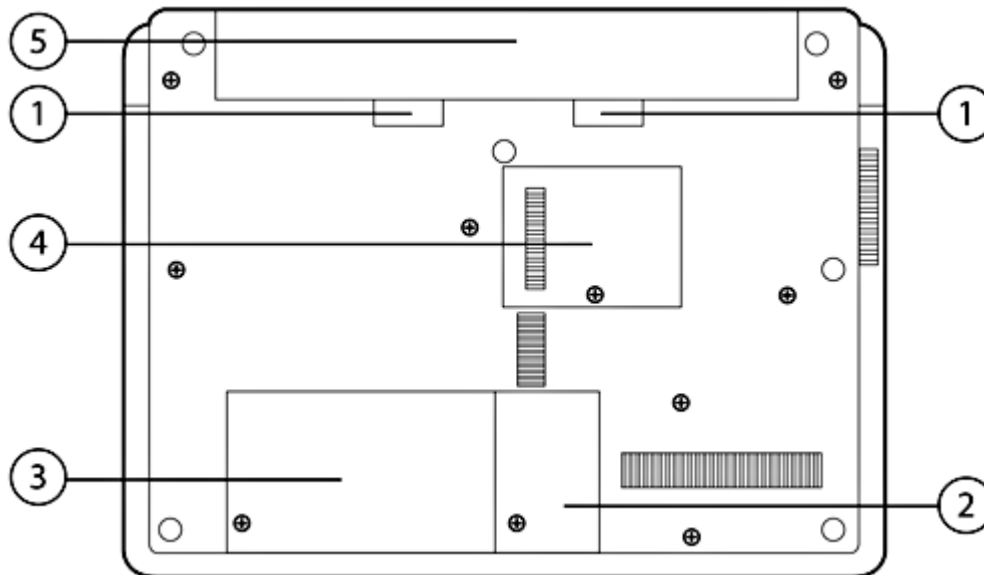


- |  |                                       |
|--|---------------------------------------|
| 1. WLAN antennas                             | 9. (2) USB 2.0 ports                  |
| 2. Optional VGA webcam                       | 10. Touchpad with scroll zone         |
| 3. Optional webcam light                     | 11. Stereo microphone in              |
| 4. Wireless on/off button with LED indicator | 12. Integrated microphone             |
| 5. Power button with LED indicator           | 13. Stereo headphone/line out         |
| 6. Stereo speakers                           | 14. Hard drive activity LED indicator |
| 7. Kensington Lock slot                      | 15. Media Card Reader                 |
| 8. Optical drive                             |                                       |

## Overview



1. RJ-11/modem port
2. VGA connector (external monitor/projector)
3. Battery Charging LED indicator
4. Power Connector
5. RJ-45/Ethernet port
6. (2) USB 2.0 ports
7. ExpressCard/54 slot



1. Battery release latches
2. WLAN module compartment (select models)
3. Hard drive bay
4. Memory module compartment
5. Battery bay

### Overview

#### At A Glance

- Genuine Windows Vista Business 32, Genuine Windows Vista Business with downgrade to Windows XP Professional custom installed, Genuine Windows Vista Home Basic 32, Red Flag Linux (PRC only), or FreeDOS
- Widescreen 17.0-inch diagonal display with optional BrightView
- ATI Mobility Radeon HD 3430 graphics with 128/256 MB video memory (384/512 MB HyperMemory)
- Thin, lightweight design starting at 6.5 lb/2.95 kg and 1.27 in/32.3 mm thin at front
- Flexible wireless connectivity options:
  - Integrated 802.11 a/b/g/n draft 2.0, a/b/g, or b/g wireless LAN module
  - Bluetooth® 2.0
- Intel® Core™2 Duo processor, Intel® Celeron® processor
- Full-sized keyboard with separate numeric keypad
- Integrated optical drive
- Integrated Media Card Reader
- Enhanced security features including HP ProtectTools Security Manager and HP SpareKey
- Optional integrated VGA webcam
- Up to 320 GB 5400 rpm or 160 GB 7200 rpm user-removable hard drive with HP 3D DriveGuard protection
- Up to 8 GB of 667 MHz or 800 MHz DDR2 SDRAM supported, dual channel memory support
- ATI Mobility Radeon HD 3430 graphics with 128/256 MB video memory (384/512 MB HyperMemory)
- Marvell Ethernet (10/100/1000 NIC)
- Touchpad with scroll zone

### Standard Features

#### Processors

Intel Core 2 Duo Processor T9400 (2.53 GHz, 6 MB L2 cache, 1066 MHz FSB)\*  
Intel Core 2 Duo Processor P8600 (2.40 GHz, 3 MB L2 cache, 1066 MHz FSB)\*  
Intel Core 2 Duo Processor P8400 (2.26 GHz, 3 MB L2 cache, 1066 MHz FSB)\*  
Intel Core 2 Duo Processor P7370 (2.0 GHz, 3 MB L2 cache, 1066 MHz FSB)\*  
Intel Core 2 Duo Processor T5870 (2.00 GHz, 2 MB L2 cache, 800 MHz FSB)\*  
Intel Core 2 Duo Processor T5670 (1.80 GHz, 2 MB L2 cache, 800 MHz FSB)\*  
Intel Pentium Dual-Core Processor T3400 (2.16 GHz, 1 MB L2 cache, 667 MHz FSB)  
Intel Pentium Dual-Core Processor T3200 (2.0 GHz, 1 MB L2 cache, 667 MHz FSB)  
Intel Dual-Core Celeron Processor T1700 (1.83 GHz, 1 MB L2 cache, 667 MHz FSB)  
Intel Dual-Core Celeron Processor T1600 (1.66 GHz, 1 MB L2 cache, 667 MHz FSB)  
Intel Celeron Processor 585 (2.16 GHz, 1 MB L2 cache, 667 MHz FSB)\*  
Intel Celeron Processor 575 (2.00 GHz, 1 MB L2 cache, 667 MHz FSB)\*

**NOTE:** Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.

\* Intel's numbering is not a measurement of higher performance.

#### Operating System

##### Preinstalled

Genuine Windows Vista Business 32\*  
Genuine Windows Vista Home Basic 32\*  
Genuine Windows Vista Home Premium 32\* (limited availability)  
Genuine Windows Vista Business with downgrade to Windows XP Professional custom installed\*†  
Red Flag Linux (PRC only)  
FreeDOS

##### Supported

Genuine Windows Vista Business 64\*  
Genuine Windows XP Professional

##### Certified

SuSE Linux Enterprise Desktop 10

\* Certain Windows Vista product features require advanced or additional hardware. See: <http://www.microsoft.com/windowsvista/getready/hardwarereqs.mspx> and: <http://www.microsoft.com/windowsvista/getready/capable.mspx> for details. Windows Vista Upgrade Advisor can help you determine which features of Windows Vista will run on your computer. To download the tool, visit: <http://www.windowsvista.com/upgradeadvisor>.

