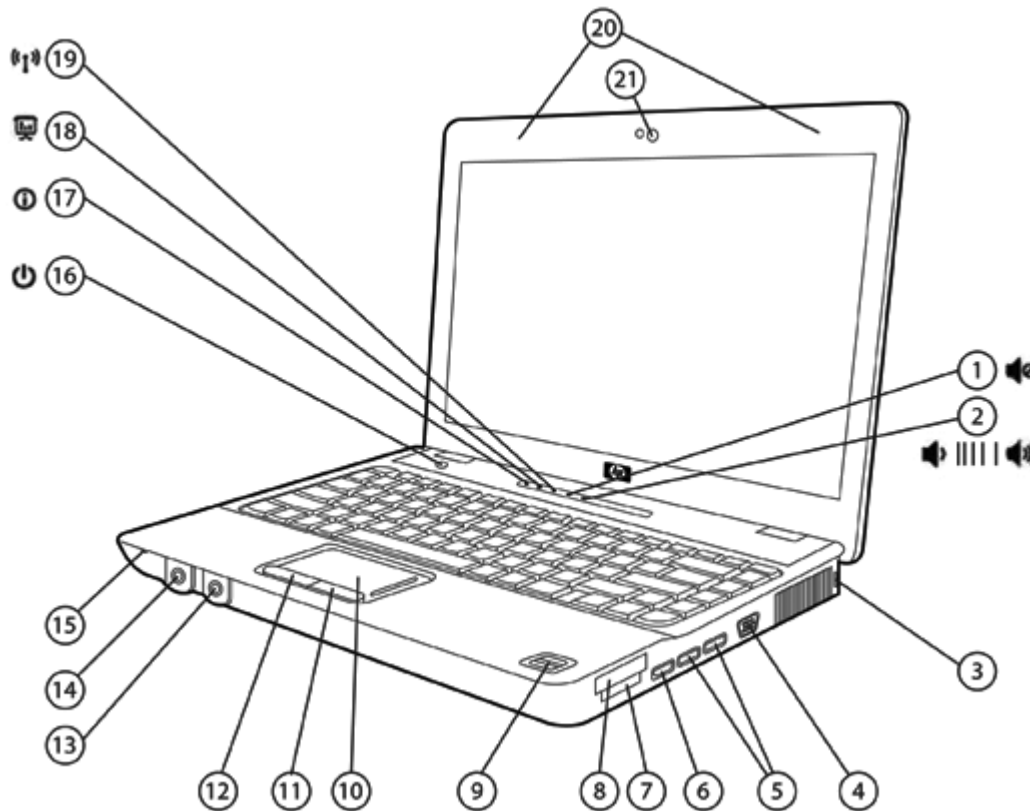


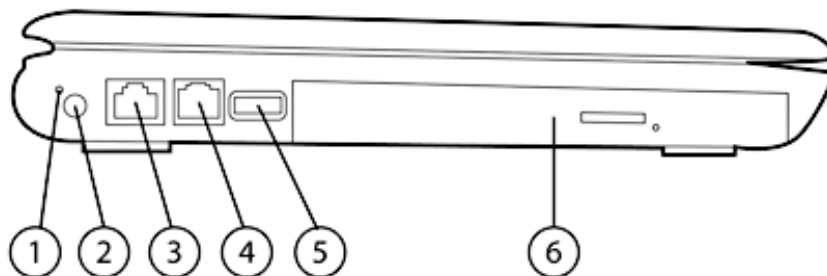
Overview

HP recommends
Windows Vista® Business



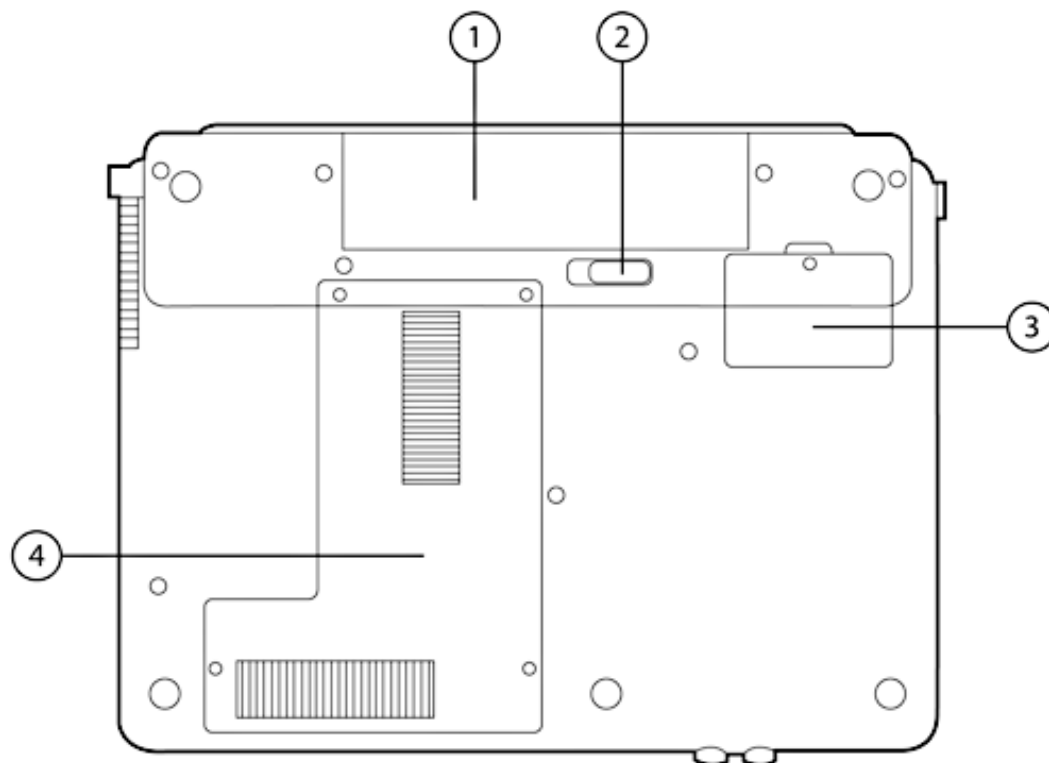
- | | |
|---|--|
| 1. Volume mute button with LED indicator | 11. Touchpad right button |
| 2. Volume scroll zone with up/down LED indicators | 12. Touchpad left button |
| 3. Kensington Lock slot | 13. Stereo headphone/line out |
| 4. VGA/external monitor connector | 14. Stereo microphone in |
| 5. (2) USB 2.0 ports | 15. Hard drive activity / HP 3D DriveGuard LED |
| 6. HDMI port | 16. Power button with LED |
| 7. Secure Digital (SD) slot | 17. HP Info Center button with LED indicator |
| 8. ExpressCard/34 slot | 18. HP Presentation button with LED indicator |
| 9. HP Fingerprint Sensor | 19. Wireless on/off button with LED indicator |
| 10. Touchpad with scroll zone | 20. Integrated dual-array microphone |
| | 21. Optional VGA webcam |

Left
View



- | | |
|-------------------------|---------------------|
| 1. Battery charging LED | 4. RJ-11/modem port |
| 2. Power connector | 5. USB 2.0 ports |
| 3. RJ-45/Ethernet port | 6. Optical drive |

Overview



1. Battery bay
2. Battery release latch
3. WLAN module compartment (select models)
4. Hard Drive and Memory bay

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, or FreeDOS (select countries)
- Thin lightweight design starting at 4.07 lb/1.85 kg and 1.1 inch/28mm thin at front
- Widescreen 12.1-inch diagonal display with optional BrightView
- Flexible wireless connectivity options:
 - Integrated 802.11 a/b/g/n draft 2.0, a/b/g, b/g wireless LAN module
 - Bluetooth® 2.0
- Intel® Core™2 Duo processors
