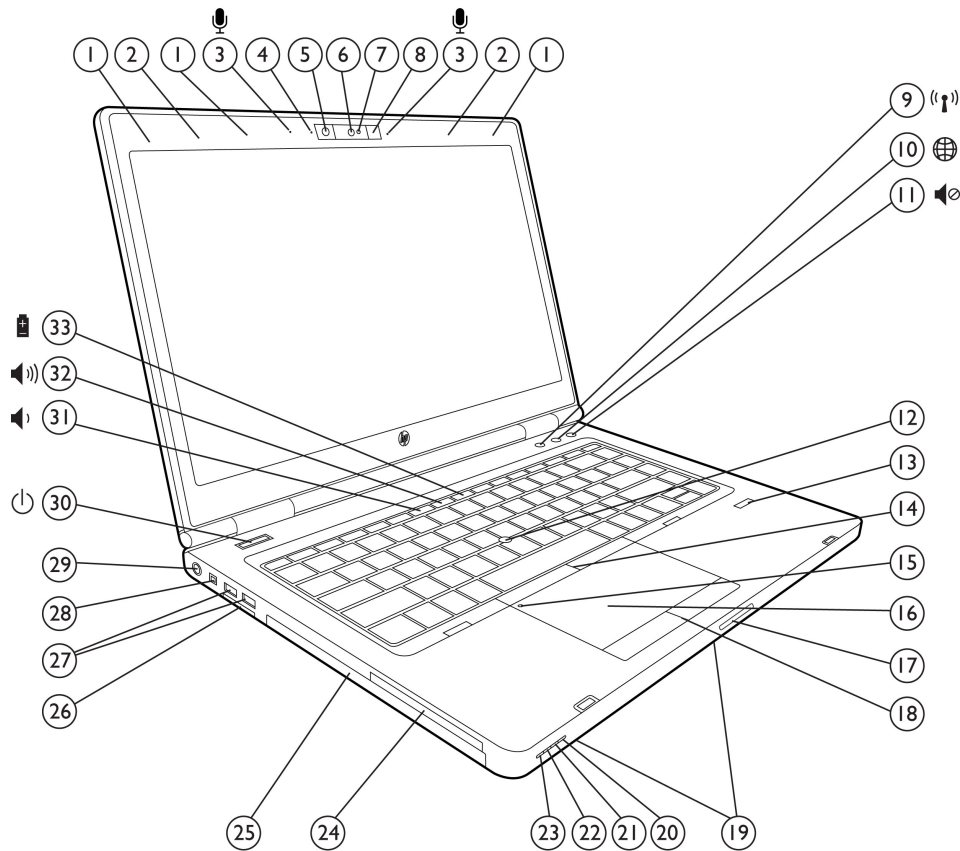
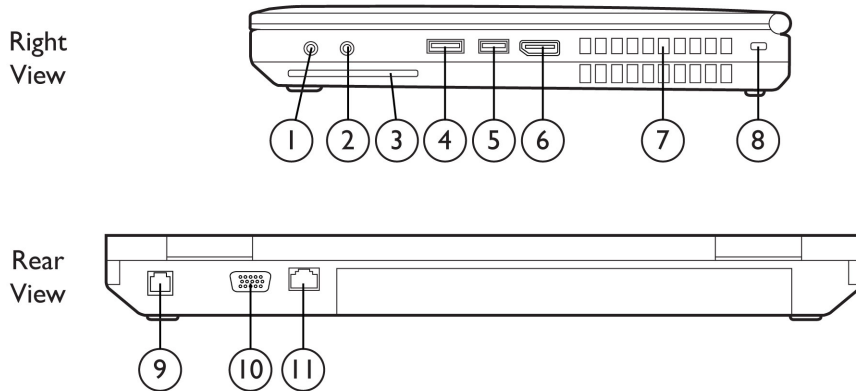


### Overview

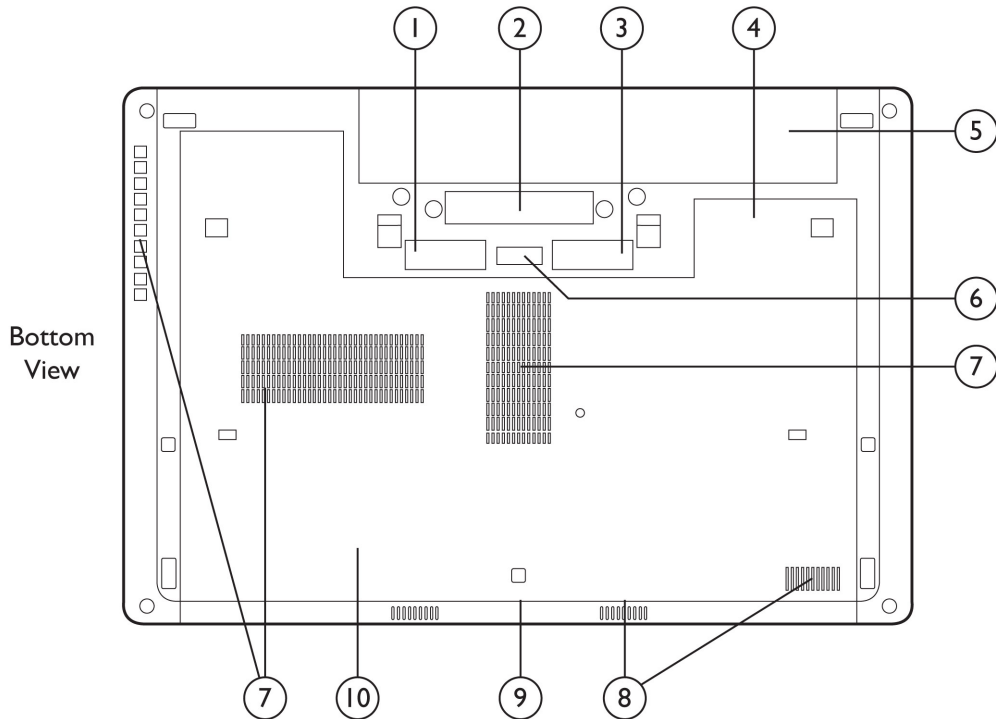


1. WLAN antennas (3)
2. WWAN antennas
3. Webcam LED indicator (with optional webcam)
4. Dual-microphone array
5. Optional 720p HD webcam
6. Ambient Light Sensor
7. HP Night Light on/off button
8. HP Night Light
9. Wireless on/off button with LED indicator
10. HP QuickWeb button with LED indicator
11. Volume mute button with LED indicator
12. Pointstick
13. Optional HP Fingerprint Sensor
14. Pointstick pick buttons
15. Touchpad on/off button with LED indicator
16. Touchpad with scroll zone
16. Display release latch
18. Touchpad pick buttons
19. Stereo speakers (see bottom view)
20. Hard drive activity / HP 3D DriveGuard LED indicator
21. Battery charging LED indicator
22. Power/standby LED indicator
23. Wireless on/off LED indicator
24. ExpressCard/54 slot
25. Upgrade Bay (optical drive, second hard drive or weight saver)
26. Secure Digital/MultiMedia Card slot
27. (2) USB 3.0 ports
28. 1394a port
29. Power connector
30. Power button with LED indicator
31. Volume down function key
32. Volume up function key
33. HP Power Assistant function key

### Overview



- |                                 |                                    |
|---------------------------------|------------------------------------|
| 1. Stereo headphone/line out    | 7. Vents                           |
| 2. Stereo microphone/line in    | 8. Security lock slot              |
| 3. Integrated Smart Card reader | 9. RJ-11/modem port                |
| 4. eSATA/USB 2.0 combo port     | 10. VGA/external monitor connector |
| 5. (1) USB 2.0 charging port    | 11. RJ-45/Ethernet port            |
| 6. DisplayPort                  |                                    |

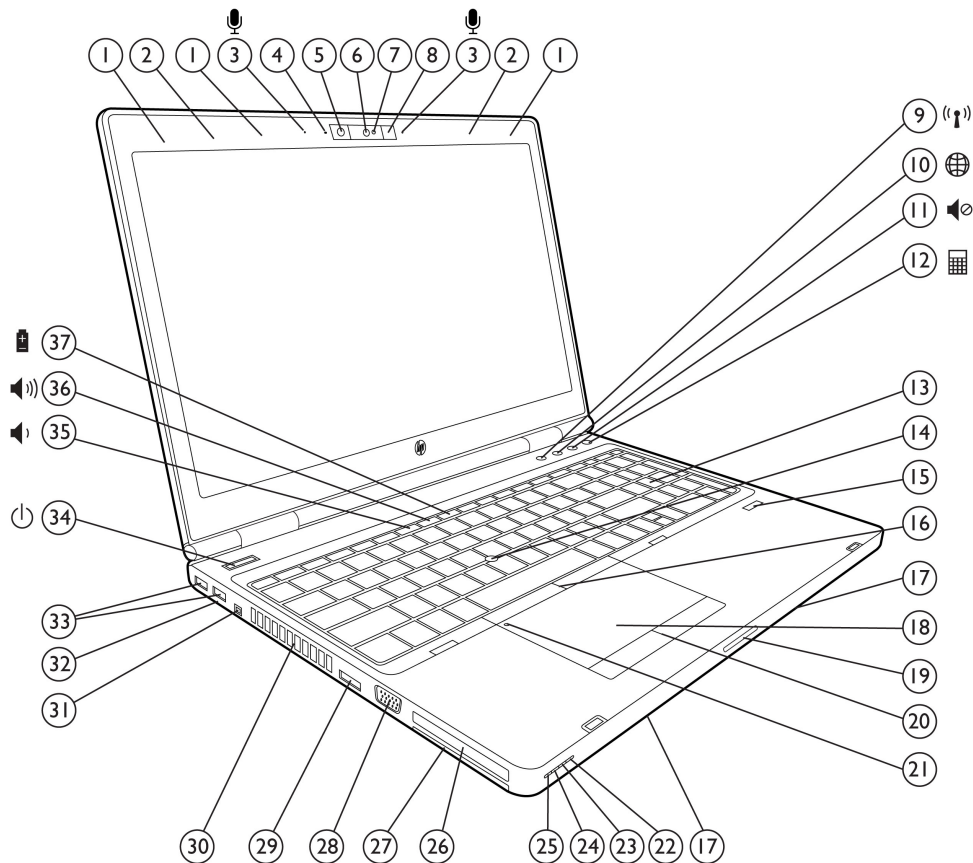


- |                                      |  |
|--------------------------------------|--|
| 1. Battery release latch             | 7. Vents   |
| 2. Docking connector                 | 8. Speakers  |
| 3. Bottom cover release latch        | 9. Bluetooth module compartment                                      |
| 4. SIM slot for WWAN (select models) | 10. Hard drive, memory, and wireless compartments under bottom cover |
| 5. Battery bay                       |  |