† Windows Vista Business disk may be included for future upgrade if desired. To qualify for this downgrade an end user must be a business (including governmental or educational institutions) and is expected to order annually at least 25 customer systems with the same custom image.

#### Chipset

Mobile Intel PM45 Express Chipset with ICHM9, 1066 MHz front side bus

### Standard Features

#### Graphics

ATI Mobility Radeon HD 3430 graphics with 128 or 256 MB dedicated video memory (384 or 512 MB HyperMemory\*)

Microsoft DirectX 10.1 capable

\* Indicates dedicated video memory and shared system memory. Either 128MB or 256MB dedicated video memory, depending on model.

#### Display

##### Internal

17.0-inch diagonal WXGA+ anti-glare (1440 x 900 resolution)  
17.0-inch diagonal WXGA+ BrightView (1440 x 900 resolution)  
17.0-inch diagonal WSXGA+ WVA (1680 x 1050 resolution)

##### External

Up to 32-bit per pixel color depth  
VGA port supports resolutions up to 2048 x 1536 at 75 Hz, and lower resolutions at up to 100 Hz  
**NOTE:** Resolutions are dependent upon monitor capability, and resolution and color depth settings.

#### Memory

##### Standard

667 MHz or 800 MHz DDR2 SDRAM; two slots supporting dual channel memory  
1024 MB or 2048 MB

##### Maximum

Upgradeable to 8192 MB with 4096 MB SODIMMs in slots 1 and 2

##### Dual-channel

Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

**NOTE:** Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed. Full availability of 4 GB or more of memory requires Windows Vista Business 64-bit or Linux. With Windows 32-bit operating systems, the amount of usable memory is dependent upon your configuration, so that above 3 GB all memory may not be available due to system resource requirements.

#### Communications

Marvell Ethernet (10/100/1000 NIC)\*

56K V.92 modem\*\*

\* The term "10/100/1000" or "Gigabit" Ethernet indicates compliance with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

\*\* Designed for downloads from 56K modem compliant sources. Maximum achievable download transmission rates currently do not reach 56 KB/s, and will vary with line conditions. Modem availability is subject to country regulatory approval.

### Standard Features

#### Wireless Devices

Support for a broad range of secure, integrated wireless LAN options featuring support for the latest industry standards. Integrated Bluetooth is also available (factory configurable only) and can be combined with any of the supported wireless LAN options.

<b>All 802.11 integrated wireless LAN options</b>	Wi-Fi certified* Cisco Compatible Extensions support Wired Equivalent Privacy (WEP) support up to 128-bit keys Wi-Fi Protected Access (WPA) and WPA2 support 802.1x authentication support, including EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, and LEAP Advanced Encryption Standard (AES) support Dual antennas integrated in the display enclosure
<b>Intel WiFi Link 5100</b>	Integrated support for 802.11a, b, g, and n draft 2.0* Up to 450 mbps data rate
<b>Intel WiFi Link 5100</b>	Integrated support for 802.11 a, b and g Up to 54 mbps data rate
<b>Broadcom 4322AGN 802.11a/b/g/draft-n Wi-Fi Adapter</b>	Integrated support for 802.11a, b, g, and n draft 2.0* Up to 300 mbps data rate
<b>Broadcom 4312G 802.11b/g Wi-Fi Adapter</b>	Integrated support for 802.11 b and g Up to 54 mbps data rate
<b>HP Integrated Module with Bluetooth Wireless Technology</b>	Bluetooth Specification v2.0 compliant Works with a wide range of Bluetooth devices

\* The specifications for 802.11n draft 2.0 are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11n WLAN devices. In countries where n draft 2.0 is not allowed, this capability is not enabled (Intel 802.11a/b/g only).

#### Keyboard

The 101/102-key compatible keyboard features an industry standard, full-pitch key layout with desktop keyboard features, such as the isolated inverted-T cursor control keys, editing keys, both left and right control and alt keys, and 12 function keys. US and International key layouts are available. Other features include a full numeric keypad, hotkeys for instant access to power conservation, brightness, and other features, 19.05 x 19.05 mm key pitch (center-to-center spacing), 3.0 mm stroke, and comfort-dished keycaps.

#### Pointing device

Touchpad with scroll zone, two pick buttons

#### Expansion card slots

<b>ExpressCard/54 slot</b>	Supports ExpressCard/54 (54 mm x 75 mm x 5 mm) and ExpressCard/34 (34 mm x 75 mm x 5 mm) card sizes
<b>Media Card Reader</b>	Supports SD (Secure Digital), MMC (MultiMedia Card), Memory Stick, Memory Stick Pro, Memory Stick Duo*, xD-Picture card

\* Memory Stick Duo Adapters are required and sold separately. Inserting a Memory Stick Duo Card directly into your notebook could damage the memory card and/or notebook.

### Standard Features

<b>Storage</b>	<b>Internal Storage Device</b>	120/160/250/320 GB 5400 rpm SMART SATA II Hard Drive 120/160 GB 7200 rpm SMART SATA Hard II Drive
		<b>NOTE:</b> These hard drives are customer removable and will withstand multiple insertion/removal cycles. Up to 10 GB is reserved for the system recovery software.
	<b>HP 3D DriveGuard</b>	The hard drive is mounted directly to the notebook frame, reducing the transmission of shock to the hard drive. Uses three-axis digital motion detection with intelligent sensitivity to help protect the hard drive during normal use from shock and vibration. The digital accelerometer temporarily halts all data transfer and parks the hard drive when abrupt motion is detected.
	<b>Fixed optical drives</b>	Blu-ray ROM DVD+/-RW SuperMulti DL Drive DVD+/-RW SuperMulti DL LightScribe Drive DVD/CD-RW Combo Drive DVD-ROM Drive

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<b>Interfaces</b>	<b>ExpressCard/54 slot</b>	One (Supports ExpressCard/54 and ExpressCard/34)
	<b>External monitor</b>	One (VGA)
	<b>Stereo microphone in</b>	One
	<b>Stereo headphone/line out</b>	One
	<b>Power connector</b>	One
	<b>RJ-11/modem</b>	One
	<b>RJ-45/Ethernet</b>	One
	<b>USB 2.0</b>	Four
	<b>LED status indicators</b>	Seven

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<b>Audio/Visual</b>	High Definition Audio support Integrated stereo speakers Integrated microphone Stereo headphone/line out Stereo microphone in Optional VGA webcam
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### Standard Features

#### Software

<b>Preinstalled software with Windows Vista or Windows XP</b>	HP Recovery Manager HP Help and Support Center HP Universal Print Driver HP ProtectTools Security Manager: <ul style="list-style-type: none"><li>BIOS Configuration for HP ProtectTools</li><li>Credential Manager for HP ProtectTools</li><li>Drive Encryption for HP ProtectTools</li></ul> HP QuickLaunch Buttons HP Wireless Assistant Microsoft Office Ready with 60-day Office Professional 2007 Trial Edition (select models) PDF Complete SE Intervideo WinDVD - DVD Player Roxio Creator Business (for optional DVD+/-RW and DVD/CDRW drives) McAfee Total Protection* Synaptics Touchpad Driver Microsoft Windows Live Messenger (select models) HP Webcam Software (with optional VGA webcam)
<b>Additional software available from the web</b>	HP SoftPaq Download Manager HP Client Manager Software HP Client Management Solutions

\* 60 day trial period for McAfee Total Protection for Small Business software. Internet access required to receive updates. First update included. Subscription required for updates thereafter.