- Integrated optical drive
- Integrated SD/MMC Media Card Reader
- Enhanced security features including HP ProtectTools Security Manager and HP Fingerprint Sensor
- Optional integrated VGA webcam
- Up to 500 GB 5400 rpm user-removable hard drive with HP 3D DriveGuard protection
- Up to 8 GB of 800-MHz DDR2 SDRAM, dual channel memory support
- Touch-sensitive controls for HP Info Center, HP Presentation button, wireless on/off, mute, and volume up, volume down
- Intel Mobile Chipset Family with integrated graphics
- Marvell Gigabit Ethernet Controller (10/100/1000 NIC)
- Touchpad with scroll zone

Standard Features

Processors

Intel Core 2 Duo Processor T9600 (2.8 GHz, 6 MB L2 cache, 1066 MHz FSB)*
 Intel Core 2 Duo Processor T9400 (2.53 GHz, 6 MB L2 cache, 1066 MHz FSB)*
 Intel Core 2 Duo Processor P9500 (2.53 GHz, 6 MB L2 cache, 1066 MHz FSB)*
 Intel Core 2 Duo Processor P8700 (2.53 GHz, 3 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 T6570 (2.10 GHz, 2 MB L2 cache, 800 MHz FSB)*
 Intel Core 2 Duo Processor T5870 (2.0 GHz, 2 MB L2 cache, 800 MHz FSB)*
 Intel Core 2 Duo Processor T5670 (1.8 GHz, 2 MB L2 cache, 800 MHz FSB)*
 Intel Pentium Dual-Core Processor T4200 (2.00 GHz, 1 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)*

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

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

Operating System

Preinstalled

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

Supported

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 also 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 at least 25 customer systems with the same custom image.