## Overview

- Secondary battery connector

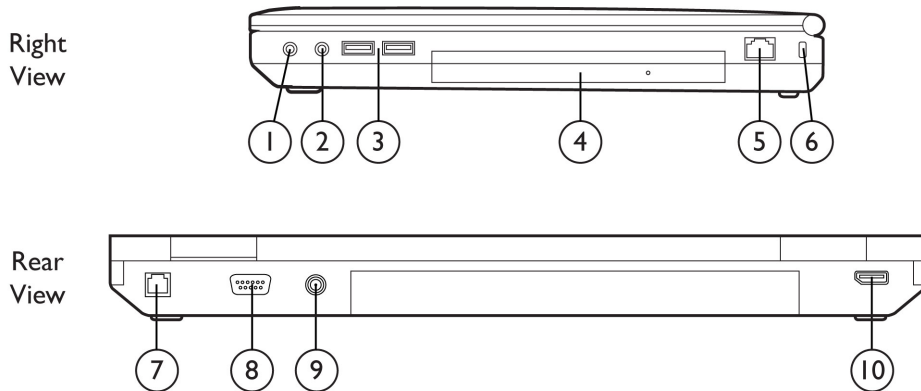
## HP EliteBook 8560p Notebook PC



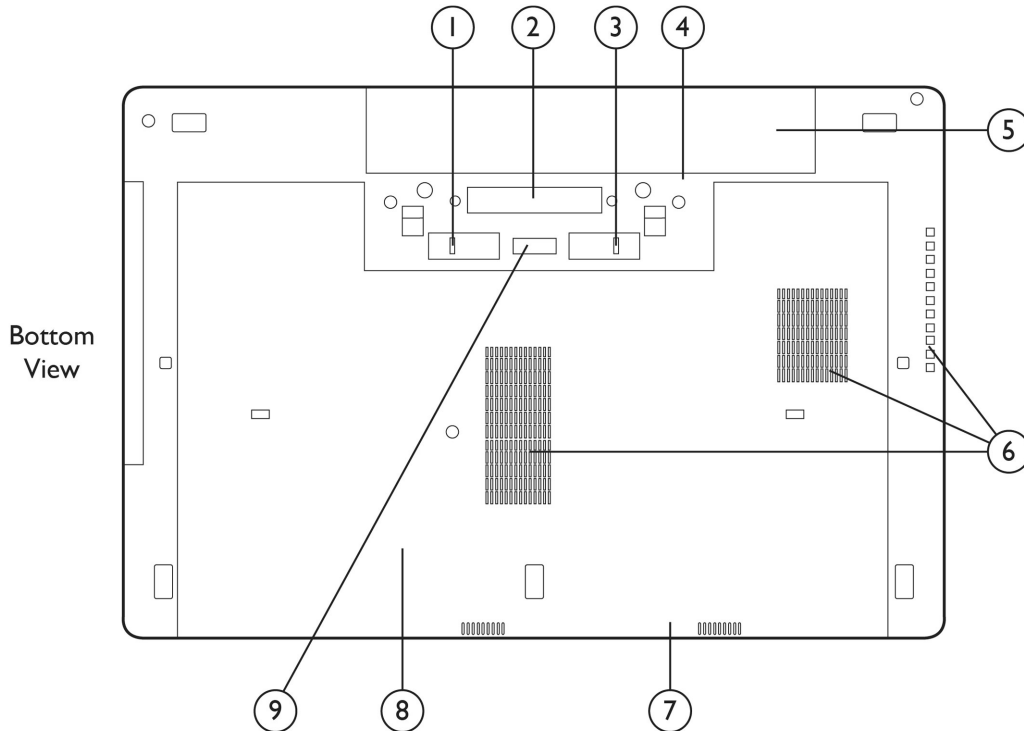
- |  |  |   |
|--|--|---|
| 1. WLAN antennas (3)                           | 14. Pointstick   | 26. ExpressCard/54 slot                 |
| 2. WWAN antennas                               | 15. Optional HP Fingerprint Sensor                       | 27. Smart Card Reader                   |
| 3. Webcam LED indicator (with optional webcam) | 16. Pointstick pick buttons                              | 28. VGA/external monitor connector      |
| 4. Dual-microphone array                       | 17. Stereo speakers                                      | 29. eSATA/USB 2.0 combo port            |
| 5. Optional 720p HD webcam                     | 18. Display release latch                                | 30. Vent                                |
| 6. Ambient Light Sensor                        | 19. Touchpad pick buttons                                | 31. 1394a port                          |
| 7. HP Night Light on/off button                | 20. Touchpad with scroll zone                            | 32. Secure Digital/MultiMedia Card slot |
| 8. HP Night Light                              | 21. Touchpad on/off light                                | 33. (2) USB 2.0 ports**                 |
| 9. Wireless on/off button with LED indicator   | 22. Hard drive activity / HP 3D DriveGuard LED indicator | 34. Power button with LED indicator     |
| 10. HP QuickWeb button with LED indicator      | 23. Battery charging LED indicator                       | 35. Volume down function key            |
| 11. Volume mute button with LED indicator      | 24. Power/standby LED indicator                          | 36. Volume up function key              |
| 12. Calculator button with LED indicator       | 25.. Wireless on/off LED indicator                       | 37. HP Power Assistant function key     |
| 13. Numeric keypad                             |  |   |

\*\* USB 2.0 port on right is a charging port.

### Overview



- |  |                       |
|--|-----------------------|
| 1. Stereo headphone/line out                                       | 6. Security lock slot |
| 2. Stereo microphone/line in                                       | 7. RJ-11/modem port   |
| 3. (2) USB 3.0 ports   | 8. Serial port        |
| 4. Upgrade Bay (optical drive, second hard drive, or weight saver) | 9. Power connector    |
| 5. RJ-45/Ethernet port   | 10. DisplayPort       |



- |                                      |   |
|--------------------------------------|---|
| 1. Battery release latch             | 6. Vents  |
| 2. Docking connector                 | 7. Bluetooth module compartment                                     |
| 3. Bottom cover release latch        | 8. Hard drive, memory, and wireless compartments under bottom cover |
| 4. SIM slot for WWAN (select models) | 9. Bluetooth module compartment                                     |
| 5. Battery bay                       |   |

## Overview

---

### At A Glance

- Genuine Windows 7 versions or FreeDOS
- Widescreen LED-backlit display
  - HP EliteBook 8460p: 14.0-inch diagonal HD or HD+
  - HP EliteBook 8560p: 15.6-inch diagonal HD, HD+ wide viewing angle, or FHD wide viewing angle
- Choice of 2nd generation Intel® Core™ i7, i5 processors
- Intel Core i7 with vPro and Core i5 with vPro technology (optional)
- AMD Radeon™ HD 6470M discrete graphics with 1 GB dedicated video memory or integrated Intel® HD Graphics 3000
- All new design with aluminum display enclosure, magnesium-reinforced chassis, wear-resistant platinum-colored HP DuraFinish, HP DisplaySafe frame, precision aluminum-alloy hinges, cast titanium-alloy display latches, keyboard in full aluminum deck, and chemically strengthened glass touchpad; designed to meet the military standard Mil-Std-810G for vibration, dust, altitude, and high temperature operation\*
- Easily hot dock with one of the optional HP docking stations
- AMD Eyefinity Technology for advanced multi-monitor support
- DisplayPort for high resolution support
- SRS Premium Sound optimized for high fidelity audio
- Choice of primary battery to optimize run-time or weight: 9-cell (100 WHr), 6-cell (62 WHr), 6-cell (55 WHr) HP Long Life Battery, or 3-cell (31 WHr)
- Flexible wireless connectivity options:
  - Optional integrated HP hs2340 HSPA+ Mobile Broadband Module connects to both HSPA and HSPA+ (UMTS) networks and provides GPS functionality
  - Optional integrated HP un2430 EV-DO/HSPA Mobile Broadband Module (Gobi 3000) provides GPS functionality (availability expected May, 2011)
  - Integrated Intel Centrino® 802.11 a/b/g/n 2x2 or a/b/g/n 3x3, Broadcom 802.11 a/b/g/n 2x2 or b/g/n 1x1 wireless LAN module
  - Bluetooth® v2.1+EDR
- HP Power Assistant allows you to conserve power, stretch battery run-time, accurately monitor the energy usage of the PC and up to four select HP external monitors, and report workforce power consumption.
- HP QuickWeb for convenient online access without long boot-up times
- Upgrade Bay for optical drive or weight saver
- Choice of 7200 rpm user-removable hard drive up to 500 GB with HP 3D DriveGuard protection, or 128/160 GB Solid State Drive
- Security features including HP ProtectTools, with central management across HP and non-HP client PCs
- BFR/PVC-free\*\*, ENERGY STAR qualified and EPEAT TBD registered in the U.S. EPEAT status varies by country- please see [epeat.net](http://epeat.net).

\* Testing was not intended to demonstrate fitness for DOD contracts requirements or for military use. Test results are not a guarantee of future performance under these test conditions.

\*\* Meeting the industry definition of 'BFR/PVC-free' per the iNEMI Position Statement on "Low Halogen" Electronics. Plastic parts incorporated into the chassis generally contain < 1000 ppm (0.1%) of bromine or chlorine. Printed circuit board and substrate laminates generally contain < 1500 ppm (0.15%) of total bromine and chlorine. Service parts after purchase may not be BFR/PVC-free. External accessories, including power supplies, power cords, and peripherals are not BFR/PVC-free.

## Standard Features (availability may vary by country)

### Processors

#### 2<sup>nd</sup> Generation Intel Core i7 Processors

Intel Core i7-2620M Processor (2.70 GHz, 4 MB L3 cache, 2 cores/4 threads, 35W)\*  
Up to 3.40 GHz with Intel Turbo Boost Technology

#### 2<sup>nd</sup> Generation Intel Core i5 Processors

Intel Core i5-2540M Processor (2.60 GHz, 3 MB L3 cache, 2 cores/4 threads, 35W)\*  
Up to 3.30 GHz with Intel Turbo Boost Technology

Intel Core i5-2520M Processor (2.50 GHz, 3 MB L3 cache, 2 cores/4 threads, 35W)\*  
Up to 3.20 GHz with Intel Turbo Boost Technology

Intel Core i5-2410M Processor (2.30 GHz, 3 MB L3 cache, 2 cores/4 threads, 35W)\* †  
Up to 2.90 GHz with Intel Turbo Boost Technology

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

† Not available with vPro.