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#### HP Recovery Manager

Each unit is shipped with HP Recovery Manager. HP Recovery Manager enables fast recovery of the factory preinstalled image if the system becomes corrupted or if important system files are accidentally deleted. Up to 10 GB of the hard drive is reserved for the system recovery software.

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#### HP ProtectTools Security Manager

HP ProtectTools Security Manager is the security platform for business notebooks and desktops. The HP ProtectTools Security Manager is an extensible client security console that delivers enhanced security capabilities through add-on software modules. Modules currently available are:

- BIOS Configuration for HP ProtectTools
- Credential Manager for HP ProtectTools
- Drive Encryption for HP ProtectTools
- File Sanitizer for HP ProtectTools
- Set-up Wizard for HP ProtectTools



### Standard Features

<b>Security</b>	<b>Standard Features</b>	HP ProtectTools Security Manager Enhanced Pre-Boot Security HP SpareKey One-Step Logon Configuration Control Hardware Memory Change Alert Ownership Tag Setup Password Power-On Password HP Disk Sanitizer HP 3D DriveGuard Kensington Lock Slot Support for Computrace / LoJack for Laptops (must be purchased separately)
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For more information on HP security solutions refer to: <http://www.hp.com/go/security>.

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<b>Power Supply</b>	External 90-watt Smart AC adapter 6-foot (1.8-meter) power cord included; total length including external AC adapter is 12 feet (3.66 meter) HP Fast Charge*
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\* HP Fast Charge recharges your battery up to 90% within 90 minutes when the system is off.

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<b>Battery</b>	<b>Primary battery</b>	8-cell (63 WHr) Li-Ion battery
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<b>Battery Life</b>	<b>Primary battery</b>	Up to 4 hours and 15 minutes <b>NOTE:</b> The listed battery life measurements were taken on models running Microsoft Windows Vista Business. Battery life will vary depending on the product configuration, product model, applications loaded on the product, power management settings of the product, and the product features used by the customer. As with all batteries, the maximum capacity of this battery will decrease with time and usage.
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<b>System Standby Time</b>	Up to TBD week
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<b>Power Conservation</b>	Supports enhanced Intel SpeedStep technology with Intel Core 2 Duo (allows Battery Optimized Mode, Maximum Performance Mode, or Automatic mode) ATI PowerPlay technology Hibernation Standby ACPI compliance
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### Standard Features

#### Service and Support

HP Services offers limited 3-year, 1-year and 90-day warranty options depending on country; 1-year limited warranty on primary battery. Warranty upgrades are also available. HP Care Pack Services extend service contracts beyond the standard warranties. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at: <http://www.hp.com/go/lookuptool>. Additional HP Care Pack Services information by product is available at: <http://www.hp.com/hps/carepack>.

**NOTE:** Certain restrictions and exclusions apply. Consult the HP Customer Support Center for details. <http://h20000.www2.hp.com/bizsupport/TechSupport/ProductRoot.jsp>.

### Options

<b>Memory</b>	HP 1 GB (DDR2 800 MHz) SODIMM	KT292AA
	HP 2 GB (DDR2 800 MHz) SODIMM	KT293AA
	HP 4 GB (DDR2 800 MHz) SODIMM	KT294AA
<hr/>		
<b>Storage</b>	HP Notebooks USB Diskette Drive	DC361B
	HP Primary SATA 250 GB 5400 rpm Hard Drive	AK072AA
<hr/>		
<b>Power</b>	HP 90W Smart AC Adapter	ED495AA#xxx
	HP 90W Smart Auto Adapter	ED493AA
	65W Air/Auto/AC Smart Combo Adapter	ED993AA#xxx
	HP 6800s/6700s Series 8-cell Primary Battery	KU532AA
<hr/>		
<b>Carrying Cases</b>	HP Universal Nylon Case	RR315AA
	HP Executive Leather Case	RR316AA
	HP Deluxe Nylon Backpack	RR317AA
	HP Deluxe Roller Case	GD405AA
<hr/>		
<b>Security</b>	HP/Kensington MicroSaver Security Lock	PC766A
<hr/>		
<b>Input/Output Devices</b>	HP USB Keyboard & Mouse Bundle	RC465AA#xxx
	HP USB/PS2 Optical 2-Button Scroll Mouse	DC369A
	HP USB Optical Travel Mouse	RH304AA

### Memory

667 MHz or 800 MHz DDR2 SDRAM

Two DIMM slots supporting dual channel memory

DIMM sizes supported: 1024 MB and 2048 MB

- Standard Memory**
- 1024 MB (1024 MB x 1)
  - 2048 MB (2048 MB x 1 or 1024 MB x 2)
  - 3072 MB (2048 MB x 1024 MB)
  - 4096 MB (2048 MB x 2)

**Optional Memory Upgrades** Support for up to 8192 MB of memory with the installation of optional DDR2 SDRAM memory kits. Both memory slots are user accessible. Please refer to the Hardware and Software Guide for installation procedures. Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

Up to	Slot 1	Slot 2
1024 MB	1024 MB	Empty
2048 MB	1024 MB	1024 MB
3072 MB	2048 MB	1024 MB
4096 MB	2048 MB	2048 MB
8192 MB	4096 MB	4096 MB

**NOTE:** This chart does not represent all possible memory configurations. Due to the non-industry standard nature of some third-party memory modules, we strongly recommend using only HP branded memory modules to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed. Full availability of 4 GB or more of memory requires Windows Vista Business 64-bit or Linux. With Windows 32-bit operating systems, the amount of usable memory is dependent upon your configuration, so that above 3 GB all memory may not be available due to system resource requirements.