Chipset

Mobile Intel GM45 Express Chipset ICH9M-Enhanced, 1066 MHz front side bus (models with integrated graphics)
 Mobile Intel GL40 Express Chipset, 667 MHz front side bus (models with integrated graphics)

Graphics

Mobile Intel Graphics Media Accelerator 4500MHD, up to 384 MB of shared system memory
 Microsoft DirectX10 capable

Standard Features

Display	Internal	12.1-inch diagonal WXGA anti-glare (1280 x 800 resolution) 12.1-inch diagonal WXGA BrightView (1280 x 800 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 HDMI 1.3 port supports direct connection to high-definition displays with up to 1920 x 1080 resolution and 7-channel audio with one convenient cable (not included) NOTE: Resolutions are dependent upon monitor capability, and resolution and color depth settings.

Memory	Standard	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.
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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.
All 802.11 integrated wireless LAN options	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
Intel WiFi Link 5100	Integrated support for 802.11a, b, g, and n draft 2.0* Up to 300 mbps data rate
Intel WiFi Link 5100	Integrated support for 802.11 a, b and g Up to 54 mbps data rate
Broadcom 4322AGN 802.11a/b/g/draft-n Wi-Fi Adapter	Integrated support for 802.11a, b, g, and n draft 2.0* Up to 300 mbps data rate
Broadcom 4312G 802.11b/g Wi-Fi Adapter	Integrated support for 802.11 b and g Up to 54 mbps data rate

Standard Features

HP Integrated Module with Bluetooth Wireless Technology 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.

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 an integrated numeric keypad, hotkeys for instant access to power conservation, brightness, and other features, 19 mm x 19 mm key pitch (center-to-center spacing), 2.5 mm stroke, and comfort-dished keycaps.

Touch-sensitive controls

Touch-sensitive controls provide easy access to the following features: HP Info Center, HP Presentation button, wireless on/off, mute, and volume up, volume down

Pointing device

Touchpad with scroll zone, two pick buttons

Expansion card slots

ExpressCard/34 slot Supports ExpressCard/34 (34 mm x 75 mm x 5 mm) card sizes
Secure Digital slot Supports SD (Secure Digital), MMC (MultiMedia Card) cards

Storage

Hard drives 120/160/250/320/500 GB 5400 rpm SMART SATA II
160 GB 7200 rpm SMART SATA II Hard Drive

NOTE: These hard drives are customer removable and will withstand multiple insertion/removal cycles. Up to 10 GB is reserved for the system recovery software.

HP 3D DriveGuard 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.

Fixed optical drives DVD-ROM Drive
DVD/CD-RW Combo Drive
DVD+/-RW SuperMulti DL LightScribe Drive
Blu-ray ROM DVD+/-RW SuperMulti DL Drive

NOTE: Optical drive available only with 1.8-inch hard drive.

Standard Features

Interfaces	ExpressCard/34 slot	One
	External monitor	One – VGA
	Stereo microphone in	One
	Stereo headphone/line out	One
	Power connector	One
	RJ-11/modem	One
	RJ-45/Ethernet	One
	HDMI	One – 1.3 compliant
	USB 2.0	Three
	SD/MMC Media card reader	One
	LED status indicators	Thirteen

Audio/Visual	<p>High Definition Audio support w/24-bit DAC</p> <p>Integrated stereo speakers</p> <p>Integrated dual array digital microphone</p> <p>Touch-sensitive controls for volume up, volume down, and mute</p> <p>Stereo headphone/line out</p> <p>Stereo microphone in</p> <p>Optional VGA webcam</p>
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Software	Preinstalled software with Windows Vista or Windows XP	<p>PDF Complete</p> <p>HP Recovery Manager</p> <p>HP Help and Support Center</p> <p>HP Universal Print Driver</p> <p>HP ProtectTools Security Manager:</p> <ul style="list-style-type: none"> BIOS Configuration for HP ProtectTools Credential Manager for HP ProtectTools Drive Encryption for HP ProtectTools <p>HP Quick Launch Buttons</p> <p>HP Wireless Assistant</p> <p>Microsoft Office Ready with 60-day Office Professional 2007 Trial Edition (select models)</p> <p>Roxio Creator Business (for optional DVD+/-RW and DVD/CDRW drives)</p> <p>Synaptics Touchpad Driver</p> <p>McAfee Total Protection*</p> <p>Intervideo WinDVD – DVD Player</p> <p>Microsoft Windows Live Messenger (select models)</p>
	Additional software available from the web	<p>HP SoftPaq Download Manager</p> <p>HP Client Manager Software</p> <p>HP Client Management Solutions</p>

* 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.

