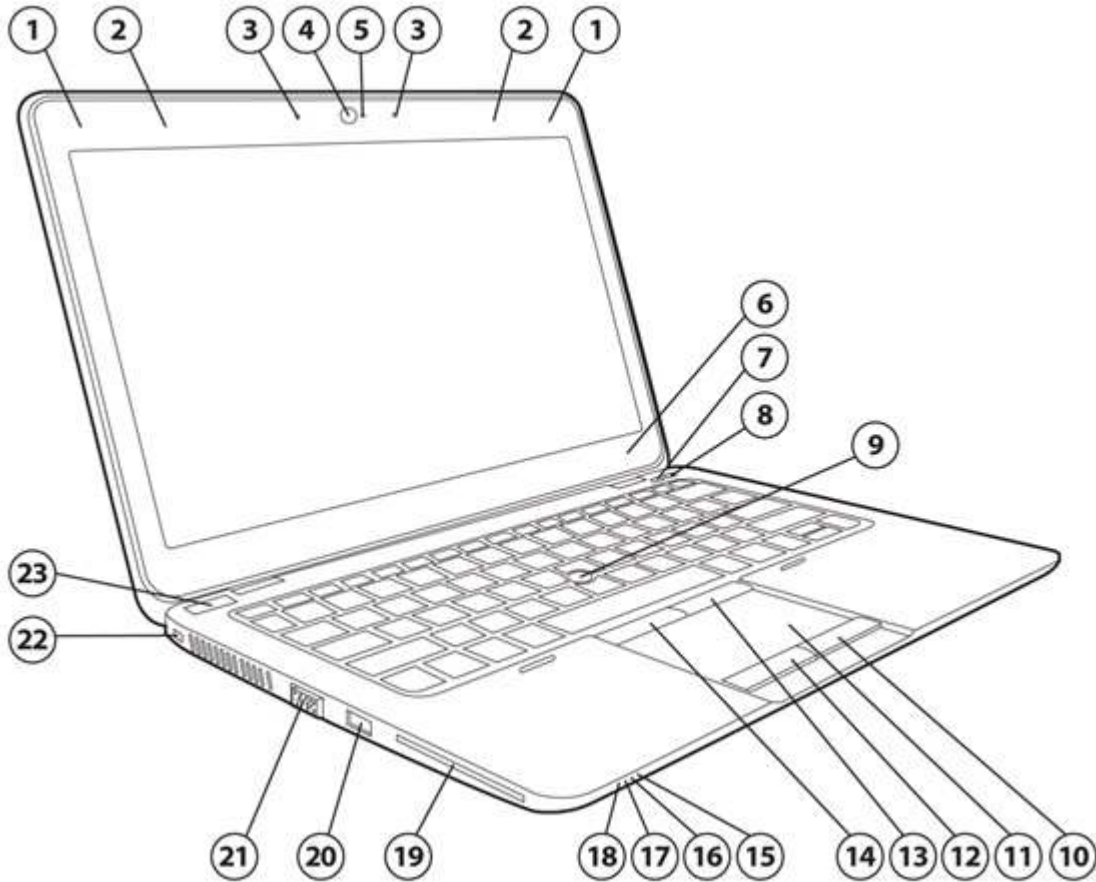


Overview

HP EliteBook 820 Notebook PC

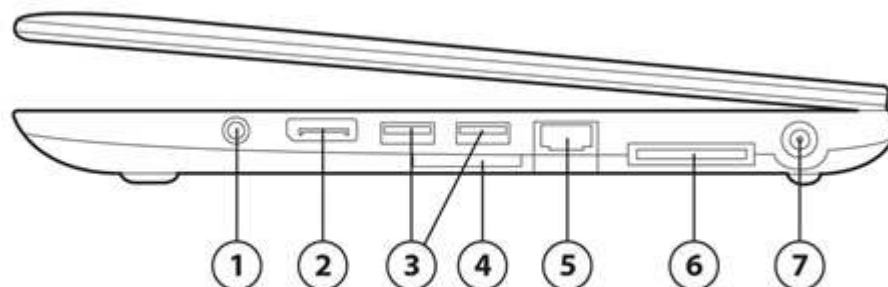


Front/Left

- | | |
|--------------------------------------|---------------------------------|
| 1. WLAN antennas (2) | 13. Right pointing stick button |
| 2. WWAN antennas (2) | 14. Left pointing stick button |
| 3. Internal microphones (2) | 15. Hard drive light |
| 4. Webcam (select models only) | 16. AC adapter/Battery light |
| 5. Webcam light (select models only) | 17. Power light |
| 6. Internal display switch | 18. Wireless light |
| 7. Wireless button | 19. Smart card reader |
| 8. Volume mute button | 20. USB 3.0 charging port |
| 9. Pointstick | 21. External VGA monitor port |
| 10. Right TouchPad button | 22. Security cable slot |
| 11. TouchPad zone | 23. Power button |
| 12. Left TouchPad button | |