<b>Memory Upgrades</b>	HP 1 GB (DDR2 667 MHz) SODIMM	EM994AA
	HP 2 GB (DDR2 667 MHz) SODIMM	EM995AA
	HP 1 GB (DDR2 800 MHz) SODIMM	KT292AA
	HP 2 GB (DDR2 800 MHz) SODIMM	KT293AA
	HP 4 GB (DDR2 800 MHz) SODIMM	KT294AA

### Storage

#### Removable Media Drive Support

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	Quantity Supported	Drive Bay
Blu-ray ROM DVD+/-RW SuperMulti DL Drive	One	Fixed optical drive bay
DVD+/-RW SuperMulti DL LightScribe Drive	One	Fixed optical drive bay
DVD/CD-RW Combo Drive	One	Fixed optical drive bay
DVD-ROM Drive	One	Fixed optical drive bay

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#### Internal Storage Device

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	Quantity Supported	Drive Bay
<b>Hard Drives</b>		
320 GB 5400 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
250 GB 5400 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
160 GB 5400 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
120 GB 5400 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
160 GB 7200 rpm SMART SATA II	One	Dedicated hard drive bay
120 GB 7200 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay

### Technical Specifications

<b>System Unit</b>	<b>Dimensions (HxWxD)</b>	1.27 in (at front) x 15.6 in x 11.22 in 32.3 mm (at front) x 396 mm x 285 mm
	<b>Weight</b>	Starting at 6.5 lb (2.95 kg)
	<b>NOTE:</b> Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components. Weight includes 8-cell battery, hard drive, and optical drive. Weight varies by configuration and components.	
	<b>Stand-Alone Power Requirements (AC Power)</b>	Nominal Operating Voltage 18.5 V Average Operating Power 23.36 W Max Operating Power < 90 W
	<b>Temperature</b>	Operating 32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical) Non-operating -4° to 140° F (-20° to 60° C)
	<b>Relative Humidity</b>	Operating 10% to 90%, non-condensing Non-operating 5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
	<b>Shock</b>	Operating 125 G, 2 ms, half-sine Non-operating 200 G, 2 ms, half-sine
	<b>Random Vibration</b>	Operating 0.75 grms Non-operating 1.50 grms
	<b>Altitude (unpressurized)</b>	Operating -50 to 10,000 ft (-15.24 to 3,048 m) Non-operating -50 to 40,000 ft (-15.24 to 12,192 m)
	<b>Industry Standard Certifications</b>	UL Yes CSA Yes FCC Compliance Yes ENERGY STAR® Yes EPEAT Silver ICES Yes Australia / NZ A-Tick Compliance Yes CCC Yes Japan VCCI Compliance Yes MIC Yes BSMI Yes CE Marking Compliance Yes BNCI or BELUS Yes CIT Yes GOST Yes Saudi Arabian Compliance (ICCP) Yes SABS Yes UKRSERTCOMPUTER Yes

### Technical Specifications

For accessibility information on HP products, please visit: <http://www.hp.com/accessibility>.

<b>HP 90W Smart AC Adapter</b>	<b>Dimensions</b>	5.00 x 1.97 x 1.1 in (12.7 x 5.0 x 2.9 cm)	
	<b>Weight</b>	0.82 lb (370 g)	
	<b>Input</b>	100 to 240 VAC	
		Input Efficiency	83% min at 115 VAC
		Input frequency range	47 to 63 Hz
		Input AC current	1.5 A at 90 VAC, 0.75 A at 180 VAC PFC Version 2.4 A at 90 VAC, 1.2 A at 180 VAC NON PFC Version
	<b>Output</b>	Output power 65W	90W
		DC output	19.0V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<11A, Over voltage protection- 29V max automatic shutdown
	<b>Connector</b>	3 pin/grounded, mates with interchangeable cords	
	<b>Environmental Design</b>	Operating temperature	32° to 104° F (0° to 40° C)
		Non-operating (storage) temperature	-4° to 149° F (-20° to 65° C)
		Altitude	0 to 10,000 ft (0 to 3,048 m)
		Humidity	20% to 80%
Storage Humidity		10% to 90%	
<b>EML and Safety Certifications</b>	CE Mark – full compliance with LVD and EMC directives; Worldwide safety standards – IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals – C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; MTBF– over 200,000 hours at 25°C ambient condition.		

<b>8-Cell (63 WHr) Li-Ion battery</b>	<b>Dimensions (H x W x L)</b>	0.8 x 1.9 x 10.6 in (2.0 x 4.8 x 27.0 cm)	
	<b>Weight</b>	0.980 lb (0.445 kg)	
	<b>Cells/Type</b>	8-cell Li-Ion	
	<b>Energy</b>	Watt-hour Capacity	63 WHr
		<b>Temperature</b>	Operating (Charging)
		Operating (Discharging)	14° to 140° F (-10° to 60° C)
		Non-operating	-4° to 140° F (-20° to 60° C)
	<b>Battery Re-Charge Time</b>	System in OFF mode or Standby	2.5 hours
		System ON	3 to 5 hours (depending on system power consumption)
		HP Fast Charge Technology	Charges the battery up to 90% within 1.5 hours when system is OFF

### Technical Specifications

#### Displays

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17.0-inch WXGA+ anti-glare	Active Area (W x H)	14.5 x 9.0 in (36.7 x 22.9 cm)		
	Diagonal Size	17.0 in (43.2 cm)		
	Surface Treatment	Anti-glare		
	Contrast Ratio	300:1 typical		
	Refresh Rate	60 Hz		
	Brightness	200 nit typical		
	Pixel Resolution	Pitch	0.255 mm	
		Format	1440 x 900	
		Configuration	RGB Stripe	
	Backlight	CCFL		
PPI	100			
Viewing Angle	±30° Horizontal, ±10° Vertical (minimum) 30/30/20/10 (Left/Right/Down/Up) (minimum) or 45/45/35/25 (Left/Right/Down/Up) (typical)			

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17.0-inch WXGA+ BrightView	Active Area (W x H)	14.5 x 9.0 in (36.7 x 22.9 cm)		
	Diagonal Size	17.0 in (43.2 cm)		
	Surface Treatment	BrightView		
	Contrast Ratio	300:1 typical		
	Refresh Rate	60 Hz		
	Brightness	200 nit typical		
	Pixel Resolution	Pitch	0.255 mm	
		Format	1440 x 900	
		Configuration	RGB Stripe	
	Backlight	CCFL		
PPI	100			
Viewing Angle	±30° Horizontal, ±10° Vertical (minimum) 30/30/20/10 (Left/Right/Down/Up) (minimum) or 45/45/35/25 (Left/Right/Down/Up) (typical)			

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### Technical Specifications

17.0-inch WSXGA+ wide-viewing angle, anti-glare	Active Area (W x H)	14.5 x 9.0 in (36.7 x 22.9 cm)	
	Diagonal Size	17.0 in (43.2 cm)	
	Surface Treatment	Anti-glare	
	Contrast Ratio	300:1 typical	
	Refresh Rate	60 Hz	
	Brightness	200 nit typical	
	Pixel Resolution	Pitch	0.219 mm
		Format	1680 x 1050
		Configuration	RGB Stripe
	Backlight	CCFL	
PPI	116		
Viewing Angle	±60° Horizontal, ±50° Vertical (minimum) or ±70° Horizontal, ±60° Vertical (typical)		