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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SMBIOS Version 2.4	System Management BIOS, previously known as DMI BIOS, is used to store system management information.
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Standard Features

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

Security

Standard Features

HP ProtectTools Security Manager
 Enhanced Pre-Boot Security
 HP SpareKey
 One-Step Logon
 HP Fingerprint Sensor
 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)

For more information on HP security solutions refer to: <http://www.hp.com/go/security>.

Power Supply

External 65-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*

*HP Fast Charge recharges your battery up to 90% within 90 minutes when the system is off.

Battery

Primary Battery

4-cell (37 WHr) Lithium-Ion battery
 8-cell (73 WHr) Lithium-Ion battery

Battery Life

Primary battery

4-cell
 Up to 3.5 hours

8-cell
 Up to 8 hours

NOTE: The listed battery life measurements were taken on models running Microsoft Windows Vista. 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.

System Standby Time Up to 1 week

Power Conservation

Supports enhanced Intel SpeedStep technology with Intel Core 2 Duo processors (allows Battery Optimized Mode, Maximum Performance Mode, or Automatic mode)
 Intel Display Power Saving technology
 Hibernation
 Standby
 ACPI compliance



Standard Features

Docking and Stands N/A

Service and Support HP Services offers limited 3-year and 1-year 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

Memory	HP 1 GB (DDR2 800 MHz) SODIMM	KT292AA
	HP 2 GB (DDR2 800 MHz) SODIMM	KT293AA
	HP 4 GB (DDR2 800 MHz) SODIMM	KT293AA
<hr/>		
Other Storage	HP Notebooks USB Diskette Drive	DC361B
<hr/>		
Power	HP 65W Smart AC Adapter	ED494AA#xxx
	HP 90W Smart Auto Adapter	ED493AA
	HP 65W AC/Auto/Air Combo Smart Adapter	ED993AA#xxx
	HP 4-cell Primary Battery	TBD
<hr/>		
Carrying Cases	HP Value Nylon Case	RR314AA
	HP Basic Carrying Case	AJ078AA
	HP Universal Nylon Case	RR315AA
	HP Executive Leather Case	RR316AA
	HP Deluxe Nylon Backpack	RR317AA
	HP Universal Messenger Bag	GD404AA
	HP Deluxe Roller Case	GD405AA
<hr/>		
Security	HP/Kensington MicroSaver Security Lock	PC766A
<hr/>		
Input/Output Devices	HP USB Keyboard & Mouse Bundle	RC465AA#xxx
	HP USB Optical Travel Mouse	RH304AA

Memory

Support for up to 8192 MB of 667/800-MHz DDR2 SDRAM
 Two DIMM slots supporting dual channel memory
 DIMM sizes supported: 1024 MB, 2048 MB, and 4096 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 is available (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.

Memory Upgrades	HP 1 GB (DDR2 800 MHz) SODIMM	KT292AA
	HP 2 GB (DDR2 800 MHz) SODIMM	KT293AA
	HP 4 GB (DDR2 800 MHz) SODIMM	KT293AA

Storage

Removable Media Drive Support

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

Hard Drive Support

	Quantity Supported	Drive Bay
Primary Hard Drives		
120-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
250-GB 5400 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
320-GB 5400 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
500-GB 5400 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
160-GB 7200 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay