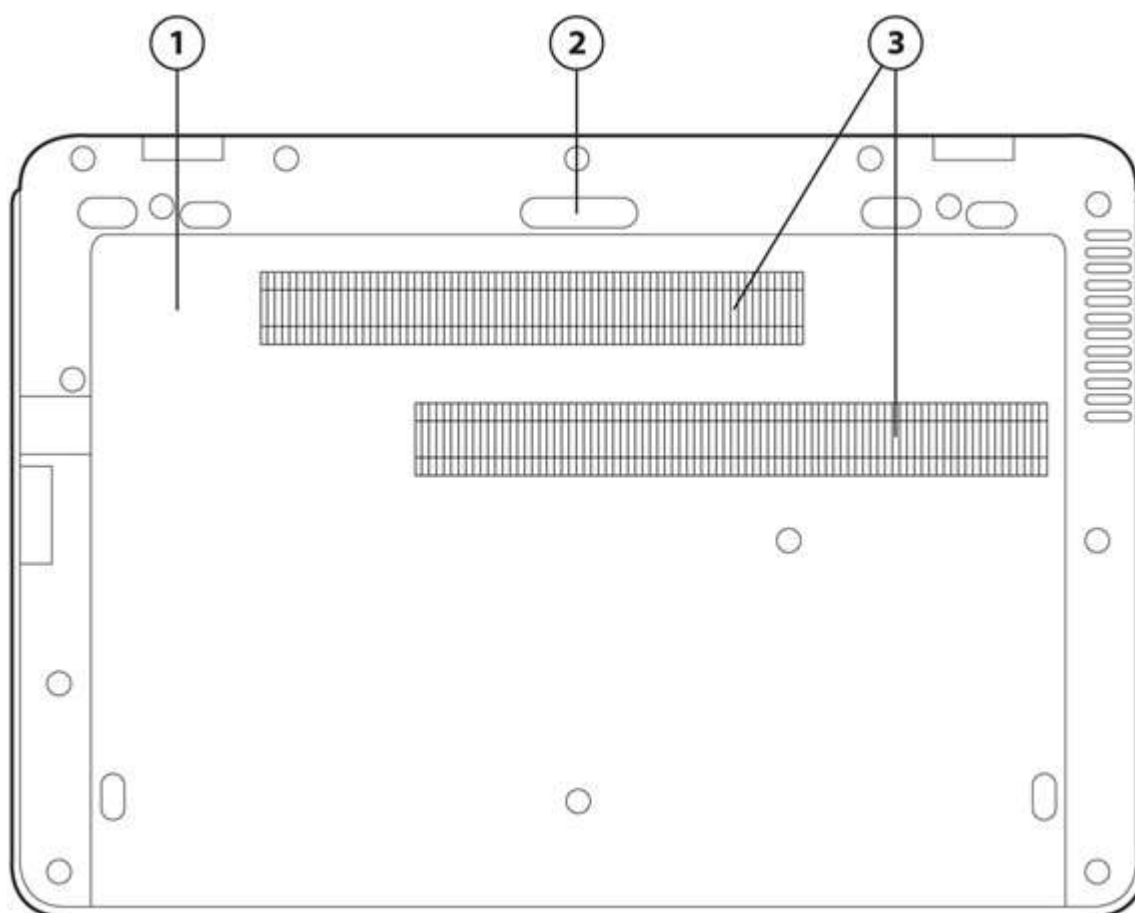
QuickSpecs

Overview



Right

- | | |
|---|-----------------------------------|
| 1. Audio-out (headphone) jack/Audio-in(microphone) jack | 5. Drop-jaw Ethernet port (RJ-45) |
| 2. DisplayPort | 6. Docking port |
| 3. USB 3.0 ports (2) | 7. Power connector |
| 4. Memory card reader | |