### Hard Drives

160 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lb (115 g)	
	Capacity	160 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	Synchronous (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track	1.5 ms
		Average	11 ms
		Maximum	22 ms
	Rotational Speed	7200 rpm	
	Logical Blocks	234,441,648	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

### Technical Specifications

120 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lb (115 g)	
	Capacity	120 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	<b>Synchronous</b> (maximum) 100 MB/s (Drive Capability)	
	Seek Time (typical reads, including settling)	<b>Single Track</b>	1.5 ms
		<b>Average</b>	11 ms
		<b>Maximum</b>	22 ms
	Rotational Speed	7200 rpm	
	Logical Blocks	234,441,648	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

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320 GB 5400 rpm SATA Hard Drive	Drive Weight	0.22 lb (101 g)	
	Capacity	320 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	<b>Synchronous</b> (maximum) 100 MB/s (Drive Capability)	
	Seek Time (typical reads, including settling)	<b>Single Track</b>	3 ms
		<b>Average</b>	13 ms
		<b>Maximum</b>	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	488,397,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

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### Technical Specifications

250 GB 5400 rpm SATA Hard Drive	Drive Weight	0.22 lb (101 g)	
	Capacity	250 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	<b>Synchronous</b> (maximum) 100 MB/s (Drive Capability)	
	Seek Time (typical reads, including settling)	<b>Single Track</b>	3 ms
		<b>Average</b>	13 ms
		<b>Maximum</b>	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	488,397,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
Features	ATA Security		

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160 GB 5400 rpm SATA Hard Drive	Drive Weight	0.22 lb (101 g)	
	Capacity	160 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	<b>Synchronous</b> (maximum) 100 MB/s (Drive Capability)	
	Seek Time (typical reads, including settling)	<b>Single Track</b>	3 ms
		<b>Average</b>	13 ms
		<b>Maximum</b>	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	312,581,808	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
Features	ATA Security		

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### Technical Specifications

120 GB 5400 rpm SATA Hard Drive	Drive Weight	0.22 lb (101 g)	
	Capacity	120 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	<b>Synchronous</b> (maximum) 100 MB/s (Drive Capability)	
	Seek Time (typical reads, including settling)	<b>Single Track</b>	3 ms
		<b>Average</b>	13 ms
		<b>Maximum</b>	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	234,441,648	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

### Removable Storage Drives

DVD-ROM Drive	Access Times	Random	<116 ms CD (typical) <125 ms DVD (typical)
		Max Data Transfer Rate	24X CD-ROM Up to 3,600 KB/s 8X-DVD Up to 10,800 KB/s
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
	Supported Media (read)	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	
	Supported Media (write)	None	
	Max Media Capacity (read)	4.7 GB	
	Transport	Tray Loading	

### Technical Specifications

DVD/CD-RW Combo Drive	<b>Access Times</b>	Random	<110 ms CD (typical) <130 ms DVD (typical)
	<b>Max Data Transfer Rate</b>	24X CD-ROM	Up to 3,600 KB/s
		8X DVD	Up to 10,800 KB/s
		24X CD-R	Up to 3,600 KB/s
		24X CD-RW	Up to 3,600 KB/s
	<b>Transfer Mode</b>	UDMA Mode 5	
	<b>Interface</b>	Gen 1 SATA	
	<b>Supported Media (read)</b>	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW	
	<b>Supported Media (write)</b>	CD-R, CD-RW	
	<b>Max Media Capacity (read)</b>	8.5 GB	
<b>Max Media Capacity (write)</b>	700 MB		
<b>Transport</b>	Tray loading		

DVD+/-RW SuperMulti DL LightScribe Drive	<b>Access Times</b>	Random	<175 ms CD (typical) <230 ms DVD (typical)
	<b>Max Data Transfer Rate</b>	24X CD-ROM	Up to 3,600 KB/s
		8X DVD	Up to 10,800 KB/s
		24X CD-R	Up to 3,600 KB/s
		16X CD-RW	Up to 2,400 KB/s
		8X DVD+R	Up to 10,800 KB/s
		4X DVD+RW	Up to 5,400 KB/s
		8X DVD-R	Up to 10,800 KB/s
		4X DVD-RW	Up to 5,400 KB/s
		2.4X DVD+R(9)	Up to 2,700 KB/s
5X DVD-RAM		Up to 6,750 KB/s	
<b>Transfer Mode</b>	UDMA Mode 5		
<b>Interface</b>	Gen 1 SATA		
<b>Supported Media (read)</b>	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM		
<b>Supported Media (write)</b>	CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM, LightScribe		
<b>Max Media Capacity (read)</b>	8.5 GB		

### Technical Specifications

<b>Max Media Capacity (write)</b>	8.5 GB
<b>Transport</b>	Tray Loading

<b>Blu-ray ROM DVD+/-RW SuperMulti DL Drive</b>	<b>Access Times</b>	Random	<190 ms CD-ROM (typical) <180 ms DVD-ROM (typical) <230 ms BD-ROM (typical)
	<b>Max Data Transfer Rate</b>	16X CD-ROM 8X DVD-ROM 16X CD-R 10X CD-RW 8X DVD+R 4X DVD+RW 8X DVD-R 4X DVD-RW 4X DVD+R(9) 5X DVD-RAM 2X BD-ROM	Up to 2400 KB/s Up to 10800 KB/s Up to 2400 KB/s Up to 1500 KB/s Up to 10800 KB/s Up to 5400 KB/s Up to 10800 KB/s Up to 5400 KB/s Up to 5400 KB/s Up to 6750 KB/s Up to 9000 KB/s
	<b>Transfer Mode</b>	UDMA Mode 5	
	<b>Interface</b>	Gen 1 SATA	
	<b>Supported Media (read)</b>	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM, BD-ROM, BD-R, BD-RE	
	<b>Supported Media (write)</b>	CD-R, CD-RW, DVD+R, DVD+R(9), DVD+RW, DVD-R, DVD-R(9), DVD-RW, DVD-RAM, BD-R, BD-RE	
	<b>Max Media Capacity (read)</b>	50.0 GB	
	<b>Max Media Capacity (write)</b>	50.0 GB	
	<b>Transport</b>	Tray Loading	

### Audio

### Technical Specifications

Hardware	Implementation	ADI 1984AJCPZ High Definition CODEC
	Touch-Sensitive Volume Controls	Volume up, volume down, and mute
	Full Duplex	Yes
	Microphone In	Stereo
	Headphone/Line Out	Stereo
	Integrated Microphone	Yes