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

### Operating System

#### Preinstalled

Genuine Windows 7 Professional 32\*  
Genuine Windows 7 Professional 64\*  
Genuine Windows 7 Home Premium 64\*  
FreeDOS

#### Supported

Genuine Windows 7 Enterprise 32\*  
Genuine Windows 7 Enterprise 64\*  
Genuine Windows 7 Ultimate 32\*  
Genuine Windows 7 Ultimate 64\*  
Genuine Windows Vista Enterprise 32\*\*  
Genuine Windows Vista Enterprise 64\*\*  
Genuine Windows Vista Business 32\*\*  
Genuine Windows Vista Business 64\*\*  
Genuine Windows XP Professional 32

#### Certified

SuSE Linux Enterprise Desktop 11

\* System may require upgraded and/or separately purchased hardware and/or a DVD drive to install the Windows 7 software and take full advantage of Windows 7 functionality. See <http://www.microsoft.com/windows/windows-7/> for details.

\*\* Certain Windows Vista product features require advanced or additional hardware. See: <http://www.microsoft.com/windowsvista/getready/hardwarereqs.msp> and <http://www.microsoft.com/windowsvista/getready/capable.msp> 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>.

### Chipset

Mobile Intel QM67 Express Chipset

## Standard Features (availability may vary by country)

### Intel Core i5 with vPro/Core i7 with vPro technology capable

Intel Core i5 with vPro and Core i7 with vPro technology is a selectable feature that is available on units configured with select processors, an Intel Centrino® Advanced-N or Ultimate-N WLAN module and a preinstalled Windows operating system. It provides advances in remote manageability, security, energy efficient performance, and wireless connectivity. Intel Active Management Technology 7.0 (iAMT) offers built-in manageability and proactive security for networked notebook PCs, even when they are powered off\* or when the operating system is inoperable. It can help identify threats before they reach the network, isolate infected systems, and update PCs regardless of their power state.

\*Requires a Windows operating system, network hardware and software, connection with a power source, and a direct (non-VPN) corporate network connection which is either cable or wireless LAN.

**NOTE:** Some functionality of Intel Core i5 with vPro/Core i7 with vPro technology, such as Intel Active Management technology and Intel Virtualization technology, requires additional third-party software in order to run. Availability of future "virtual appliances" applications for Intel Core i5 with vPro/Core i7 with vPro technology is dependent on third-party software providers. Compatibility with future "virtual appliances" is yet to be determined.

## Graphics

Models with discrete graphics:

AMD Radeon™ HD 6470M with 1 GB dedicated DDR3 video memory  
Microsoft DirectX 11 (Shader Model 5.0) and OpenGL 4.0 capable  
AMD Eyefinity Technology supports up to four independent displays when using an HP Advanced Docking station

Models with integrated graphics:

Intel HD Graphics 3000  
Microsoft DirectX 10.1 (Shader Model 4.1) and OpenGL 3.0 capable, supports up to two independent displays

## Display

### Internal

HP EliteBook 8460p:  
14.0-inch diagonal LED-backlit HD anti-glare (1366 x 768 resolution)  
14.0-inch diagonal LED-backlit HD+ anti-glare (1600 x 900 resolution)

HP EliteBook 8560p:  
15.6-inch diagonal LED-backlit HD anti-glare (1366 x 768 resolution)  
15.6-inch diagonal LED-backlit HD+ WVA anti-glare (1600 x 900 resolution)  
15.6-inch diagonal LED-backlit FHD WVA anti-glare (1920 x 1080 resolution)

### External

HP Privacy Filter support  
Up to 32-bit per pixel color depth  
**DisplayPort** supports resolutions up to 2560 x 1600, 30-bit color depth at 60 Hz, and full HD (1920 x 1080) monitors, 24-bit color depth at 120 Hz  
**VGA** port supports resolutions up to 2048 x 1536 at 75 Hz, and lower resolutions at up to 100 Hz  
**DVI-D** (single link) video signal available through DVI port in optional HP Docking Station (sold separately)  
supports resolutions up to 1600 x 1200 at both full and reduced blanking, and 1920 x 1200 at reduced blanking  
**NOTE:** Resolutions are dependent upon monitor capability, and resolution and color depth settings.



## Standard Features (availability may vary by country)

<b>Memory</b>	<b>Standard</b>	DDR3 PC3-10600 SDRAM (1333 MHz) Two SODIMM slots supporting dual-channel memory 2 GB, 4 GB, and 8 GB SODIMMs
	<b>Maximum</b>	Upgradeable to 16 GB with 8 GB SODIMMs in slots 1 and 2
	<b>Dual-channel</b>	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 a Windows 64-bit operating system 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>Communications</b>	Integrated Intel 82579LM Gigabit* Network Connection (vPro configurations) 56K V.92 modem**  * The term "10/100/1000" or "Gigabit" Ethernet indicates compatibility 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.
-----------------------	---

<b>Wireless Devices</b>	Support for a broad range of secure, integrated wireless LAN and wireless WAN options featuring support for the latest industry standards. Broadband Wireless (WWAN) requires a Windows operating system and is available in select countries as a standard, factory configurable feature or an after market option. Integrated Bluetooth is also available (factory configurable only) and can be combined with any of the supported wireless LAN and wireless WAN options.
<b>Mobile Broadband options</b>	Two 850/900/1575/1700/1800/1900/2100 MHz antennas integrated in the top of the display panel support current and future WWAN technologies. <b>NOTE:</b> Separately purchased mobile network operator service is required.
<b>HP hs2340 HSPA+ Mobile Broadband Module</b>	Integrated mobile broadband module that provides connectivity to both HSPA and HSPA+ (UMTS) networks. It also provides standalone, Internet and network assisted GPS functionality for various mapping applications and security applications such as Computrace Pro for HP ProtectTools.
<b>HP un2430 EV-DO/HSPA Mobile Broadband Module</b> (availability expected May, 2011)	Integrated mobile broadband module with Gobi global mobile Internet technology that provides connectivity to both CDMA (EVDO) and UMTS (HSPA) networks. It also provides GPS functionality for various mapping applications and security applications such as Computrace LoJack Pro Premium for HP ProtectTools.
<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



## Standard Features (availability may vary by country)

	Advanced Encryption Standard (AES) support
	Dual antennas integrated in the display enclosure
<b>Intel Centrino Ultimate-N 6300 (3x3)</b>	Integrated support for 802.11 a, b, g, and n* 3 transmit, 3 receive antennas Up to 450 mbps data rate
<b>Intel Centrino Advanced-N 6205 (2x2)</b>	Integrated support for 802.11 a, b, g, and n* 2 transmit, 2 receive antennas Up to 300 mbps data rate
<b>Broadcom 43224AGN 802.11a/b/g/n WiFi Adapter</b>	Integrated support for 802.11 a, b, g, and n Up to 300 mbps data rate
<b>Broadcom 4313GN 802.11b/g/n WiFi Adapter</b>	Integrated support for 802.11 b, g, and n Up to 72 mbps data rate
<b>HP Integrated Module with Bluetooth 2.1+EDR Wireless Technology</b>	Bluetooth Specification v2.1+EDR compliant Works with a wide range of Bluetooth devices

### Keyboard

The HP spill-resistant keyboard is designed using a thin layer of Mylar film under the keyboard and a drain system that funnels fluid through a hole in the bottom of the notebook. This minimizes the risk of damage to sensitive components underneath. The 101/102-key compatible keyboard features a full-pitch key layout with desktop keyboard features, such as editing keys, both left and right control and alt keys, function keys, and 19.05 x 19.05 mm key pitch (center-to-center spacing). U.S. and International key layouts are available. Other features include hot keys for instant access to power conservation and brightness. The HP EliteBook 8560p includes a separate numeric keypad.

### Launch Buttons and Function Keys

Separate launch buttons provide easy access to the following features: wireless on/off, HP QuickWeb, and volume mute. The HP EliteBook 8560p also features a calculator launch button. Function keys provide control of the following features: standby mode, external display, volume down, volume up, HP Power Assistant, and display brightness.

### Pointing device

Touchpad with on/off button, two-way scroll, gestures, two pick buttons  
 Pointstick with two additional pointstick buttons

### Expansion card slots

<b>ExpressCard/54 slot</b>	Supports ExpressCard/54 and ExpressCard/34
<b>Integrated Smart Card Reader</b>	Compatible with ISO 7816 compliant Smart Cards PC/SC interface support
<b>Secure Digital/MultiMedia Card slot</b>	Supports SD (Secure Digital), SDHC, SDXC, MultiMedia Card, and MultiMedia Card+

## Standard Features (availability may vary by country)

<b>Internal Storage</b>	<b>Hard drives</b>	250/320/500 GB 7200 rpm SMART SATA II
	<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> (Windows only)	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>Solid State Drive</b>	128/160 GB
<hr/>		
<b>Upgrade Bay</b>	<b>Fixed 12.7 mm SATA optical drive</b>	DVD+/-RW SuperMulti DL Drive DVD-ROM Drive
	<b>Weight saver</b>	
<hr/>		
<b>Interfaces</b>	<b>ExpressCard/54 slot</b>	One
	<b>External monitor</b>	Two - (1) DisplayPort, (1) VGA
	<b>1394a</b>	One
	<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 3.0</b>	Two
	<b>USB 2.0</b>	HP 8460P: One (charging port) HP 8560p: Two (includes one charging port)
	<b>eSATA/USB 2.0 combo</b>	One
	<b>Serial port</b>	One (HP EliteBook 8560p only)
	<b>Docking connector</b>	One
	<b>Secondary battery connector</b>	One

## Standard Features (availability may vary by country)

### Audio/Visual

- SRS Premium Sound™
  - Integrated stereo speakers
  - Integrated microphone (dual-microphone array when equipped with optional webcam)
  - Button for volume mute; function keys for volume up and down
  - Stereo headphone/line out
  - Stereo microphone/line in
- Optional 720p HD webcam
- HD format (widescreen)
  - Supports videoconferencing and still image capture
  - High quality fixed focus lens
  - Video capture at various resolutions up to 1280x720 resolution (720p) and up to 30fps
  - M-JPEG compression supports higher frame rates for video capture and videoconferencing
  - Improved low light sensitivity
  - Improved dynamic range

### Software

#### Preinstalled software with Windows operating system

HP Recovery Manager  
HP Support Assistant  
HP ProtectTools Security Manager  
HP ProtectTools for Central Management  
HP Hotkey Support  
HP QuickWeb  
HP Power Assistant  
HP Connection Manager 4.0  
HP DayStarter  
Microsoft Office 2010 preloaded (purchase of a Product Key required to activate a full Office 2010 suite)\*  
Norton Internet Security 2011\*\*  
PDF Complete Special Edition\*\*\*  
Intervideo WinDVD - DVD Player (select models)  
Roxio Burn Secure (select models)  
Roxio MyDVD 10 SE (select models)  
HP Webcam Software (select models)  
Skype

#### Additional software available from the web

HP SoftPaq Download Manager

\* Microsoft Office 2010 Preloaded includes reduced functionality versions of Word and Excel. Purchase of Product Key required to activate full Office 2010 suite available at participating resellers/retailers and <http://www.office.com>.