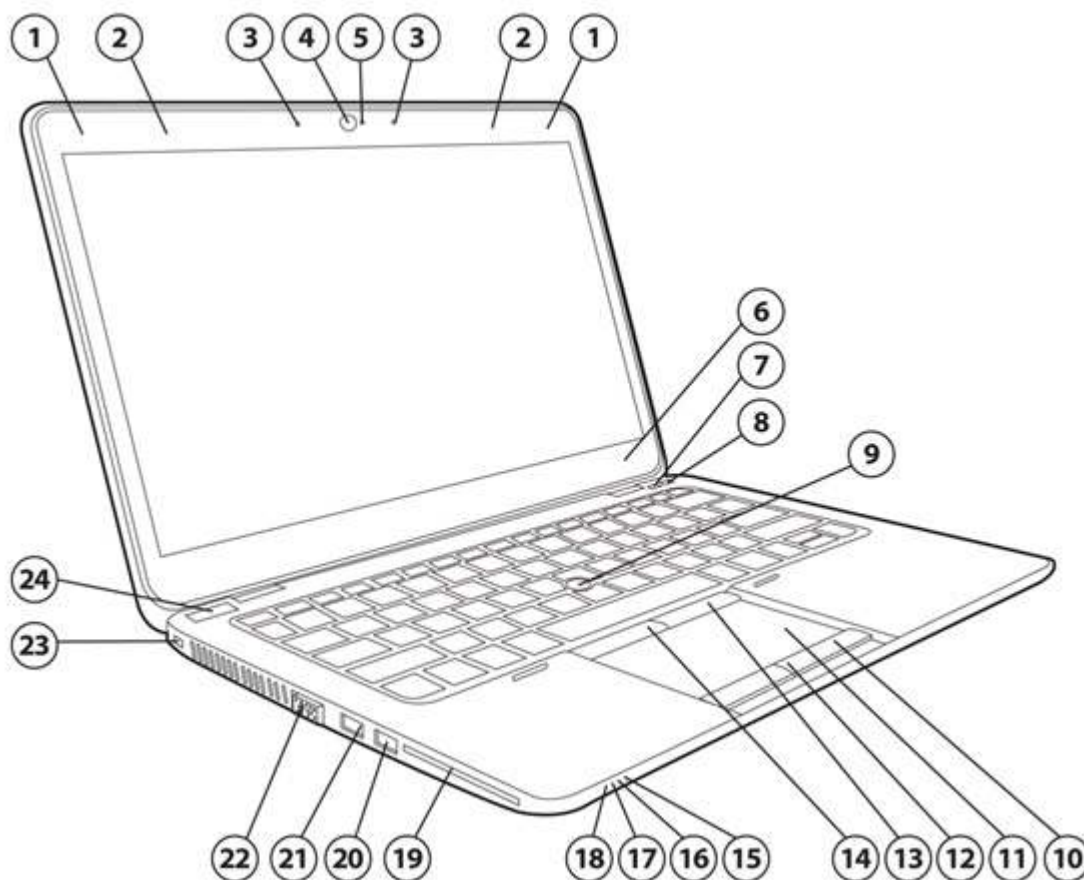
Bottom

- | | |
|----------------------------------|--------------|
| 1. EasyAccess panel | 3. Vents (2) |
| 2. EasyAccess panel release lock | |

QuickSpecs

Overview

HP EliteBook 840 Notebook PC

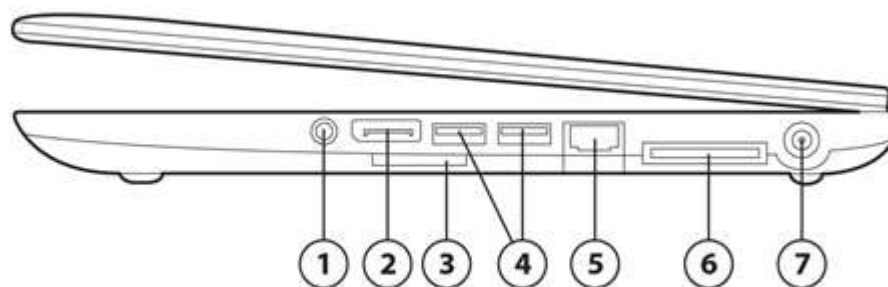


Front/Left

- | | |
|--------------------------------------|---------------------------------|
| 1. WLAN antennas (2) | 13. Right pointing stick button |
| 2. WWAN antennas (2) | 14. Left pointing stick button |
| 3. Internal microphones (2) | 15. Hard drive light |
| 4. Webcam (select models only) | 16. AC adapter/Battery light |
| 5. Webcam light (select models only) | 17. Power light |
| 6. Internal display switch | 18. Wireless light |
| 7. Wireless button | 19. Smart card reader |
| 8. Volume mute button | 20. USB 3.0 port |
| 9. Pointstick | 21. USB 3.0 charging port |
| 10. Right TouchPad button | 22. External VGA monitor port |
| 11. TouchPad zone | 23. Security cable slot |
| 12. Left TouchPad button | 24. Power button |