Technical Specifications

System Unit	Dimensions (HxWxD)	1.10 in (at front) x 11.57 in x 8.90 in 28 mm (at front) x 294 mm x 226 mm
	Weight	Starting at 4.07 lb (1.85 kg)
	NOTE: Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components. Weight includes 4-cell battery, hard drive and optical drive. Weight varies by configuration and components.	
Stand-Alone Power Requirements (AC Power)	Nominal Operating Voltage	18.5 V
	Average Operating Power	16.9 W
	Max Operating Power	< 65 W
Temperature	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)
Relative Humidity	Operating	10% to 90%, non-condensing
	Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
Shock	Operating	125 G, 2 ms, half-sine
	Non-operating	200 G, 2 ms, half-sine
Random Vibration	Operating	0.75 grms
	Non-operating	1.50 grms
Altitude (unpressurized)	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)
Industry Standard Certifications	Australia & New Zealand – A-tick/C-tick	Yes
	China – CCC safety/EMC	Yes
	Hong Kong – HP DoC (CE DoC)	Yes
	Korea – MIC, eK	Yes
	Thailand	Yes
	Taiwan – BSMI	Yes
	Japan VCCI	Yes
	UL	Yes
	FCC	Yes
	CB	Yes
	GreenMark for Taiwan	Yes
	WEEE	Yes
	Energy Star	Yes
	EPEAT	Silver
	Singapore – PSB	Yes
China CECP	Yes	

Technical Specifications

HP 65W Smart AC Adapter	Dimensions	4.17 x 1.85 x 1.1 in (10.6 x 4.7 x 2.8 cm)		
	Weight	0.62 lb (280 g)		
	Input	100 to 240 VAC		
		Input Efficiency	83% min at 115 VAC	
		Input frequency range	47 to 63 Hz	
	Output	Input AC current	1.7 A at 90 VAC, 0.85 A at 180 VAC	
		Output power 65W	65W	
		DC output	18.5V	
		Hold-up time	5 msec at 115 VAC input	
		Output current limit	Output current limit <11A, Over voltage protection- 29V max automatic shutdown	
	Connector	3 pin/grounded, mates with interchangeable cords		
	Environmental Design	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%		
EMI and Safety Certifications	Storage Humidity	10% to 90%		
	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.			

4-Cell (37 WHr) Lithium-Ion battery	Dimensions (H x W x L)	0.8 x 2.1 x 8.0 in (2.0 x 5.3 x 20.3 cm)		
	Weight	0.55 lb (0.249 kg)		
	Cells/Type	4-cell Lithium-Ion		
	Energy	Watt-hour Capacity	37 WHr	
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)	
		Operating (Discharging)	14° to 140° F (-10° to 60° C)	
		Non-operating	-4° to 140° F (-20° to 60° C)	
	Battery Re-Charge Time	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 90 minutes when system is OFF		

Displays

Technical Specifications

12.1-inch Color TFT WXGA Display	Active Area (W x H)	10.3 x 6.4 in (26.1 x 16.3 cm)		
	Diagonal Size	12.1 in (30.7 cm)		
	Surface Treatment	Anti-glare		
	Contrast Ratio	300:1 (typical)		
	Refresh Rate	60 Hz		
	Brightness	200 nit (typical)		
	Pixel Resolution	Pitch	0.204 mm	
		Format	1280 x 800	
		Configuration	RGB Stripe	
	Backlight	CCFL		
PPI	125			
Viewing Angle	±45° Horizontal, ±25° Vertical (typical)			

12.1-inch Color TFT WXGA BrightView Display	Active Area (W x H)	10.3 x 6.4 in (26.1 x 16.3 cm)		
	Diagonal Size	12.1 in (30.7 cm)		
	Surface Treatment	BrightView		
	Contrast Ratio	300:1 (typical)		
	Refresh Rate	60 Hz		
	Brightness	200 nit (typical)		
	Pixel Resolution	Pitch	0.204 mm	
		Format	1280 x 800	
		Configuration	RGB Stripe	
	Backlight	CCFL		
PPI	125			
Viewing Angle	±45° Horizontal, ±25° 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	100 MB/s (Drive Capability)	
		(maximum)		
	Seek Time	Single Track	1.5 ms	
	(typical reads, including settling)	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

500-GB 5400 rpm SATA Drive Weight	0.22 lb (101 g)	
Capacity	500 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)	150 MB/s (Drive Capability)
Seek Time (typical reads, including settling)	Single Track	2 ms
	Average	12 ms
	Maximum	22 ms
Rotational Speed	5400 rpm	
Logical Blocks	976,773,168	
Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
Features	ATA Security	

320-GB 5400 rpm SATA 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	Synchronous (maximum)	150 MB/s (Drive Capability)
Seek Time (typical reads, including settling)	Single Track	2 ms
	Average	12 ms
	Maximum	22 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	

250-GB 5400 rpm SATA 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	Synchronous (maximum)	100 MB/s (Drive Capability)
Seek Time (typical reads, including settling)	Single Track	3 ms
	Average	13ms
	Maximum	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	