\*\* Norton Internet Security 2011 includes 60 days of complimentary live updates; subscription required for live updates thereafter. Internet access required to receive updates.

\*\*\* PDF Complete Special Edition 60 day trial; purchase license afterwards for full functionality.

## Standard Features (availability may vary by country)

**HP Recovery Manager** Models shipped with Windows 7 or Windows Vista include 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 20 GB of the hard drive is reserved for the system recovery software.

### Security

#### Standard Features

HP ProtectTools Security Manager (standard modules include)

- Credential Manager
- Computrace\* Pro
- Device Access Manager
- Drive Encryption
- Face Recognition (webcam configurations only)
- File Sanitizer
- Privacy Manager
- Embedded Security

Integrated Smart Card Reader

Enhanced Pre-Boot Security (Multiuser / Multifactor)

HP SpareKey

One-Step Logon

TPM 1.2 Embedded Security Chip\*\*

HP Disk Sanitizer

Security lock slot

Support for Intel AT\*\*\*

#### Optional Features

##### HP Fingerprint Sensor

Enhanced sensor scans the fingerprint to uniquely identify and authenticate a person.

##### HP Privacy Filter

Narrows viewing area so that screen data is visible only to persons directly in front of the monitor.

##### Computrace\* Pro for HP ProtectTools with GPS Tracking

Subscription based security solution providing the ability to track, initiate physical recovery, conduct asset management, and perform remote data delete by utilizing GPS technology. GPS functionality requires HP Mobile Broadband Module.

\* The Computrace agent is shipped turned off, and must be activated by customers when they purchase a subscription with terms ranging from one to five years.

\*\* TPM module disabled where use is restricted by law, for example, Russia and China.

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

\*\*\* Intel AT security requires a separately purchased Absolute Computrace service subscription and must be activated and configured. Check with Absolute for availability in your country. Intel and HP assume no liability for lost or stolen data and/or systems or any other damages resulting therefrom. See <http://www.intel.com/technology/anti-theft/>

## Standard Features (availability may vary by country)

### HP ProtectTools Security Manager with Central Management

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. The ProtectTools modules are available on the hard drive (also downloadable from the web) and can be configured in Software Setup.

HP ProtectTools is centrally manageable with the capability to manage notebooks from a single point. HP ProtectTools is management ready out of the box, in partnership with Digital Persona. Features address requirements that customers expect from a centrally managed security solution such as user provisioning, credential reset, and credential revocation.

HP ProtectTools provides two separate management solutions, targeted at the enterprise and the SMB:

- **Digital Persona Pro AD:** Designed for the enterprise customer. Integrates with Active Directory and gives IT Managers the ability to provision users, create login policies based on passwords, biometrics or smartcards. Management features also include remote credential recovery in case the user forgets the password, loses the smartcard or cannot use the fingerprint reader for any reason. In addition, advanced auditing capabilities are also built in. Digital Persona Pro AD is available now.
- **Digital Persona Pro Workgroup:** Designed for the small business customer. Provides features similar to the Active Directory version, but for workgroups. Workgroup activation is built into HP ProtectTools, and activation of up to 5 seats is completely free.

For more information on Central Management for HP ProtectTools, refer to:

<http://www.hp.com/products/security>.

### Power Supply

Models with discrete graphics or quad-core processor:

External 90-watt Smart AC adapter

Models with integrated graphics and without quad-core processor:

External 65-watt Smart AC adapter

Power cord included is 1.8 meter (6-foot).

Total length including external AC adapter is 3.66 meter (12 feet).

HP Fast Charge\*

\*HP Fast Charge recharges your battery up to 90% within 90 minutes when the system is off. HP Fast Charge does not apply to the 9-cell primary battery, HP ST09 Extended Life Notebook Battery, or HP BB09 Ultra Extended Life Notebook Battery.

### Battery

#### Primary battery

HP 9-cell (100 WHr) Li-Ion battery

HP 6-cell (62 WHr) Li-Ion battery

HP Long Life 6-cell (55 WHr) Li-Ion battery

#### Secondary battery Options

HP BB09 Ultra Extended Life Notebook Battery (9-cell 100 WHr)

HP ST09 Extended Life Notebook Battery (9-cell 73 WHr)

## Standard Features (availability may vary by country)

### Battery Life

#### HP EliteBook 8460p\*

<b>9-cell (100 WHr)</b>	Up to 13 hours and 45 minutes
<b>6-cell (62 WHr)</b>	Up to 8 hours and 15 minutes
with optional HP ST09 Extended Life Notebook Battery	Up to 18 hours and 30 minutes
with optional HP BB09 Ultra Extended Life Notebook Battery	Up to 22 hours and 30 minutes

#### HP EliteBook 8560p\*

<b>9-cell (100 WHr)</b>	Up to 12 hours
<b>6-cell (62 WHr)</b>	Up to 7 hours and 15 minutes
with optional HP ST09 Extended Life Notebook Battery	Up to 16 hours and 15 minutes
with optional HP BB09 Ultra Extended Life Notebook Battery	Up to 20 hours

\* Configurations with integrated graphics.

**NOTE:** Battery life will vary depending on the product model, configuration, loaded applications, features, use, wireless functionality and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See MobileMark07 battery benchmark [www.bapco.com/products/mobilemark2007](http://www.bapco.com/products/mobilemark2007) for additional details.

### System Standby Time

Up to 1 week

### Power Conservation

AMD PowerPlay technology (models with discrete graphics)  
Hibernation  
Standby  
ACPI compliance

### Docking and Stands

HP 90W Docking Station  
HP 120W Advanced Docking Station  
HP USB 2.0 Docking Station  
HP Essential USB 2.0 Port Replicator  
HP LAN and USB Travel Hub

**NOTE:** Some HP Docking stations may not support every feature of some HP Notebook models. Please refer to the individual docking station documentation for specific information about supported features.

## Standard Features (availability may vary by country)

### Service and Support

HP Services offers 3-year limited warranty; (3-year limited warranty on HP Long Life Battery – only available with 3-year platform warranty). 1-year limited warranty on primary battery. On-site service and 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 (availability may vary by country)

**NOTE:** Options/capabilities listed in the QuickSpecs represent those capabilities available through Base Units or Build to Order configurations. The various product features and capabilities will vary in terms of configurable vs. aftermarket options (AMOs). There may be options and capabilities available through CTO that are not available as AMOs.

<b>Memory</b>	HP 1 GB (DDR3 1333 MHz) SODIMM	AT911AA#xxx
	HP 2 GB (DDR3 1333 MHz) SODIMM	AT912AA#xxx
	HP 4 GB (DDR3 1333 MHz) SODIMM	AT913AA#xxx
	HP 8 GB (DDR3 1333 MHz) SODIMM	QP013AA#xxx
	HP 2 GB PC3-12800 (DDR3 1600 MHz) SODIMM	H2P63AA
	HP 4 GB PC3-12800 (DDR3 1600 MHz) SODIMM	H2P64AA
	HP 8 GB PC3-12800 (DDR3 1600 MHz) SODIMM	H2P65AA

**NOTE:** 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. Due to system limitations, DDR3-1600 MHz memory will only be supported at DDR3-1333 MHz.

---

<b>Storage</b>	HP Mobile USB DVDRW	A2U57AA
	Upgrade Bay DVDRW	LZ835AA
	HP Upgrade Bay SATA 500 GB 7200 rpm Hard Drive	LX733AA#xxx
	HP Primary SATA 500 GB 7200 rpm Hard Drive	AU098AA#xxx

---

<b>Expansion Solutions</b>	HP 2012 90W Docking Station	A7E32AA
	HP 2012 120W Advanced Docking Station	A7E36AA
	HP 90W Docking Station	VB041AA#xxx
	HP 120W Advanced Docking Station	NZ222AA#xxx
	HP 3005pr USB 3.0 Port Replicator	H1L08AA
	HP 2005pr USB 2.0 Port Replicator	H1L07AA
	HP USB 2.0 Docking Station	AY052AA#xxx
	HP Essential USB 2.0 Port Replicator	AQ731AA#xxx
	HP LAN and USB Travel Hub	BM868AA#xxx
	HP Display & Notebook Stand	AW662AA#xxx
	HP Adjustable Display Stand	AW663AA#xxx
HP Adjustable Dual Display Stand	AW664AA#xxx	

---

## Options (availability may vary by country)

<b>Power</b>	HP ST09 Extended Life Notebook Battery	QK639AA
	HP BB09 Ultra Extended Life Notebook Battery	QK640AA
	HP CC06XL Long Life Notebook Battery	QK642AA
	HP 90W Smart AC Adapter	ED495AA#xxx
	HP 90W Smart AC/Auto/Air Combo Adapter	AJ652AA#xxx
	HP 65W Slim Adapter	AX727AA#xxx
	HP 90W Slim Adapter	BT796AA#xxx

---

<b>Carrying Cases</b>	HP Basic Carrying Case	AJ078AA
	HP Business Nylon Case	BP848AA
	HP Professional Slim Top Load Case	AY530AA
	HP Professional Series Carrying Case	AT886AA
	HP Professional Series Backpack	AT887AA
	HP Professional Series Designer Tote	AT889AA
	HP Business Nylon Backpack	BP849AA
	HP Deluxe 4 Wheel Roller Case	XW576AA
	HP Elite Series Designer Tote	AT891AA
	HP Elite Slim Top Load Case	AX680AA
	HP Elite Leather Messenger	AX676AA
HP Executive Leather Case	RR316AA	

---

<b>Security</b>	HP Notebook Combo Lock	AY475AA#xxx
	HP Keyed Cable Lock	BV411AA
	HP 14.0-inch Display Privacy Filter	AU100AA#xxx
	HP 15.6-inch Display Privacy Filter	AU103AA#xxx