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Audio Output Quality	Frequency Response	20 Hz – 20 kHz
	Signal to Noise Ratio	>85 dB
	Total Harmonic Distortion	0.01%
	Noise Floor	-110 dB
	Play/Record Sampling Rate(s)	8 kHz – 48kHz
	DAC	16, 20 or 24-bit
	ADC	16 or 20-bit

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Integrated Stereo Speakers	Power Rating	2 Watts
	Impedance	4 Ohms

### Communications

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V.92 56K Data/Fax Modem	Form Factor	MDC 1.5 Daughtercard
	Power Management Support	APM Revision 1.2, ACPI
	Approvals/Certifications	UL, CSA, NEMKO, CCIB, Industry Canada, FCC Part 68, CTR21, FCC Part 15 Class B, Canadian ICES-003 Class B, C.I.S.P.R.22, Australian ACA, CE Mark, Other Countries
	Data Mode Capabilities	V.92 data V.8bis V.80 V44, V.42bis, MNP5 (Compression) V.42 (LAPM, MNP2-4) (Error Correction) <b>Optional symbol rates:</b> 2800, 3429 Asymmetric Symbol rates <b>Synchronous primary channel data signaling rates:</b> 3600, 31200 Automatic rate re-negotiation V.34 V.32bis V.32 V.23

### Technical Specifications

	V.22bis
	V.22
	V.21
	Bell 212A
	Bell 103J
<b>Fax Mode Capabilities</b>	TIA/EIA-578-B (Class 1) T.30, T.4 (Group 3) V.17 V.29 V.27ter V.21 Channel 2
<b>Command Set</b>	V.250 (Partial) TIA-602 Identification: +GMI, +GMM, +GMR Port control: +IPR, +ICF, +IFC, +ILRR Modulation: +MS, +MR, +MA Error control: +ES, +ER, +EB, +ESR, +ETBM Data compression: +DS, +DR V.251

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<b>Intel WiFi Link 5100</b>	<b>Wireless LAN Standards</b>	IEEE 802.11a IEEE 802.11b IEEE 802.11g
	<b>Interoperability</b>	Wi-Fi certified (802.11abg only) Cisco Compatible Extensions Program compliant (802.11abg only) with Microsoft Windows Vista and XP (details at: <a href="http://www.hp.com/go/notebooks/WLAN">http://www.hp.com/go/notebooks/WLAN</a> ) Tested with wireless access points from several major manufacturers (details at: <a href="http://www.hp.com/go/notebooks/WLAN/draft-n">http://www.hp.com/go/notebooks/WLAN/draft-n</a> )
	<b>Frequency Band</b>	2.4 GHz and 5 GHz
	<b>Antenna Structure</b>	1 transmit; 2 receive (1x2)
	<b>Data Rates</b>	802.11b: 1, 2, 5.5, 11 Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
	<b>Modulation</b>	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM
	<b>Security<sup>1</sup></b>	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST.  Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only.
	<b>Sub-channels</b>	Multinational support with frequency bands and channels compliant to local regulations.
	<b>Media Access Protocol</b>	CSMA/CA (Collision Avoidance) with ACK
	<b>Network Architecture</b>	Ad-hoc (Peer to Peer)
	<b>Models</b>	Infrastructure (Access Point Required)
	<b>Roaming</b>	IEEE 802.11 compliant roaming between access points



### Technical Specifications

<b>Output Power</b> (for CCK) <sup>2</sup>	17.5 dBm						
<b>Output Power</b> (for OFDM; 15 dBm power varies by data rate) <sup>2</sup>							
<b>Power Consumption</b>	Idle associated: 350 mW Idle unassociated: 350 mW Transmit: 2.0 W (max) Receive: 1.5 W (max)						
<b>Power Management</b>	ACPI compliant power management 802.11 compliant power saving mode						
<b>Receiver Sensitivity</b> <sup>4</sup>	54 Mbps: -72 dBm, 11 Mbps: -85 dBm , 1 Mbps: -95 dBm						
<b>Antenna type</b>	High efficiency dual band antenna with spatial diversity, mounted in the display enclosure						
<b>Range</b>	<table><tr><td>802.11 a – Typical (@6 Mbps)</td><td>600 feet – Outdoor Open Area 150 feet – Indoor, Office environment</td></tr><tr><td>802.11 b – Typical (@1 Mbps)</td><td>1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment</td></tr><tr><td>802.11 g – Typical (@1 Mbps)</td><td>1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment</td></tr></table>	802.11 a – Typical (@6 Mbps)	600 feet – Outdoor Open Area 150 feet – Indoor, Office environment	802.11 b – Typical (@1 Mbps)	1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment	802.11 g – Typical (@1 Mbps)	1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment
802.11 a – Typical (@6 Mbps)	600 feet – Outdoor Open Area 150 feet – Indoor, Office environment						
802.11 b – Typical (@1 Mbps)	1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment						
802.11 g – Typical (@1 Mbps)	1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment						
<b>Form Factor</b>	PCI-Express MiniCard						
<b>Weight</b>	0.026 lb (12 g)						
<b>Dimensions</b>	0.19 x 1.2 x 2.0 in (4.75 x 29.85 x 50.8 mm)						
<b>Operating Voltage</b>	3.3v +/- 10%						
<b>Temperature</b>	Operating 32° to 176° F (0° to 80° C) Non-operating -40° to 176° F (-40° to 80° C)						
<b>Humidity</b>	Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing)						
<b>Altitude</b>	Operating 0 to 10,000 ft (3,048 m) Non-operating 0 to 50,000 ft (15,240 m)						
<b>Configuration Utility</b> <sup>5</sup>	Microsoft Windows XP Choice of Configuration Utility: <ul style="list-style-type: none"><li>● Microsoft Windows XP Wireless Network Connection Manager</li><li>● Broadcom Wireless Configuration Utility (required for Cisco Compatible Extensions support)</li></ul> Microsoft Windows Vista <ul style="list-style-type: none"><li>● Microsoft Windows Vista Wireless Network Connection Manager</li><li>● Broadcom IHV extensions for Windows Vista available to support Cisco Compatible Extensions.</li></ul>						
<b>LED Activity</b>	LED Off – Radio OFF; Solid LED On – Radio ON						
	<ol style="list-style-type: none"><li>1. Check latest software/driver release for updates on supported security features.</li><li>2. Maximum output power may vary by country according to local regulations.</li><li>3. In Power Save Polling mode.</li><li>4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).</li><li>5. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft</li></ol>						

### Technical Specifications

Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.