Technical Specifications

160-GB 5400 rpm SATA 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	Synchronous (maximum)	100 MB/s (Drive Capability)
Seek Time (typical reads, including settling)	Single Track	3 ms
	Average	13ms
	Maximum	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	

120-GB 5400 rpm SATA 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	Synchronous (maximum)	100 MB/s (Drive Capability)
Seek Time (typical reads, including settling)	Single Track	3 ms
	Average	13ms
	Maximum	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	3,600 KB/s
		8X DVD	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	Access Times	Random	<110 ms CD <130 ms DVD
	Max Data Transfer Rate	24X CD-ROM	3,600 KB/s
		8X DVD	10,800 KB/s
		24X CD-R	3,600 KB/s
		24X CD-RW	3,600 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	
	Supported Media (write)	CD-R, CD-RW	
	Max Media Capacity (read)	8.5 GB	
Max Media Capacity (write)	700 MB		
Transport	Tray loading		

DVD+/-RW SuperMulti DL LightScribe Drive	Access Times	Random	<175 ms CD <230 ms DVD
	Max Data Transfer Rate	24X CD-ROM	3,600 KB/s
		8X DVD	10,800 KB/s
		24X CD-R	3,600 KB/s
		16X CD-RW	2,400 KB/s
		8X DVD+R	10,800 KB/s
		4X DVD+RW	5,400 KB/s
		8X DVD-R	10,800 KB/s
		4X DVD-RW	5,400 KB/s
		2.4X DVD+R(9)	2,700 KB/s
	5X DVD-RAM	6,750 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)	CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM, LightScribe	
Max Media Capacity (read)	8.5 GB		
Max Media Capacity (write)	8.5 GB		
Transport	Tray Loading		

Technical Specifications

Blu-ray ROM DVD+/-RW SuperMulti DL Drive	Access Times	Random	<190 ms CD-ROM (typical) <180 ms DVD-ROM (typical) <230 ms BD-ROM (typical)
	Max Data Transfer Rate	16X CD-ROM	Up to 2400 KB/s
		8X DVD-ROM	Up to 10,800 KB/s
		16X CD-R	Up to 2400 KB/s
		10X CD-RW	Up to 1500 KB/s
		8X DVD+R	Up to 10,800 KB/s
		4X DVD+RW	Up to 5400 KB/s
		8X DVD-R	Up to 10,800 KB/s
		4X DVD-RW	Up to 5400 KB/s
		4X DVD+R(9)	Up to 5400 KB/s
		5X DVD-RAM	Up to 6750 KB/s
	2X BD-ROM	Up to 9000 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, BD-ROM, BD-R, BD-RE		
Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+R(9), DVD+RW, DVD-R, DVD-R(9), DVD-RW, DVD-RAM, BD-R, BD-RE		
Max Media Capacity (read)	50.0 GB		
Max Media Capacity (write)	50.0 GB		
Transport	Tray Loading		

Security

HP Fingerprint Sensor	Mobile Voltage Operation	3.0V–3.6V Single Supply	
	Operating Temperature	32° – 158°F (0° – 70°C)	
	Current Consumption @ 3.3V	Less than 70 mA peak imaging and scrolling Less than 25 mA hardware finger detection Advanced Power Management	
	High-Rate Image Capture	Up to 240 image frames /sec	
	ESD Resistance	IEC 61000-4-2 Level 4 (±15KV)	
	Detection Matrix	192 x 16 Pixels 9.7 mm x 0.81 mm 500 ppi High-Resolution Images	

Audio



Technical Specifications

Hardware	Implementation	ADI1984AJCPZ High Definition CODEC
	Touch-Sensitive Volume Controls	Volume up, volume down, and mute
	Full Duplex	Yes
	Sound Blaster Pro compatible	Yes
	Microphone In	Stereo
	Headphone/Line Out	Stereo
	Integrated Microphone	Yes

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

Integrated Stereo Speakers	Power Rating	1.5 Watts
	Impedance	4 Ohms

Communications

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) Optional symbol rates: 2800, 3429 Asymmetric Symbol rates Synchronous primary channel data signaling rates: 3600, 31200 Automatic rate re-negotiation V.34 V.32bis V.32 V.23 V.22bis V.22 V.21 Bell 212A Bell 103J

Technical Specifications

Fax Mode Capabilities	TIA/EIA-578-B (Class 1) T.30, T.4 (Group 3) V.17 V.29 V.27ter V.21 Channel 2
Command Set	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