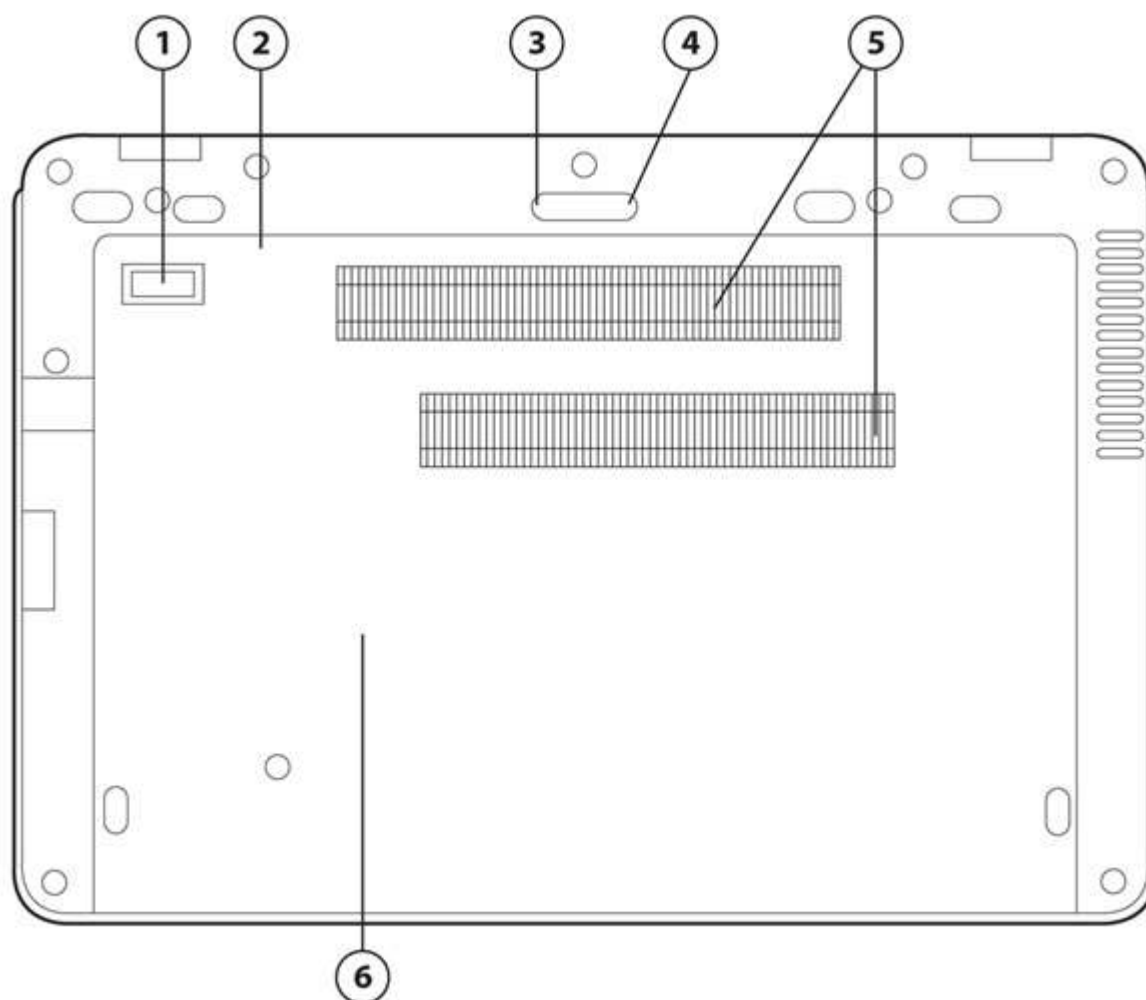
QuickSpecs

Overview



Right

- | | |
|---|-----------------------------------|
| 1. Audio-out (headphone) jack/Audio-in(microphone) jack | 5. Drop-jaw Ethernet port (RJ-45) |
| 2. DisplayPort | 6. Docking port |
| 3. Memory card reader | 7. Power connector |
| 4. USB 3.0 ports (2) | |