---

<b>Input/Output Devices</b>	HP USB Optical Travel Mouse	RH304AA
	HP USB/PS2 Optical 2-Button Scroll Mouse	DC369A

## Technical Specifications

<b>System Unit</b>	<b>Dimensions (HxWxD)</b>	HP EliteBook 8460p: 31.8 mm (at front) x 338 mm x 231.3 mm 1.25 in (at front) x 13.31 in x 9.11 in
	<b>Weight</b>	HP EliteBook 8560p: 34.1 mm (at front) x 374 mm x 250.5 mm 1.34 in (at front) x 14.72 in x 9.86 in  HP EliteBook 8460p: Starting at 2.21 kg (4.87 lb) with SSD, weight saver (no optical drive), and 6-cell battery Starting at 2.35 kg (5.18 lb) with hard drive, DVD-ROM drive, and 6-cell battery Starting at 2.37 kg (5.23 lb) with SSD, weight saver (no optical drive), and 9-cell battery Starting at 2.51 kg (5.53 lb) with hard drive, DVD-ROM drive, and 9-cell battery  HP EliteBook 8560p: Starting at 2.73 kg (6.01 lb) with hard drive and weight saver (no optical drive) Starting at 2.85 kg (6.27 lb) with hard drive and DVD-ROM drive
<b>NOTE:</b> Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components.		
<b>Stand-Alone Power Requirements (AC Power)</b>	Nominal Operating Voltage	18.5 V
	Average Operating Power	Integrated graphics: TBD W Discrete graphics: TBD W
	Max Operating Power	< 65 W or < 90 W
<b>Temperature</b>	Operating*	0° to 35° C (32° to 95° F) (not writing optical) 5° to 35° C (41° to 95° F) (writing optical)
	Non-operating	-20° to 60° C (-4° to 140° F)
<b>Relative Humidity</b>	Operating	10% to 90%, non-condensing
	Non-operating	5% to 95%, 38.7° C (101.6° F) 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	-15.24 to 3,048 m (-50 to 10,000 ft)
	Non-operating	-15.24 to 12,192 m (-50 to 40,000 ft)
<b>Planned Industry Standard Certifications</b>	UL	Yes
	CSA	Yes
	FCC Compliance	Yes
	ENERGY STAR®	Select models*

## Technical Specifications

EPEAT	Gold target**
ICES	Yes
Australia / NZ A-Tick Compliance	Yes
CCC	Yes
Japan VCCI Compliance	Yes
KCC	Yes
BSMI	Yes
CE Marking Compliance	Yes

\* Configurations of the HP EliteBook 8460p and HP EliteBook 8560p that are ENERGY STAR qualified are identified as HP EliteBook 8460p ENERGY STAR and HP EliteBook 8560p ENERGY STAR on HP websites and on [www.energystar.gov](http://www.energystar.gov).

\*\* EPEAT Registered TBD in U.S. EPEAT registration varies by country. See [www.epeat.net](http://www.epeat.net) for registration status by country.

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

---

### Audio **SRS Premium Sound**

---

<b>Hardware</b>	<b>Implementation</b>	IDT 92HD80 High Definition CODEC
	<b>Function Key</b>	Volume up, volume down
	<b>Volume Controls</b>	
	<b>Mute Button</b>	Volume mute button with LED indicator
	<b>Full Duplex</b>	Yes
	<b>Microphone In</b>	Stereo
	<b>Headphone/Line Out</b>	Stereo
	<b>Integrated Microphone</b>	Yes, dual digital microphone array

---

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

---

## Technical Specifications

<b>Integrated Stereo Speakers</b>	<b>Power Rating</b>	2 Watts
	<b>Impedance</b>	4 Ohms

## Power

<b>HP 90W Smart AC Adapter</b>	<b>Dimensions</b>	12.7 x 5.0 x 2.9 cm (5.00 x 1.97 x 1.1 in)		
	<b>Weight</b>	370 g (0.82 lb)		
	<b>Input</b>	<b>Input</b>	100 to 240 VAC	
		Input Efficiency	87% 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>	<b>Output power</b>	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	0° to 40° C (32° to 104° F)	
		Non-operating (storage) temperature	-20° to 65° C (-4° to 149° F)	
		Altitude	0 to 3,048 m (0 to 10,000 ft)	
Humidity		20% to 80%		
	Storage Humidity	10% to 90%		
<b>EMI 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.			

## Technical Specifications

<b>HP 65W Smart AC Adapter</b>	<b>Dimensions</b>	10.6 x 4.7 x 2.8 cm (4.17 x 1.85 x 1.1 in)	
	<b>Weight</b>	280 g (0.62 lb)	
	<b>Input</b>	Input	100 to 240 VAC
		Input Efficiency	87% min at 115 VAC
		Input frequency range	47 to 63 Hz
	<b>Output</b>	Input AC current	1.7 A at 90 VAC, 0.85 A at 180 VAC
		Output power	65W
		DC output	18.5V
		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	0° to 40° C (32° to 104° F)
		Non-operating (storage) temperature	-20° to 65° C (-4° to 149° F)
		Altitude	0 to 3,048 m (0 to 10,000 ft)
		Humidity	20% to 80%
<b>EMI and Safety Certifications</b>	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.		

---

<b>Optional HP BB09 Ultra Extended Life Notebook Battery</b>	<b>Dimensions (H x W x L)</b>	3x15x29cm (1.2 x 5.9 x 11.4 in)		
	<b>Weight (max)</b>	0.682kg, (1.5lb)		
	<b>Cells/Type</b>	Lithium-Ion		
	<b>Energy</b>	Voltage	11.25V	
		Amp-hour capacity	8.85Ah	
		Watt-hour capacity	100Wh	
	<b>Temperature</b>	Operating (Charging)	0° to 45° C (32° to 113° F)	
		Operating (Discharging)	-10° to 50° C (14° to 122° F)	
		Non-operating	-20° to 50° C (-4° to 122° F)	
	<b>Battery Re-Charge Time</b>	System in OFF or Standby Mode	3.5 to 5 hours	
		System ON	4 to 7 hours	
<b>Fuel Gauge LED</b>	Yes			
<b>Warranty</b>	1 year			
<b>Optional Travel Battery Available</b>	NA			

---

## Technical Specifications

<b>Optional HP ST09 Extended Life Notebook Battery</b>	<b>Dimensions</b> (H x W x L)	3x15.5x30.5cm (1.2 x 6.1 x 12 in)		
	<b>Weight</b> (max)	0.550kg, (1.2lb)		
	<b>Cells/Type</b>	Lithium-Ion Polymer		
	<b>Energy</b>	Voltage	11.1V	
		Amp-hour capacity	6.6Ah	
		Watt-hour capacity	73Wh	
	<b>Temperature</b>	Operating (Charging)	0° to 45° C (32° to 113° F)	
		Operating (Discharging)	-10° to 50° C (14° to 122° F)	
		Non-operating	-20° to 50° C (-4° to 122° F)	
	<b>Battery Re-Charge Time</b>	System in OFF or Standby Mode	3.5 to 5 hours	
		System ON	4 to 7 hours	
<b>Fuel Gauge LED</b>	Yes			
<b>Warranty</b>	1 year			
<b>Optional Travel Battery Available</b>	NA			

<b>Optional HP 6-cell (55 WHr) Long Life Battery</b>	<b>Dimensions</b> (H x W x L)	2.0 x 4.7 x 20.5cm (0.8 x 1.8 x 8.0in)		
	<b>Weight</b> (max)	0.323kg, (0.72lb)		
	<b>Cells/Type</b>	Lithium-Ion		
	<b>Energy</b>	Voltage	10.8V	
		Amp-hour capacity	5.1Ah	
		Watt-hour capacity	55Wh	
	<b>Temperature</b>	Operating (Charging)	0° to 45° C (32° to 113° F)	
		Operating (Discharging)	-10° to 50° C (14° to 122° F)	
		Non-operating	-20° to 50° C (-4° to 122° F)	
	<b>Battery Re-Charge Time</b>	System in OFF or Standby Mode	2.5 hours	
		System ON	3 to 5 hours	
<b>Fuel Gauge LED</b>	No			
<b>Warranty</b>	3 years			
<b>Optional Travel Battery Available</b>	Yes			



## Technical Specifications

<b>HP 9-cell (100 WHr) Lithium-Ion Primary battery</b>	<b>Dimensions (H x W x L)</b>	2 x 6.6 x 20.5cm (0.8 x 2.4 x 8.1 in)	
	<b>Weight (max)</b>	0.488kg, (1.1lb)	
	<b>Cells/Type</b>	Lithium-Ion	
	<b>Energy</b>	Voltage	11.25V
		Amp-hour capacity	8.85Ah
		Watt-hour capacity	100Wh
	<b>Temperature</b>	Operating (Charging)	0° to 45° C (32° to 113° F)
		Operating (Discharging)	-10° to 50° C (14° to 122° F)
		Non-operating	-20° to 50° C (-4° to 122° F)
	<b>Battery Re-Charge Time</b>	System in OFF or Standby Mode	3.5 to 5 hours
		System ON	4 to 7 hours
<b>Fuel Gauge LED</b>	No		
<b>Warranty</b>	1 year		
<b>Optional Travel Battery Available</b>	Yes		

---

<b>6-Cell (62 WHr) Lithium-Ion battery</b>	<b>Dimensions (HxWxL)</b>	2.0 x 5.1 x 21.1 cm (0.8 x 2.0 x 8.3 in)	
	<b>Weight</b>	0.325 kg (0.72 lb)	
	<b>Cells/Type</b>	6-cell Lithium-Ion	
	<b>Energy</b>	Watt-hour Capacity	62Wh
	<b>Temperature</b>	Operating (Charging)	0° to 45° C (32° to 113° F)
		Operating (Discharging)	-10° to 60° C (14° to 140° F)
		Non-operating	-20° to 60° C (-4° to 140° F)
<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)	

---

## Displays

---

## Technical Specifications

<b>15.6-inch LED HD (1366 x 768) anti-glare</b>	<b>Dimensions (W x H)</b>	34.4 x 19.4 cm (13.54 x 7.59 in)	
	<b>Diagonal Size</b>	39.6cm (15.6 in)	
	<b>Surface Treatment</b>	Anti-glare	
	<b>Contrast Ratio</b>	300:1 (typical)	
	<b>Refresh Rate</b>	60 Hz	
	<b>Brightness</b>	200 nit (typical)	
	<b>Pixel Resolution</b>	<b>Pitch</b>	0.252 mm
		<b>Format</b>	1366 x 768
		<b>Configuration</b>	RGB Stripe
	<b>Backlight</b>	LED	
<b>PPI</b>	100 ppi		
<b>Viewing Angle</b>	±30° Horizontal, ±10° Vertical (minimum) 30/30/20/10 (Left/Right/Down/Up) (minimum) or 45/45/35/25 (Left/Right/Down/Up) (typical)		