Intel WiFi Link 5100	Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n (draft 2.0)*  * The specifications for 802.11n draft 2.0 are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11n WLAN devices. In countries where n draft 2.0 is not allowed, this capability is not enabled.
	Interoperability	Wi-Fi certified (802.11abg only) Cisco Compatible Extensions Program compliant (802.11abg only) with Microsoft Windows Vista and XP (details at: <a href="http://www.hp.com/go/notebooks/WLAN">http://www.hp.com/go/notebooks/WLAN</a> ) Tested with wireless access points from several major manufacturers (details at: <a href="http://www.hp.com/go/notebooks/WLAN/draft-n">http://www.hp.com/go/notebooks/WLAN/draft-n</a> )
	Frequency Band	2.4 GHz and 5 GHz
	Antenna Structure	1 transmit; 2 receive (1x2)
	Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n (draft): 66 possible data rates, ranging from 6 Mbps to 300 Mbps, depending on the combination of Bandwidth, Modulation Coding Scheme, and Guard Interval used, as defined in IEEE 802.11n (draft) specification
	Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM
	Security <sup>1</sup>	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES (support for key sizes of 128, 192, and 256 bits), 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST.  Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only.
	Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
	Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK
	Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
	Roaming	IEEE 802.11 compliant roaming between access points
	Output Power (for CCK) <sup>2</sup>	15 dBm
	Output Power (for OFDM; power varies by data rate) <sup>2</sup>	15 dBm



### Technical Specifications

<b>Broadcom 4312G 802.11b/g WiFi Adapter</b>	<b>Wireless LAN Standards</b>	IEEE 802.11b IEEE 802.11g
	<b>Interoperability</b>	Wi-Fi certified (802.11abg only) Cisco Compatible Extensions Program compliant (802.11abg only) with Microsoft Windows Vista and XP (details at: <a href="http://www.hp.com/go/notebooks/WLAN">http://www.hp.com/go/notebooks/WLAN</a> ) Tested with wireless access points from several major manufacturers (details at: <a href="http://www.hp.com/go/notebooks/WLAN/draft-n">http://www.hp.com/go/notebooks/WLAN/draft-n</a> )
	<b>Frequency Band</b>	2.4 GHz
	<b>Data Rates</b>	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
	<b>Modulation</b>	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM
	<b>Security<sup>1</sup></b>	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST.  Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only.
	<b>Sub-channels</b>	Multinational support with frequency bands and channels compliant to local regulations.
	<b>Media Access Protocol</b>	CSMA/CA (Collision Avoidance) with ACK
	<b>Network Architecture</b>	Ad-hoc (Peer to Peer)
	<b>Models</b>	Infrastructure (Access Point Required)
	<b>Roaming</b>	IEEE 802.11 compliant roaming between access points
	<b>Output Power (for CCK)<sup>2</sup></b>	17 dBm
	<b>Output Power (for OFDM; power varies by data rate)<sup>2</sup></b>	15 dBm
	<b>Power Consumption</b>	Idle associated: 250 mW Idle unassociated: 150 mW Transmit: 2.0 W (max) Receive: 2.0 W (max)
	<b>Power Management</b>	ACPI compliant power management 802.11 compliant power saving mode
	<b>Receiver Sensitivity<sup>3</sup></b>	54 Mbps: -71 dBm, 11 Mbps: -85 dBm, 1 Mbps: -95 dBm
	<b>Antenna type</b>	High efficiency dual band antenna with spatial diversity, mounted in the display enclosure
	<b>Range</b>	802.11 b – Typical (@1 Mbps)                      1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment  802.11 g – Typical (@1 Mbps)                      1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment
	<b>Form Factor</b>	PCI-Express MiniCard
	<b>Weight</b>	0.026 lb (12 g)
	<b>Dimensions</b>	0.19 x 1.2 x 2.0 in (4.75 x 29.85 x 50.8 mm)
	<b>Operating Voltage</b>	3.3v +/- 10%

### Technical Specifications

<b>Temperature</b>	Operating	14° to 149° F (–10° to 65° C)
	Non-operating	–40° to 176° F (–40° to 80° C)
<b>Humidity</b>	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
<b>Altitude</b>	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
<b>Configuration Utility<sup>4</sup></b>	Microsoft Windows XP	Choice of Configuration Utility: <ul style="list-style-type: none"> <li>• Microsoft Windows XP Wireless Network Connection Manager</li> <li>• Broadcom Wireless Configuration Utility (required for Cisco Compatible Extensions support)</li> </ul>
	Microsoft Windows Vista	<ul style="list-style-type: none"> <li>• Microsoft Windows Vista Wireless Network Connection Manager</li> <li>• Broadcom IHV extensions for Windows Vista available to support Cisco Compatible Extensions.</li> </ul>
<b>LED Activity</b>	LED Off – Radio OFF; Solid LED On – Radio ON	
	<ol style="list-style-type: none"> <li>1. Check latest software/driver release for updates on supported security features.</li> <li>2. Maximum output power may vary by country according to local regulations.</li> <li>3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).</li> <li>4. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.</li> </ol>	

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<b>Broadcom 4322AGN 802.11a/b/g/draft-n WiFi Adapter</b>	<b>Wireless LAN Standards</b>	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n (draft 2.0)
	<b>Interoperability</b>	Wi-Fi certified (802.11abg only) Cisco Compatible Extensions Program compliant (802.11abg only) with Microsoft Windows Vista and XP (details at: <a href="http://www.hp.com/go/notebooks/WLAN">http://www.hp.com/go/notebooks/WLAN</a> ) Tested with wireless access points from several major manufacturers (details at: <a href="http://www.hp.com/go/notebooks/WLAN/draft-n">http://www.hp.com/go/notebooks/WLAN/draft-n</a> )
	<b>Frequency Band</b>	2.4 GHz and 5 GHz
	<b>Data Rates</b>	802.11b: 1, 2, 5.5, 11 Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n (draft): 6, 6.5, 9, 12, 13, 13.5, 18, 19.5, 24, 26, 27, 36, 39, 40.5, 48, 52, 54, 58.5, 65, 78, 81, 104, 108, 117, 121.5, 130, 135, 162, 216, 243, 270, 300 Mbps
	<b>Frequency Support</b>	20 MHz: 2.4 GHz and 5 GHz bands 40 MHz: 2.4 GHz and 5 GHz band
	<b>Modulation</b>	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM