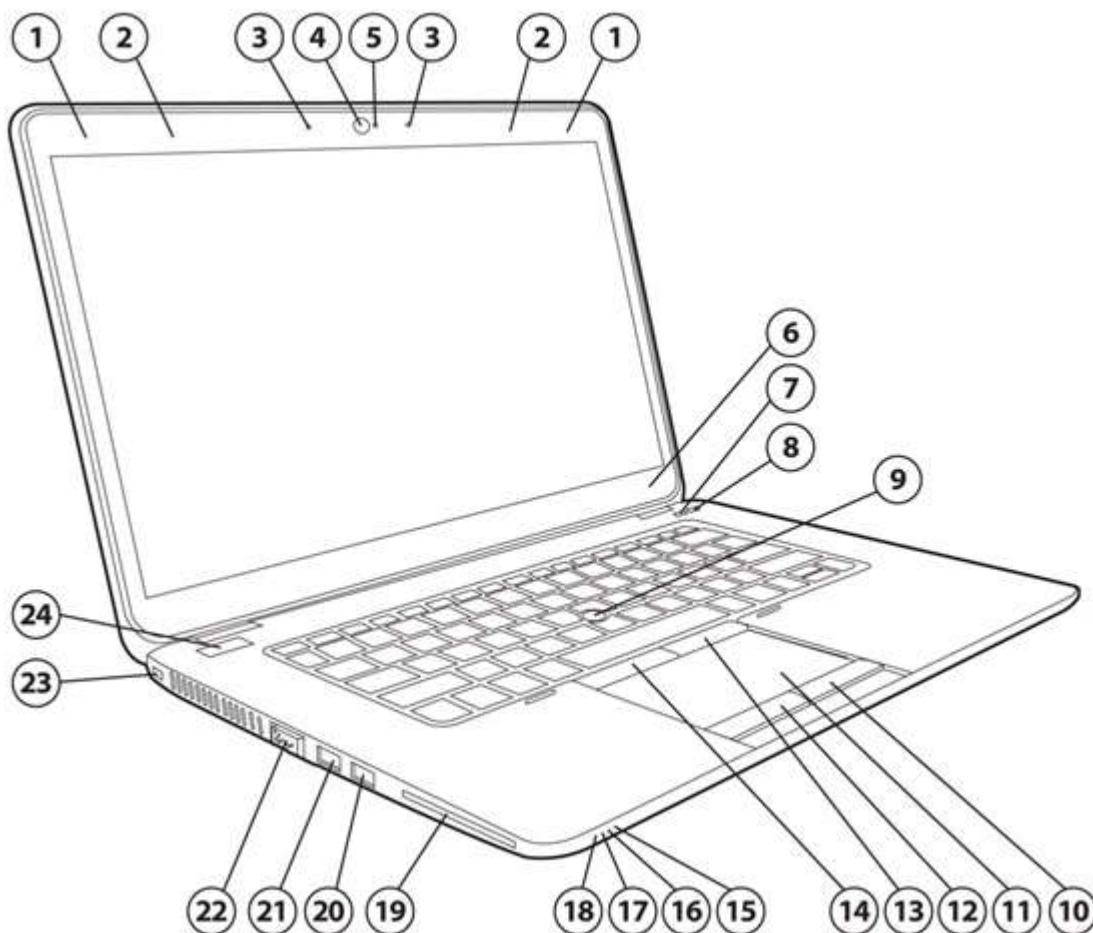
Bottom

QuickSpecs

Overview

- | | |
|-----------------------------------|------------------------------|
| 1. Accessory battery connector | 4. Service door release lock |
| 2. EasyAccess panel | 5. Vents (2) |
| 3. EasyAccess panel release latch | 6. SIM slot * |
- * Supports full-size 2FF (mini-SIM card)

HP EliteBook 850 Notebook PC



Front/Left

- | | |
|--------------------------------------|---------------------------------|
| 1. WLAN antennas (2) | 13. Right pointing stick button |
| 2. WWAN antennas (2) | 14. Left pointing stick button |
| 3. Internal microphones (2) | 15. Hard drive light |
| 4. Webcam (select models only) | 16. AC adapter/Battery light |
| 5. Webcam light (select models only) | 17. Power light |
| 6. Internal display switch | 18. Wireless light |
| 7. Wireless button | 19. Smart card reader |
| 8. Volume mute button | 20. USB 3.0 port |
| 9. Pointstick | 21. USB 3.0 charging port |
| 10. Right TouchPad button | 22. External VGA monitor port |
| 11. TouchPad zone | 23. Security cable slot |
| 12. Left TouchPad button | 24. Power button |