---

<b>15.6-inch LED HD+ WVA (1600 x 900) anti-glare</b>	<b>Dimensions (W x H)</b>	34.4 x 19.4 cm (13.54 x 7.59 in)	
	<b>Diagonal Size</b>	39.6 cm (15.6 in)	
	<b>Surface Treatment</b>	Anti-glare	
	<b>Contrast Ratio</b>	300:1 (typical)	
	<b>Refresh Rate</b>	60 Hz	
	<b>Brightness</b>	200 nit (typical)	
	<b>Pixel Resolution</b>	<b>Pitch</b>	0.215 mm
		<b>Format</b>	1600 x 900
		<b>Configuration</b>	RGB Stripe
	<b>Backlight</b>	LED	
<b>PPI</b>	118 ppi		
<b>Viewing Angle</b>	±60° Horizontal, ± 50° Vertical (minimum) or ±70° Horizontal, ±60° Vertical (typical)		

---

## Technical Specifications

<b>15.6-inch LED FHD WVA (1920 x 1080) anti-glare</b>	<b>Dimensions (W x H)</b>	34.4 x 19.4 cm (13.54 x 7.59 in)		
	<b>Diagonal Size</b>	39.6 cm (15.6 in)		
	<b>Surface Treatment</b>	Anti-glare		
	<b>Contrast Ratio</b>	300 :1 (min)		
	<b>Refresh Rate</b>	60 Hz		
	<b>Brightness</b>	220 nits (Typ)		
	<b>Pixel Resolution</b>	<b>Pitch</b>	0.179mm x 0.179mm	
		<b>Format</b>	1920 x 1080	
		<b>Configuration</b>	RGB Stripe	
		<b>Backlight</b>	White LED	
	<b>PPI</b>	142 ppi		
	<b>Viewing Angle</b>	±60° Horizontal, ± 50° Vertical (minimum) or ±70° Horizontal, ±60° Vertical (typical)		

---

<b>14.0-inch LED HD (1366 x 768) anti-glare</b>	<b>Dimensions (W x H)</b>	32.4 x 19.2 cm (12.74 x 7.56 in)		
	<b>Diagonal Size</b>	35.6cm (14.0 in)		
	<b>Surface Treatment</b>	Anti-glare		
	<b>Contrast Ratio</b>	400:1 (typical)		
	<b>Refresh Rate</b>	60 Hz		
	<b>Brightness</b>	200 nit (typical)		
	<b>Pixel Resolution</b>	<b>Pitch</b>	0.227 mm	
		<b>Format</b>	1366 x 768	
		<b>Configuration</b>	RGB Stripe	
		<b>Backlight</b>	LED	
	<b>PPI</b>	112 ppi		
	<b>Viewing Angle</b>	±30° Horizontal, ±10° Vertical (minimum) 30/30/20/10 (Left/Right/Down/Up) (minimum) or 45/45/35/25 (Left/Right/Down/Up) (typical)		

---

## Technical Specifications

<b>14.0-inch LED HD+ (1600 x 900) anti-glare</b>	<b>Dimensions (W x H)</b>	32.4 cm x 19.2 cm (12.74 x 7.56 in)	
	<b>Diagonal Size</b>	35.6cm (14.0 in)	
	<b>Surface Treatment</b>	Anti-glare	
	<b>Contrast Ratio</b>	300 (min)	
	<b>Refresh Rate</b>	60 Hz	
	<b>Brightness</b>	200 nits (typ)	
	<b>Pixel Resolution</b>	<b>Pitch</b>	0.1935mm
		<b>Format</b>	1600 x 900
		<b>Configuration</b>	RGB Stripe
	<b>Backlight</b>	LED	
<b>PPI</b>	131 ppi		
<b>Viewing Angle</b>	30/30/20/10 (Left/Right/Down/Up) (minimum)		

## Internal Storage

<b>500 GB 7200 rpm SATA Hard Drive</b>	<b>Drive Weight</b>	115g (0.25 lbs)	
	<b>Capacity</b>	500 GB	
	<b>Height</b>	9.5 mm (0.37 in)	
	<b>Width</b>	70 mm (2.75 in)	
	<b>Interface</b>	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	<b>Transfer Rate</b>	<b>Synchronous (maximum)</b>	300 MB/s (Drive Capability)
	<b>Seek Time</b> (typical reads, including settling)	<b>Single Track</b>	1.5 ms
		<b>Average</b>	11 ms
		<b>Maximum</b>	22 ms
	<b>Rotational Speed</b>	7200 rpm	
<b>Logical Blocks</b>	976,773,168		
<b>Operating Temperature</b>	0° to 60° C (32° to 140° F) [case temp]		
<b>Features</b>	ATA Security		

## Technical Specifications

<b>320 GB 7200 rpm SATA Hard Drive</b>	<b>Drive Weight</b>	115 g (0.25 lbs)	
	<b>Capacity</b>	320 GB	
	<b>Height</b>	9.5 mm (0.37 in)	
	<b>Width</b>	70 mm (2.75 in)	
	<b>Interface</b>	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	<b>Transfer Rate</b>	<b>Synchronous</b> (maximum) 300 MB/s (Drive Capability)	
	<b>Seek Time</b> (typical reads, including settling)	<b>Single Track</b>	1.5 ms
		<b>Average</b>	11 ms
		<b>Maximum</b>	22 ms
	<b>Rotational Speed</b>	7200 rpm	
	<b>Logical Blocks</b>	625,142,448	
	<b>Operating Temperature</b>	0° to 60° C (32° to 140° F) [case temp]	
<b>Features</b>	ATA Security		

---

<b>250 GB 7200 rpm SATA Hard Drive</b>	<b>Drive Weight</b>	115g (0.25 lbs)	
	<b>Capacity</b>	250 GB	
	<b>Height</b>	9.5 mm (0.37 in)	
	<b>Width</b>	70 mm (2.75 in)	
	<b>Interface</b>	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	<b>Transfer Rate</b>	<b>Synchronous</b> (maximum) 300 MB/s (Drive Capability)	
	<b>Seek Time</b> (typical reads, including settling)	<b>Single Track</b>	1.5 ms
		<b>Average</b>	11 ms
		<b>Maximum</b>	22 ms
	<b>Rotational Speed</b>	7200 rpm	
	<b>Logical Blocks</b>	488,397,168	
	<b>Operating Temperature</b>	0° to 60° C (32° to 140° F) [case temp]	
<b>Features</b>	ATA Security		

---

## Technical Specifications

<b>160 GB 2.5-inch SATA Solid State Drive</b>	<b>Drive Weight</b>	78 Grams		
	<b>Capacity</b>	160 GB		
	<b>Height</b>	7 mm (0.276 in)		
	<b>Width</b>	70 mm (2.76 in)		
	<b>Interface</b>	SATA Gen 2		
	<b>Performance</b>	<b>Maximum Sequential Read</b>	<b>Maximum Sequential Write</b>	
		250 MB/s	100 MB/s	
	<b>Logical Blocks</b>	312,581,808		
	<b>Operating Temperature</b>	0° to 70°C (32° to 158°F) [case temp]		
	<b>Features</b>	ATA Security; ATA-7; SATA 2.6; DIPM; TRIM		

<b>128 GB 2.5-inch SATA Solid State Drive</b>	<b>Drive Weight</b>	75 Grams		
	<b>Capacity</b>	128 GB		
	<b>Height</b>	7 mm (0.276 in)		
	<b>Width</b>	70 mm (2.76 in)		
	<b>Interface</b>	SATA Gen 2		
	<b>Performance</b>	<b>Maximum Sequential Read</b>	<b>Maximum Sequential Write</b>	
		250 MB/s	140 MB/s	
	<b>Logical Blocks</b>	250,069,680		
	<b>Operating Temperature</b>	0° to 60° C (32° to 140° F) [case temp]		
	<b>Features</b>	ATA Security; ATA-7; SATA 2.6; DIPM; TRIM		

## Optical Drives

<b>DVD-ROM Drive</b>	<b>Access Times</b>	Random	< 140 ms CD (typical) < 160 ms DVD (typical)
	<b>Max Data Transfer Rate</b>	24X CD-ROM 8X-DVD	
	<b>Transfer Mode</b>	UDMA Mode 5	
	<b>Interface</b>	Gen 1 SATA	
	<b>Supported Media (read)</b>	CD-DA, 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>	None	
	<b>Max Media Capacity (read)</b>	8.5GB	
	<b>Transport</b>	Tray Loading	

## Technical Specifications

<b>DVD+/-RW SuperMulti DL Drive</b>	<b>Access Times</b>	Random	<140ms CD (typical) < 160 ms DVD (typical)
	<b>Max Data Transfer Rate</b>	24X CD-ROM 8X DVD 24X CD-R 24X CD-RW 8X DVD+R 8X DVD+RW 8X DVD-R 6X DVD-RW 6X - DVD+R Dual Layer 6X - DVD-R Dual Layer 5X DVD-RAM	
	<b>Transfer Mode</b>	UDMA Mode 5	
	<b>Interface</b>	Gen 1 SATA	
	<b>Supported Media (read)</b>	CD-DA, 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, DVD+R DL, DVD-R DL	
	<b>Max Media Capacity (read)</b>	8.5 GB	
	<b>Max Media Capacity (write)</b>	8.5 GB	
	<b>Transport</b>	Tray Loading	

## Security

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



## Technical Specifications

### Communications

---

<b>Intel® 82579LM Gigabit Network Connection</b>	<b>Ethernet Features</b>	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023. Clauses 40) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE(Energy Efficient Ethernet) Jumbo Frame 9K Auto MDI/MDIX Crossover cable detection
	<b>Power Management</b>	ACPI compliant - multiple power modes Energy Detect Low Power Mode(Green Ethernet)
	<b>Performance Features</b>	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload( ARP & NS) Large send offload and Giant send offload Receiving Side Scaling MACSec Offload (802.3ae) Intel vPro iSCSI Boot
	<b>Manageability</b>	Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite Virtual Cable Doctor for Ethernet cable status
	<b>Interface</b>	PCI Express 1.1 x1 to fully support ASPM L0s/L1 and CLKREQ. <b>NOTE:</b> Intel 82579 PCIe interface is not PCIe compliant. It operates at half of PCIe specification V1.1 (2.5GT/S) speed.
	<b>NIC Device Driver Name</b>	Intel 82579LM/82579V Ethernet Network Connection