Intel WiFi Link 5100	Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n (draft 2.0)
	Interoperability	Wi-Fi certified (802.11abg only) Cisco Compatible Extensions Program compliant (802.11abg only) with Microsoft Windows Vista and XP (details at: http://www.hp.com/go/notebooks/WLAN) Tested with wireless access points from several major manufacturers (details at: http://www.hp.com/go/notebooks/WLAN/draft-n)
	Frequency Band	2.4 GHz and 5 GHz
	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
	Security¹	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) ²	15 dBm
	Output Power (for OFDM; power varies by data rate) ²	15 dBm

Technical Specifications

Power Consumption	Transmit: 2.3 Watts (average, with one spatial streams) Receive: 1.9 Watts (average with two receive chains) Idle mode ³ : 30 mW (average) Radio off: 20 mW (max)	
Power Management	ACPI compliant power management 802.11 compliant power saving mode	
Receiver Sensitivity⁴	300 Mbps: -68 dBm, 54 Mbps: -74 dBm, 6 Mbps: -90 dBm	
Antenna Connections	3 U.FL type connectors, 50 ohm nominal impedance	
Range	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
Form Factor	PCI-Express MiniCard	
Weight	0.013 lb (6 g)	
Dimensions	0.19 x 1.2 x 2.0 in (4.75 x 29.85 x 50.8 mm)	
Operating Voltage	3.3V +/- 9%, 1.5V +/- 5%	
Temperature	Operating	32° to 176° F (0° to 80° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 90% (non-condensing)
Altitude	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
Configuration Utility⁵	Microsoft Windows XP Choice of Configuration Utility: <ul style="list-style-type: none"> ● Microsoft Windows XP Wireless Network Connection Manager ● Intel PROSet for Microsoft Windows XP (required for Cisco Compatible Extensions support) Microsoft Windows Vista <ul style="list-style-type: none"> ● Microsoft Windows Vista Wireless Network Connection Manager. ● Intel IHV extensions for Windows Vista available to support Cisco Compatible Extensions. 	
LED Activity	LED Off – Radio OFF; Solid LED On – Radio ON	
	<ol style="list-style-type: none"> 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. In Power Save Polling mode and on battery power. 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). 5. 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. 	

Broadcom 4312G 802.11b/g WiFi Adapter Standards	Wireless LAN	IEEE 802.11b IEEE 802.11g
	Interoperability	Wi-Fi certified (802.11abg only) Cisco Compatible Extensions Program compliant (802.11abg only) with Microsoft Windows Vista and XP (details at: http://www.hp.com/go/notebooks/WLAN) Tested with wireless access points from several major manufacturers (details at: http://www.hp.com/go/notebooks/WLAN/draft-n)
	Frequency Band	2.4 GHz



Technical Specifications

Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps	
Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM	
Security¹	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.	
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) ²	17 dBm	
Output Power (for OFDM; power varies by data rate) ²	15 dBm	
Power Consumption	Idle associated: 250 mW Idle unassociated: 150 mW Transmit: 2.0 W (max) Receive: 2.0 W (max)	
Power Management	ACPI compliant power management 802.11 compliant power saving mode	
Receiver Sensitivity³	54 Mbps: -71 dBm, 11 Mbps: -85 dBm , 1 Mbps: -95 dBm	
Antenna type	High efficiency dual band antenna with spatial diversity, mounted in the display enclosure	
Range	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
Form Factor	PCI-Express MiniCard	
Weight	0.026 lb (12 g)	
Dimensions	0.19 x 1.2 x 2.0 in (4.75 x 29.85 x 50.8 mm)	
Operating Voltage	3.3v +/- 10%	
Temperature	Operating	14° to 149° F (-10° to 65° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
Altitude	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
Configuration Utility⁴	Microsoft Windows XP Choice of Configuration Utility: <ul style="list-style-type: none"> ● Microsoft Windows XP Wireless Network Connection Manager ● Broadcom Wireless Configuration Utility (required for Cisco Compatible Extensions support) Microsoft Windows Vista <ul style="list-style-type: none"> ● Microsoft Windows Vista Wireless Network Connection Manager ● 	

Technical Specifications

- 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.

Broadcom 4322AGN Wireless LAN 802.11a/b/g/draft-n WiFi Standards Adapter

IEEE 802.11a
IEEE 802.11b
IEEE 802.11g
IEEE 802.11n (draft 2.0)

Interoperability

Wi-Fi certified (802.11abg only)
Cisco Compatible Extensions Program compliant (802.11abg only) with Microsoft Windows Vista and XP (details at: <http://www.hp.com/go/notebooks/WLAN>)
Tested with wireless access points from several major manufacturers (details at: <http://www.hp.com/go/notebooks/WLAN/draft-n>)

Frequency Band

2.4 GHz and 5 GHz

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): 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

Frequency Support

20 MHz: 2.4 GHz and 5 GHz bands
40 MHz: 2.4 GHz and 5 GHz band

Modulation

Direct Sequence Spread Spectrum
DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM

Security¹

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.