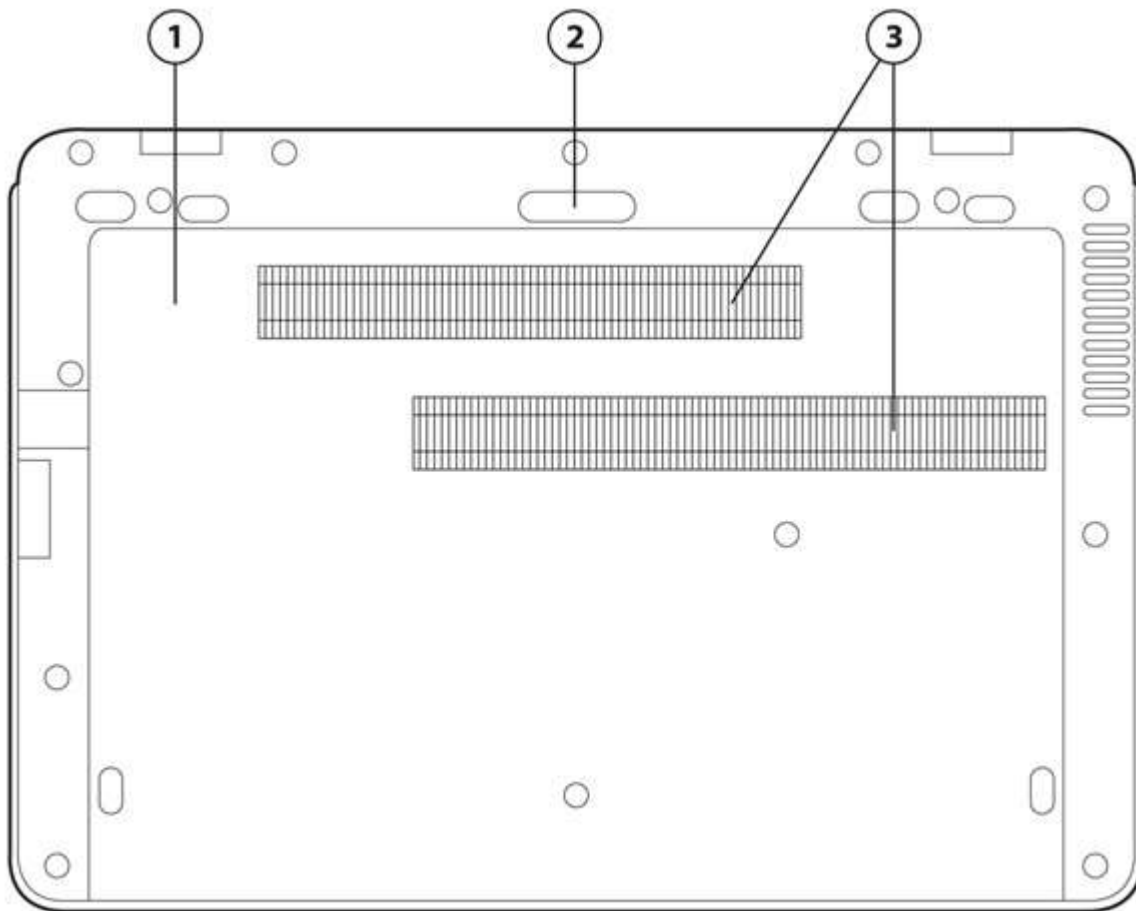
Overview



- Right**
- | | |
|---|-----------------------------------|
| 1. Audio-out (headphone) jack/Audio-in(microphone) jack | 5. Drop-jaw Ethernet port (RJ-45) |
| 2. DisplayPort | 6. Docking port |
| 3. Memory card reader | 7. Power connector |
| 4. USB 3.0 ports (2) | |

QuickSpecs

Overview



Bottom

1. EasyAccess panel
2. EasyAccess panel release lock
3. Vents (2)

At A Glance

- Windows 8 versions, Windows 7 versions, SUSE Linux, or FreeDOS
- Lync certified
- Magnesium and aluminum chassis, HP DuraFinish, HP DisplaySafe frame, HP duraKeys, precision aluminum drop hinge, aluminum palm rest
- 4-step Soft-touch paint process
- Patent-pending Drop-jaw Ethernet port
- EasyAccess door to quickly access most components for easy serviceability
- Full-sized spill-resistant keyboard; optional back-lit keyboard keeps you productive in low-light settings
- Ensured durability through MIL-SPEC 810G testing, plus an additional 115,000 hours of reliability testing through HP's Total Test Process
- Choice of 4th generation Intel® Core™ i7, i5 and i3 processors
- Integrated Intel® HD Graphics 4400 or AMD Radeon™ HD 8750M discrete graphics with 1 GB dedicated GDDR5 video memory
- LED-backlit display
 - HP EliteBook 820: 12.5-inch diagonal HD or HD Premium
 - HP EliteBook 840: 14.0-inch diagonal HD, HD+ (including a touch-enabled option), or FHD
 - HP EliteBook 850: 15.6-inch diagonal HD or FHD
- Easily hot dock with the 2013 UltraSlim Docking Station
- DisplayPort for high resolution support
- Touchpad with scroll zone, on/off button with LED indicator
-