---

## Technical Specifications

<b>V.92 56K Data/Fax Modem Form Factor</b>	MDC 1.5 Daughtercard
<b>Power Management Support</b>	APM Revision 1.2, ACPI
<b>Approvals/Certifications</b>	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
<b>Data Mode Capabilities</b>	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 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 T.31
<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

## Technical Specifications

<b>HP un2430 EV-DO/HSPA Mobile Broadband Module</b>	<b>Technology/Operating Bands</b>	GSM/GPRS/EDGE: 850MHz(Cell), 900MHz(EGSM), 1800MHz(DCS), 1900MHz (PCS) UMTS/WCDMA with receive diversity: 2100MHz (UTRA FDD Band I), 1900MHz (UTRA FDD Band II), AWS (UTRA FDD Band IV), 900MHz(UTRA FDD Band VIII), 850MHz (UTRA FDD Band V) 1xEVDO/1xRTT with receive diversity: 850MHz (Band Class0-Cell), 1900MHz (Band Class1-PCS)
	<b>Wireless Protocol Standards</b>	GSM/GPRS/EDGE: Class A, Multi-slot class 10 operation, coding schemes CS1 - CS4 and MSC1 - MSC9. UMTS/WCDMA: Release 99 and Release 6 CDMA: 1xEVDO Release 0 and Release A, IS-95A, IS-95B, IS-856, IS-2000
	<b>Wireless Parametric Standards</b>	Meets or exceeds TIA/EIA IS-98-D
	<b>Maximum Data Rates</b>	UMTS (HSPA) - 14.4 Mbps (Download ), 5.76Mbps (Upload) CDMA (EVDO Release A) - 3.1 Mbps (Download), 1.8Mbps (Upload)
	<b>GPS</b>	Standalone GPS enabled gpsOneXTRATM™
	<b>GPS Bands</b>	L1 - 1575.42 MHz
	<b>Maximum Output Power</b>	GSM/GPRS/EDGE: 32dBm (+/-1) WCDMA: 24dBm (+0.7/-2.3) CDMA: 24dBm (+0.7/-2)
	<b>Maximum Power Consumption</b>	2750mA (peak); 1100mA (average)
	<b>Power Consumption, Idle Not Connected</b>	20 mA
	<b>Power Management</b>	USB selective suspend Integrated notebook wireless button
	<b>Antenna Type</b>	Dual high efficiency 5 band antennae with spatial diversity, mounted in the display enclosure
	<b>Form Factor</b>	PCI-Express MiniCard, USB 2.0 interface
	<b>Weight</b>	11.5 g
	<b>Dimensions</b> (Length x Width x Thickness)	51 x 30 x 5 mm (2.01 x 1.18 x 0.18 in)
	<b>Voltage, Operating</b>	3.3v +/- 10%
	<b>Temperature, Operating</b> (from TIA/EIA/IS-98-D)	-30° to 70° C (-22° to 158° F) (full RF performance) -30° to 75° C (-22° to 167° F) (reduced RF performance)
	<b>Temperature, Non-operating, 96 hours</b> (from MIL-STD 202 Method 108)	-40° to 85° C (-40° to 185° F)
	<b>Humidity, Non-operating</b>	95% relative humidity for 48 hours @ 85° C (185° F) (non-condensing)
	<b>Configuration Utilities</b>	HP Connection Manager
	<b>LED Activity</b>	LED Off - Radio Off; Solid LED On - Radio On

## Technical Specifications

<b>HP hs2340 HSPA+ Mobile Broadband Module</b>	<b>Technology/Operating Bands</b>	GSM/GPRS/EDGE: 850MHz(Cell), 900MHz(EGSM), 1800MHz(DCS), 1900MHz (PCS) UMTS/WCDMA with receive diversity: 2100MHz (UTRA FDD Band I), 1900MHz (UTRA FDD Band II), 900MHz(UTRA FDD Band VIII), 850 MHz (UTRA FDD Band V)
	<b>Wireless Protocol Standards</b>	GSM/GPRS/EDGE: Class B, Multi-slot class 10 operation, coding schemes CS1 - CS4 and MSC1 - MSC9. UMTS/WCDMA: Release 99 and Release 7 Advanced Receiver Type 3i
	<b>Wireless Parametric Standards</b>	Complies with 3GPP specifications
	<b>Maximum Data Rates</b>	UMTS (HSPA) - 21 Mbps (Download ), 5.76Mbps (Upload)
	<b>GPS</b>	Standalone, A-GPS (Internet- and Network assisted)
	<b>GPS Bands</b>	1575.42 MHz (± 1.023 MHz)
	<b>Maximum Output Power</b>	GSM/EDGE GSM850 & GSM900 bands GPRS: +33 dBm ± 2 dBm (class 4) EGPRS: +27 dBm ± 3 dBm (class E2)  DCS1800 & PCS1900 bands GPRS: +30 dBm ± 2 dBm (class 1) EGPRS: +26 dBm +4 / -3 dBm (class E2)  UMTS UTRA FDD Bands +24 dBm +4 / -3 dBm (class 3)
	<b>Maximum Power Consumption</b>	2000mA (peak); 600mA (average)
	<b>Power Consumption, Sleep Mode</b>	5 mA
	<b>Power Management</b>	USB selective suspend Integrated notebook wireless button
	<b>Antenna Type</b>	Dual high efficiency 5 band antennae with spatial diversity, mounted in the display enclosure
	<b>Form Factor</b>	PCI-Express MiniCard, USB 2.0 interface
	<b>Weight</b>	< 12 g
	<b>Dimensions</b> (Length x Width x Thickness)	51 x 30 x 5 mm (2.01 x 1.18 x 0.18 in)
	<b>Voltage, Operating</b>	3.3v +/- 9%
	<b>Temperature, Operating</b>	-10° to 65° C (14° to 149° F) (full RF performance) -10° to 75° C (14° to 167° F) (reduced RF performance)
	<b>Temperature, Non-operating, 96 hours</b> (from MIL-STD 202 Method 108)	-30° to 85° C (-22° to 185° F)
	<b>Humidity, Non-operating</b>	85% relative humidity for 48 hours @ 185° F (85° C) (non-condensing)
	<b>Configuration Utilities</b>	HP Connection Manager

## Technical Specifications

**LED Activity** LED Off - Radio Off;  
Solid LED On - Radio On

**Intel Centrino Advanced-N Wireless LAN Standards 6205**

IEEE 802.11a  
IEEE 802.11b  
IEEE 802.11g  
IEEE 802.11n\*

\* In countries where 802.11n is not allowed, this capability is not enabled.

**Interoperability** Wi-Fi certified  
Cisco Compatible Extensions Program compliant with Microsoft Windows Vista and XP (details at: <http://www.hp.com/go/notebooks/WLAN>)

**Frequency Band** 2.4 GHz and 5GHz

**Antenna Structure** 2 transmit; 2 receive (2x2)

**Data Rates** 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps  
802.11b: 1, 2, 5.5, 11 Mbps  
802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps  
802.11n: 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 specification

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

**Security<sup>1</sup>** Authentication: WPA and WPA2, 802.1x (EAP\_TLS, TTLS, PEAP, LEAP, EAP-FAST)  
  
Authentication Protocols: PAP, CHAP, TLS, GTC, MS-CHAP, MS-CHAPv2  
  
Encryption: 64 and 128-bit WEP, AES-CCMP, CKIP, TKIP  
  
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 2.4GHz band Access Points

**Output Power** (for CCK and OFDM)<sup>2</sup> 17 dBm max

**Power Consumption** Transmit: 2.3 Watts (max, with two spatial streams)  
Receive: 1 Watt (max with two spatial streams)  
Idle mode<sup>3</sup>: 35 mW (average)  
Radio off: 20 mW (max)

**Power Management** ACPI compliant power management  
802.11 compliant power saving mode

**Receiver Sensitivity<sup>4</sup>** 54 Mbps: -76 dBm, 6 Mbps: -92 dBm

## Technical Specifications

<b>Antenna Connections</b>	2 U.FL type connectors, 50 ohm nominal impedance	
<b>Form Factor</b>	PCI-Express Half-MiniCard	
<b>Weight</b>	3.4 g (0.0075 lb)	
<b>Dimensions</b>	3.1 x 26.8 x 30.0 mm (0.12 x 1.06 x 1.18 in)	
<b>Operating Voltage</b>	3.3V +/- 9%	
<b>Temperature</b>	Operating	0° to 80° C (32° to 176° F)
	Non-operating	-40° to 80° C (-40° to 176° F)
<b>Humidity</b>	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 90% (non-condensing)
<b>Altitude</b>	Operating	3,048 m (0 to 10,000 ft)
	Non-operating	15,240 m (0 to 50,000 ft)
<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 and on battery power.</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 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>	

---

<b>Intel Centrino Ultimate-N 6300</b>	<b>Wireless LAN Standards</b>	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n*
		* In countries where 802.11n is not allowed, this capability is not enabled.
	<b>Interoperability</b>	Wi-Fi certified (802.11bgn only) Cisco Compatible Extensions Program compliant (802.11bgn 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> )
	<b>Frequency Band</b>	2.4 GHz and 5GHz
	<b>Antenna Structure</b>	3 transmit; 3 receive (3x3)
	<b>Data Rates</b>	802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: many possible data rates, ranging from 6 Mbps to 450 Mbps, depending on the combination of Bandwidth, Modulation Coding Scheme, and Guard Interval used, as defined in IEEE 802.11n specification
	<b>Modulation</b>	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM
	<b>Security<sup>1</sup></b>	Authentication: WPA and WPA2, 802.1x (EAP_TLS, TTLS, PEAP, LEAP, EAP-FAST)  Authentication Protocols: PAP, CHAP, TLS, GTC, MS-CHAP, MS-CHAPv2