Sub-channels

Multinational support with frequency bands and channels compliant to local regulations.

Media Access Protocol CSMA/CA (Collision Avoidance) with ACK

Network Architecture Ad-hoc (Peer to Peer)

Models Infrastructure (Access Point Required)

Roaming IEEE 802.11 compliant roaming between access points

Output Power (for CCK)² 17 dBm

Output Power (for OFDM; power varies by data rate)² 15 dBm

Power Consumption 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)

Technical Specifications

Power Management	ACPI compliant power management 802.11 compliant power saving mode	
Receiver Sensitivity³	270 Mbps: -66dBm, 162 Mbps: -72 dBm, 54 Mbps: -72 dBm, 11 Mbps: -85 dBm , 1 Mbps: -94 dBm	
Antenna type	High efficiency dual band antenna with spatial diversity, mounted in the display enclosure	
Range	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
Form Factor	PCI-Express MiniCard	
Weight	0.026 lb (12 g)	
Dimensions	0.19 x 1.2 x 2.0 in (4.75 x 29.85 x 50.8 mm)	
Operating Voltage	3.3v +/- 10%	
Temperature	Operating	14° to 149° F (-10° to 65° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
Altitude	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
Configuration Utility⁴	Microsoft Windows XP Choice of Configuration Utility:	
	<ul style="list-style-type: none"> ● Microsoft Windows XP Wireless Network Connection Manager ● Broadcom Wireless Configuration Utility (required for Cisco Compatible Extensions support) 	
	Microsoft Windows Vista	
	<ul style="list-style-type: none"> ● 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	
	<ol style="list-style-type: none"> 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. 	

HP Integrated Module with Bluetooth Wireless Technology

Bluetooth Specification	2.0 Compliant
Dimensions	1.02 x 0.55 x 0.22 in (26 x 14 x 5.7 mm)
Frequency Band	2402 to 2480 MHz
Number of Available Channels	79 (1 MHz) available channels
Data Rates and Throughput	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
Transmit Power	-6 dBm to 4 dBm (Bluetooth Class II)



Technical Specifications

Receiver Sensitivity	Better than -80 dBm at 0.1 % raw bit error rate	
Power Consumption	Peak (Tx) 264 mW Peak (Rx) 231 mW Sleep <1 mW	
Antenna	Internally integrated within module	
Range	Up 33 ft (10 m)	
Electrical Interface	USB 2.0 compliant	
OS Support	Microsoft Windows Plug and Play compliant Microsoft Windows XP Professional and Home Microsoft Windows 2000	
Bluetooth Software Supported	Broadcom Bluetooth for Windows Microsoft Windows XP Bluetooth Software	
Link Topology	Point to Point, Multipoint Pico Nets up to 7 slaves	
Security	Full support of Bluetooth Security Provisions	
Power Management	Microsoft Windows ACPI, and USB Bus Support Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff	
Certifications	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	
Temperature	Operating	-4° to 158° F (-20° to 70° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90%
	Non-operating	5% to 95%
Altitude	Operating	15,000 ft (4,572 m)
	Non-operating	40,000 ft (12,192 m)
Bluetooth Profiles Supported	(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

Environmental 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
- Taiwan Green Mark
- 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	11.83 W	12.09 W	11.55 W
Sleep (Energy Star low power mode)	1.137 W	1.182 W	1.127 W
Off	0.835 W	0.862 W	0.817 W

Heat Dissipation*	115 VAC	230 VAC	100 VAC
Normal Operation	41 BTU/hr	41 BTU/hr	40 BTU/hr
Sleep	4 BTU/hr	4 BTU/hr	4 BTU/hr
Off	3 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	3.1	23.8
Fixed Disk (random writes)	3.1	23.5

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
8-cell high capacity Lithium-Ion battery

Additional information

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

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

Technical Specifications

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

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 94.3% recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
 - CANON bags – several layers – 15 g
 - Corrugated carton – 440g
 - Cardboard & misc. – 245g
- Internal:
 - EPE-Expanded Polyethylene – 80 g
- 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.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

Material Usage

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)):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants – may not be used as flame retardants in plastics
- Cadmium

Technical Specifications

- 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>
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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