QuickSpecs

Overview

- Enhanced security features including HP Sure Start self-healing BIOS, HP Client Security, HP Trust Circles Standard and optional HP Fingerprint Reader
- Optional HD webcam with dual-microphone array for video conferencing
- HD Audio with DTS Studio Sound optimized for high fidelity audio
- Wireless and speaker mute buttons
- Flexible wireless connectivity options:
 - HP Connection Manager allows full control over wireless connections, including 3G and 4G mobile broadband, Wi-Fi, Ethernet and Bluetooth® (Win 7 only)
 - Integrated 4G HP Mobile Broadband Modules
 - HP Wireless Hotspot (Win 8 Only)
 - HP Mobile Connect (EMEA Only) (Win 8 Only)
 - Intel WiDi Software
- Choice of 7200 rpm user-removable hard drive (up to 500 GB) with HP 3D DriveGuard, 5400 rpm user-removable hard drive (up to 1 TB on EliteBook 840 and 850), 500 GB 7200 rpm Self Encrypting Drive, 500 GB 5400 rpm FIPS Self Encrypting Drive, 256 GB SED Solid State Drive, or 128/180/240/512 GB Solid State Drive
- 120 GB M.2 (NGFF) SSD (EliteBook 820 only, will be available on EliteBook 840 and 850 in 1Q 2014)
- M.2 32GB flash cache for Intel Smart Response Technology

NOTE: See important legal disclosures for all listed specs in their respective features sections.

Features

PRODUCT NAMES

HP EliteBook 820 G1 Notebook PC
HP EliteBook 840 G1 Notebook PC
HP EliteBook 850 G1 Notebook PC

OPERATING SYSTEM

Preinstalled	Windows 8 Pro 64*
	Windows 7 Professional (available through downgrade rights from Windows 8 Pro)**
	Windows 8 64*
	Windows 7 Professional 32***
	Windows 7 Professional 64***
	Windows 7 Home Premium 32***
	Windows 7 Home Premium 64***
	SUSE Linux
	FreeDOS

* Not all features are available in all editions of Windows 8. Systems may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows 8 functionality. See <http://www.microsoft.com> for details.

** This system is preinstalled with Windows® 7 Pro software and also comes with a license and media for Windows 8 Pro software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.

*** Not all features are available in all editions of Windows 7. This system may require upgraded and/or separately purchased hardware to take full advantage of Windows 7 functionality. See <http://www.microsoft.com/windows/windows-7/> for details.

PROCESSOR

4th Generation Intel® Core™ i7-4600U with Intel HD Graphics 4400 (2.1 GHz, 4 MB cache, 2 cores)*

Up to 3.3 GHz with Intel Turbo Boost Technology

4th Generation Intel® Core™ i7-4500U with Intel HD Graphics 4400 (1.8 GHz, 4 MB cache, 2 cores)*, **

Up to 3.0 GHz with Intel Turbo Boost Technology

4th Generation Intel® Core™ i5-4300U with Intel HD Graphics 4400 (1.9 GHz, 3 MB cache, 2 cores)*

Up to 2.9 GHz with Intel Turbo Boost Technology

4th Generation Intel® Core™ i5-4200U with Intel HD Graphics 4400 (1.6 GHz, 3 MB cache, 2 cores)*, **

Up to 2.6 GHz with Intel Turbo Boost Technology

4th Generation Intel® Core™ i3-4010U with Intel HD Graphics 4400 (1.7 GHz, 3 MB cache, 2 cores)*, **

* Multi-Core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. 64-bit computing on Intel® architecture requires a computer system with a processor, chipset, BIOS, operating system, device drivers, and applications enabled for Intel® 64 architecture. Processors will not operate (including 32-bit operation) without an Intel® 64 architecture-enabled BIOS. Performance will vary depending on your hardware and software configurations. Intel's numbering is not a measurement of higher performance.

** Not available with Intel iAMT (*Not available with vPro)

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

QuickSpecs

Features

INTEL TURBO BOOST TECHNOLOGY*

Intel Turbo Boost is a feature that speeds up the CPU for a short time. It is similar to overclocking the processor, except within a framework provided by Intel. This feature provides additional performance and allows the computer to perform certain tasks more quickly. It also draws additional power and generates additional heat. Therefore, if Turbo Boost is used while powered from battery, it causes additional stress on the battery.

Using Turbo Boost while powered from battery might impact battery cycle life. Cycle life describes how long the battery will last before it needs to be replaced. A cycle refers to one complete charge/discharge cycle of the battery. Because Turbo Boost causes extra stress on the battery, it often shortens the lifetime of the battery.

HP decided not to enable Turbo Boost when powered from battery. This decision was based on the desire to give customers the greatest battery cycle life possible. Turbo Boost is enabled when powered from AC adapter.

Based on customer requests, HP will provide an option to enable Turbo Boost while powered from battery. For the 2013 platform, it will be an F10 option. Turbo Boost will be available for devices powered from battery by the end of the year. The additional performance might cause a slight reduction in battery cycle life, but will not void the battery warranty.

*Implementing Turbo Boost in F10 option is only allowed for batteries over 40WHr. Intel® Turbo Boost technology requires a PC with a processor with Intel Turbo Boost capability. Intel Turbo Boost performance varies depending on hardware, software and overall system configuration. See www.intel.com/technology/turboboost for more information.