## Technical Specifications

	Encryption: 64 and 128-bit WEP, AES-CCMP, CKIP, TKIP
	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</b> (for CCK and OFDM) <sup>2</sup>	17 dBm max
<b>Power Consumption</b>	Transmit: 2.4 Watts (max, with three spatial streams) Receive: 1.4 Watts (max with three spatial streams) Idle mode <sup>3</sup> : 35 mW (average) Radio off: 20 mW (max)
<b>Power Management</b>	ACPI compliant power management 802.11 compliant power saving mode
<b>Receiver Sensitivity</b> <sup>4</sup>	54 Mbps: -76 dBm, 6 Mbps: -92 dBm
<b>Antenna Connections</b>	3 U.FL type connectors, 50 ohm nominal impedance
<b>Form Factor</b>	PCI-Express Half-MiniCard
<b>Weight</b>	3.4 g (0.0075 lb)
<b>Dimensions</b>	3.1 x 26.8 x 30.0 mm (0.12 x 1.06 x 1.18 in)
<b>Operating Voltage</b>	3.3V +/- 9%
<b>Temperature</b>	Operating 0° to 80° C (32° to 176° F) Non-operating -40° to 80° C (-40° to 176° F)
<b>Humidity</b>	Operating 10% to 90% (non-condensing) Non-operating 5% to 90% (non-condensing)
<b>Altitude</b>	Operating 3,048 m (0 to 10,000 ft) Non-operating 15,240 m (0 to 50,000 ft)
<b>LED Activity</b>	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. 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 43224AGN**  
802.11a/b/g/n

**Wireless LAN Standards** IEEE 802.11a  
IEEE 802.11b



## Technical Specifications

### WiFi Adapter

	IEEE 802.11g IEEE 802.11n*
<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> )
<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: 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 bands
<b>Modulation</b>	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM
<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 , nominal
<b>Output Power (for OFDM; power varies by data rate)<sup>2</sup></b>	15 dBm , nominal
<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: -61dBm , 54 Mbps: -72 dBm , 11 Mbps: -85 dBm , 1 Mbps: -92 dBm
<b>Antenna type</b>	High efficiency dual band antenna with spatial diversity, mounted in the display enclosure
<b>Form Factor</b>	PCI-Express Half-MiniCard
<b>Weight</b>	6 g (0.013 lb)
<b>Dimensions</b>	4.75 x 26.8 x 30 mm (0.19 x 1.06 x 1.18 in)
<b>Operating Voltage</b>	3.3v +/- 10%



## Technical Specifications

<b>Temperature</b>	Operating	-10° to 65° C (14° to 149° F)
	Non-operating	-40° to 80° C (-40° to 176° F)
<b>Humidity</b>	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
<b>Altitude</b>	Operating	3,048 m (0 to 10,000 ft)
	Non-operating	15,240 m (0 to 50,000 ft)
<b>LED Activity</b>	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 4313GN  
802.11b/g/n  
WiFi Adapter**

<b>Wireless LAN Standards</b>	IEEE 802.11b IEEE 802.11g IEEE 802.11n
<b>Interoperability</b>	Wi-Fi certified Cisco Compatible Extensions Program compliant with Microsoft Win7, Vista and XP (details at: <a href="http://www.hp.com/go/notebooks/WLAN">http://www.hp.com/go/notebooks/WLAN</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 802.11n: 6.5, 7.2, 13, 14.4, 19.5, 21.7, 26, 28.9, 39, 43.3, 52, 57.8, 58.5, 65, 72.2Mbps
<b>Frequency Support</b>	20 MHz: 2.4 GHz bands
<b>Modulation</b>	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM
<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 , nominal

## Technical Specifications

<b>Output Power</b> (for OFDM; power varies by data rate) <sup>2</sup>	15 dBm , nominal	
<b>Power Consumption</b>	Idle associated: 250 mW avg (CLKREQ enabled) Idle unassociated: 425 mW avg Transmit/Receive 20 MHz channel: 5.5 W (max)	
<b>Power Management</b>	ACPI compliant power management 802.11 compliant power saving mode	
<b>Receiver Sensitivity</b> <sup>3</sup>	72.2 Mbps: -71 dBm	
<b>Antenna type</b>	High efficiency dual band antenna with spatial diversity, usually mounted in the display enclosure	
<b>Form Factor</b>	PCI-Express Half-MiniCard	
<b>Weight</b>	6 g (0.013 lb)	
<b>Dimensions</b>	4.75 x 26.8 x 30 mm (0.19 x 1.06 x 1.18 in)	
<b>Operating Voltage</b>	3.3v +/- 10%	
<b>Temperature</b>	Operating	-10° to 65° C (14° to 149° F)
	Non-operating	-40° to 80° C (-40° to 176° F)
<b>Humidity</b>	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
<b>Altitude</b>	Operating	3,048 m (0 to 10,000 ft)
	Non-operating	15,240 m (0 to 50,000 ft)
<b>LED Activity</b>	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 and Win7.

### HP Integrated Module with Bluetooth 2.1+EDR Wireless Technology

<b>Bluetooth Specification</b>	2.1+EDR Compliant
<b>Dimensions</b>	1.18 x 0.26 x 0.13 in (30 x 6.5 x 3.25 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

## Technical Specifications

<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 Microsoft Windows Plug and Play compliant
<b>Bluetooth Software Supported</b>	Broadcom Bluetooth for Windows Microsoft Windows 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
<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 -20° to 70° C (-4° to 158° F) Non-operating -40° to 80° C (-40° to 176° F)
<b>Humidity</b>	Operating 10% to 90% Non-operating 5% to 95%
<b>Altitude</b>	Operating 4,572 m (15,000 ft) Non-operating 12,192 m (40,000 ft)
<b>Bluetooth Profiles Supported</b>	Serial Port Profile (SPP) <sup>1</sup> Service Discovery Application Profile (SDAP) Dial-Up Networking (DUN) <sup>1,2</sup> Generic Object Exchange Profile (GOEP) <sup>1,2</sup> Object Push Profile (OPP) <sup>1,2</sup> File Transfer Profile (FTP) Synchronization Profile (SYNC) Hard Copy Cable Replacement (HCRP) <sup>1,2</sup> Personal Area Networking Profile (PAN) <sup>1,2</sup> Human Interface Device Profile (HID) <sup>1,2,3</sup> FAX Profile (FAX) Basic Imaging Profile (BIP) <sup>2</sup> Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP)

1. indicates the profile is supported by Microsoft Windows XP SP2

2. indicates the profile is part of Windows Vista

## 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
- IT ECO declaration
- EPEAT – Gold

**System Configuration**      The configuration used for the Energy Consumption and Declared Noise Emissions data for these models are based on a "Typically Configured Notebook"

**HP EliteBook 8460p Notebook PC**

<b>Energy Consumption</b>	115 VAC	230 VAC	100 VAC
Normal Operation	11.57 W	12.11 W	11.45 W
Sleep (Energy Star low power mode)	1.23 W	1.31 W	1.14 W
Off	0.56 W	0.62 W	0.51 W

<b>Heat Dissipation*</b>	115 VAC	230 VAC	100 VAC
Normal Operation	40 BTU/hr	41 BTU/hr	390 BTU/hr
Sleep	4 BTU/hr	4 BTU/hr	4 BTU/hr
Off	2 BTU/hr	2 BTU/hr	2 BTU/hr

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

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

System Fan Off	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Idle	3.3	26.7
Fixed Disk (random writes)	3.4	30.2

System fan is usually off except when charging the battery

**Batteries**      This battery(s) in this product comply with EU Directive 2006/66/EC

Batteries used in the product do not contain:

- Mercury greater the 5ppm by weight
- Cadmium greater than 10ppm by weight

The battery type and chemistry used in the product is:  
 CR2032 (coin cell), Li-ion  
 6-cell high capacity Lithium-Ion battery (optional 8 cell available)

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

## Technical Specifications

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 Gold level, see: [www.epeat.net](http://www.epeat.net)

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

This product contains 0% post consumer recycled plastic (by wt.)

This product is greater than 95.1% recycle-able when properly disposed of at end of life.

### Packaging Materials

- External:
  - Corrugated Paper – 500 g
  - CANON bags-several layers – 5 g
- Internal:
  - Polyethylene – 15 g
  - Molded pulp – 180 g
- The Corrugated Paper packaging material is made from 80% recycled content.
- The CANON bags-several layers packaging material is made from 80% recycled content.
- The Polypropylene packaging material is made from 80% recycled content.
- The Molded Pulp packaging material is made from 80% 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.

## Technical Specifications

### HP EliteBook 8560p Notebook PC

<b>Energy Consumption</b>	115 VAC	230 VAC	100 VAC
Normal Operation	9.71 W	9.81 W	11.45 W
Sleep (Energy Star low power mode)	0.81 W	0.90 W	0.80 W
Off	0.56 W	0.64 W	0.55 W
<b>Heat Dissipation*</b>	115 VAC	230 VAC	100 VAC
Normal Operation	33.4 BTU/hr	33.5 BTU/hr	33 BTU/hr
Sleep	3 BTU/hr	3 BTU/hr	3 BTU/hr
Off	2 BTU/hr	2 BTU/hr	2 BTU/hr

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

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

System Fan Off	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Idle	2.9	24
Fixed Disk (random writes)	3.8	32

System fan is usually off except when charging the battery

**Batteries** This battery(s) in this product comply with EU Directive 2006/66/EC

Batteries used in the product do not contain:

- Mercury greater the 5ppm by weight
- Cadmium greater than 10ppm by weight

The battery type and chemistry used in the product is:

CR2032 (coin cell), Li-ion

6-cell high capacity Lithium-Ion battery (optional 8 cell available)

### Additional information

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

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

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

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

Plastics parts weighing over 25 grams used in the product are marked per ISO

## Technical Specifications

11469 and ISO1043.

This product contains 0% post consumer recycled plastic (by wt.)

This product is greater than 95.5% recycle-able when properly disposed of at end of life.

### Packaging Materials

- External:
  - Corrugated carton – 375 g
  - Paper/cardboard – 310 g
- Internal:
  - Polyethylene low density solid – 22 g
- The Corrugated carton packaging material is made from 80% recycled content.
- The Paper/Cardboard packaging material is made from 80% recycled content.
- The Polyethylene low density solid packaging material is made from 80% 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](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

## Technical Specifications

- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- 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)
- Nickel finishes that release greater than 0.5 micro-grams/cm<sup>2</sup>/week, measured according to EN 1811:1998, are not used on any product surface designed to be frequently handled or touched by users.

### 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>



## Technical Specifications

Copyright © 2012 Hewlett-Packard Development Company, L.P.

All rights reserved. Microsoft, Windows, Windows 7, Windows Vista and Windows XP are registered trademarks or trademarks of Microsoft Corporation in the U.S. and/or other countries. Intel, Core, and Celeron are registered trademarks or trademarks of Intel Corporation in the U.S. and/or other countries. Bluetooth is a registered trademark of Bluetooth SIG, Inc., in the U.S. and other countries. All other product names mentioned herein may be trademarks of their respective companies.

The information contained herein is subject to change without notice and is provided "as is" without warranty of any kind. The warranties for HP products are set forth in the express limited warranty statements accompanying such products. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.