### Technical Specifications

<b>Security<sup>1</sup></b>	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST.  Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only.
<b>Sub-channels</b>	Multinational support with frequency bands and channels compliant to local regulations.
<b>Media Access Protocol</b>	CSMA/CA (Collision Avoidance) with ACK
<b>Network Architecture Models</b>	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
<b>Roaming</b>	IEEE 802.11 compliant roaming between access points
<b>Output Power (for CCK)<sup>2</sup></b>	17 dBm
<b>Output Power (for OFDM; power varies by data rate)<sup>2</sup></b>	15 dBm
<b>Power Consumption</b>	Idle associated: 250 mW Idle unassociated: 150 mW Transmit/Receive 20 MHz channel: 2.0 W (max) Transmit/Receive 40 MHz channel: 2.0 W (max)
<b>Power Management</b>	ACPI compliant power management 802.11 compliant power saving mode
<b>Receiver Sensitivity<sup>3</sup></b>	270 Mbps: -66dBm, 162 Mbps: -72 dBm, 54 Mbps: -72 dBm, 11 Mbps: -85 dBm , 1 Mbps: -94 dBm
<b>Antenna type</b>	High efficiency dual band antenna with spatial diversity, mounted in the display enclosure
<b>Range</b>	802.11 a – Typical (@6 Mbps)      600 feet – Outdoor Open Area 150 feet – Indoor, Office environment 802.11 b – Typical (@1 Mbps)      1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment 802.11 g – Typical (@1 Mbps)      1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment
<b>Form Factor</b>	PCI-Express MiniCard
<b>Weight</b>	0.026 lb (12 g)
<b>Dimensions</b>	0.19 x 1.2 x 2.0 in (4.75 x 29.85 x 50.8 mm)
<b>Operating Voltage</b>	3.3v +/- 10%
<b>Temperature</b>	Operating                      14° to 149° F (-10° to 65° C) Non-operating                -40° to 176° F (-40° to 80° C)
<b>Humidity</b>	Operating                      10% to 90% (non-condensing) Non-operating                5% to 95% (non-condensing)
<b>Altitude</b>	Operating                      0 to 10,000 ft (3,048 m) Non-operating                0 to 50,000 ft (15,240 m)
<b>Configuration Utility<sup>4</sup></b>	Microsoft Windows XP Choice of Configuration Utility: <ul style="list-style-type: none"><li>● Microsoft Windows XP Wireless Network Connection Manager</li></ul>

### Technical Specifications

- Broadcom Wireless Configuration Utility (required for Cisco Compatible Extensions support)

Microsoft Windows Vista

- Microsoft Windows Vista Wireless Network Connection Manager
- Broadcom IHV extensions for Windows Vista available to support Cisco Compatible Extensions.

#### LED Activity

LED Off – Radio OFF; Solid LED On – Radio ON

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
4. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.

<b>HP Integrated Module with Bluetooth Wireless Technology</b>	<b>Bluetooth Specification</b>	2.0 Compliant
	<b>Dimensions</b>	1.02 x 0.55 x 0.22 in (26 x 14 x 5.7 mm)
	<b>Frequency Band</b>	2402 to 2480 MHz
	<b>Number of Available Channels</b>	79 (1 MHz) available channels
	<b>Data Rates and Throughput</b>	3 Mbps data rate; throughput up to 2.17 Mbps Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric
	<b>Transmit Power</b>	-6 dBm to 4 dBm (Bluetooth Class II)
	<b>Receiver Sensitivity</b>	Better than -80 dBm at 0.1 % raw bit error rate
	<b>Power Consumption</b>	Peak (Tx) 264 mW Peak (Rx) 231 mW Sleep < 1 mW
	<b>Antenna</b>	Internally integrated within module
	<b>Range</b>	Up 33 ft (10 m)
	<b>Electrical Interface</b>	USB 2.0 compliant
	<b>OS Support</b>	Microsoft Windows Plug and Play compliant Microsoft Windows XP Professional and Home Microsoft Windows 2000
	<b>Bluetooth Software Supported</b>	Broadcom Bluetooth for Windows Microsoft Windows XP Bluetooth Software
	<b>Link Topology</b>	Point to Point, Multipoint Pico Nets up to 7 slaves
	<b>Security</b>	Full support of Bluetooth Security Provisions
	<b>Power Management</b>	Microsoft Windows ACPI, and USB Bus Support Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff

### Technical Specifications

<b>Certifications</b>	All necessary regulatory approvals for supported countries, including: FCC (47 CFR) Part 15C, Section 15.247 & 15.249 ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark
<b>Temperature</b>	Operating                    –4° to 158° F (–20° to 70° C) Non-operating           –40° to 176° F (–40° to 80° C)
<b>Humidity</b>	Operating                   10% to 90% Non-operating           5% to 95%
<b>Altitude</b>	Operating                   15,000 ft (4,572 m) Non-operating           40,000 ft (12,192 m)
<b>Bluetooth Profiles Supported</b>	(with Bluetooth for Windows 4.0 software) Serial Port Profile (SPP)* Dial-Up Networking (DUN)* Generic Object Exchange Profile (GOEP) Object Push Profile (OPP)* File Transfer Profile (FTP) Synchronization Profile (SYNC) Hard Copy Cable Replacement (HCRP)* Personal Area Networking Profile (PAN)* Human Interface Device Profile (HID)* FAX Profile (FAX) Basic Imaging Profile (BIP) Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP)

\* indicates the profile is also supported by Microsoft Windows XP SP2



### Technical Specifications

#### Eco Data

#### Eco-Label Certifications

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
- IT ECO declaration
- EPEAT – Silver
- Korea ECO label

#### System Configuration

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Convertible Mini tower Desktop model is based on a “Typically Configured Notebook”

Energy Consumption	115 VAC	230 VAC	100 VAC
Normal Operation	15.814 W	15.018 W	15.905 W
Sleep (Energy Star low power mode)	1.156 W	1.173 W	1.165 W
Off	0.727 W	0.74 W	0.74 W
Heat Dissipation*	115 VAC	230 VAC	100 VAC
Normal Operation	54 BTU/hr	51 BTU/hr	54 BTU/hr
Sleep	4 BTU/hr	4 BTU/hr	4 BTU/hr
Off	2 BTU/hr	3 BTU/hr	3 BTU/hr

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

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

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

System Fan Off	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Idle	3.9	28
Fixed Disk (random writes)	3.9	28

System fan is usually off except when charging the battery

#### 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 4000 ppm by weight.

The battery type and chemistry used in the product is:  
CR2032 (coin cell), Lithium

### Technical Specifications

#### Additional information

High capacity Lithium-Ion battery

This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive – 2002/95/EC.

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

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

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

Keyboard complies with ISO standard: ISO 9995, EN 29241-4, and ISO/IEC 15412

Input devices of this product comply with ISO 9241, part 9.

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

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

This product is greater than 97.3% recycle-able when properly disposed of at end of life.

#### Packaging Materials

- External:
  - CANON bags – several layers – 15g
  - Corrugated carton – 440g
  - Cardboard & misc – 245g
- Internal:
  - EPE-Expanded Polyethylene – 80g
- The EPE foam packaging material is made from 100% recycled content.
- The corrugated paper packaging materials contains at least 100% recycled content.

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.

### Technical Specifications

#### Material Usage

- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

This product does not contain any of the following substances in excess of regulatory limits (for reference of these limits please refer to the HP General Specification of the Environment ([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)

#### 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/go/reuse-recycle> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: <http://www.hp.com/go/recyclers>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

#### 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> Environment website <http://www.hp.com/environment>

## Technical Specifications

Eco-label certifications

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

ISO 14001 certificates:

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

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