CHIPSET

Chipset integrated with processor

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 9.0 (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 this technology, such as Intel® Active management technology and Intel Virtualization technology, requires additional 3rd party software in order to run. Availability of future "virtual appliances" applications for Intel vPro technology is dependent on 3rd party software providers. Microsoft Windows required. For hard drives, GB = 1 billion bytes. Actual formatted capacity is less. Up to 30 GB for Windows 8 is reserved for system recovery software.

QuickSpecs

Features

GRAPHICS

Integrated:

Intel® HD Graphics 4400

Discrete*:

AMD Radeon™ HD 8750M**, with 1 GB dedicated DDR5 video memory***

* HP EliteBook 840 and 850 only.

** HD content required to view HD images.

*** AMD Dynamic Switchable Graphics technology requires an Intel processor, plus an AMD Radeon™ discrete graphics configuration and is not available on FreeDOS and Linux OS. With AMD Dynamic Switchable Graphics technology, full enablement of all discrete graphics video and display features may not be supported on all systems (e.g. OpenGL applications will run on the integrated GPU or the APU as the case may be).

DISPLAY

HP EliteBook 820

Internal

12.5" diagonal LED-backlit HD anti-glare SVA flat (1366 x 768)

12.5" diagonal LED-backlit HD Premium anti-glare UWVA slim (1366 x 768)

External

Up to 32-bit per pixel color depth

VGA

Port supports resolutions up to 1920 x 1200 external resolution@60 Hz

DisplayPort

Supports resolutions up to 3200x2000 @ 60Hz

Number of Displays with 2013 UltraSlim Docking Station	UMA	Discrete
EliteBook 820	3	n/a

HP EliteBook 840

Internal

14" diagonal LED-backlit HD anti-glare SVA flat (1366 x 768)

14" diagonal LED-backlit HD+ anti-glare SVA flat (1600 x 900)

14" diagonal LED-backlit HD+ SVA flat + touch (1600 x 900)*

14" diagonal LED-backlit FHD anti-glare UWVA slim (1920 x 1080)

External

Up to 32-bit per pixel color depth

VGA

Port supports resolutions up to 1920 x 1200 external resolution @60 Hz

DisplayPort

Supports resolutions up to 3200x2000 @ 60Hz

Number of Displays with 2013 UltraSlim Docking Station	UMA	Discrete
EliteBook 840	3	3

* Touch panel has chemically-strengthened Gorilla glass top cover

NOTE: HD content required to view HD images.

NOTE: Resolutions are dependent upon monitor capability, and resolution and color depth settings.

HP EliteBook 850

Internal

15.6" diagonal LED-backlit HD anti-glare SVA flat (1366 x 768)

15.6" diagonal LED-backlit FHD anti-glare SVA slim(1920 x 1080)

QuickSpecs

Features

External

Up to 32-bit per pixel color depth

VGA

Port supports resolutions up to 1920 x 1200 external resolution @60 Hz

DisplayPort

Supports resolutions up to 3200x2000 @ 60Hz

Number of Displays with 2013 UltraSlim Docking Station	UMA	Discrete
EliteBook 840	3	3

NOTE: HD content required to view HD images.

NOTE: Resolutions are dependent upon monitor capability, and resolution and color depth settings.

STORAGE AND DRIVES

Primary Storage Bay

Hard Drives*

320/500 GB/1 TB** 5400 rpm SATA II Hard Drive

320/500 GB 7200 rpm SATA II Hard Drive

500 GB 7200 rpm SED (Self Encrypting Drive)

500 GB 5400 rpm FIPS*** SED (Self Encrypting Drive)

Solid State Drive*

120 GB M.2 (NGFF) Solid State Drive (EliteBook 820 only, will be available on EliteBook 840 and 850 in 1Q 2014)

128/180/240/512 GB 2.5" Solid State Drive

256 GB SED Solid State Drive

NOTE: If 120 GB M.2 (NGFF) SSD is selected, any of the HDD and SSD can be configured as secondary storage.

HP 3D DriveGuard (Windows only)

The hard drive is mounted directly to the notebook frame, reducing the transmission of shock to the hard drive

*For hard drives and solid state drives, GB = 1 billion bytes. Actual formatted capacity is less. Up to 16 GB (for Windows 7) and 36 GB (for Windows 8) of system disk is reserved for the system recovery software.

** 1TB only available on EliteBook 840 and 850.

*** FIPS-certified, hardware-based AES-256 encryption image

NOTE: For Solid State Drives (SSD), GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 5GB for Windows 8 is reserved for system recovery software.

FLASH CACHE

32 GB M.2 (NGFF)

Optional 32 GB M.2 flash cache module support for Intel Smart Response Technology. (Available only with standard non-SED hard drive.)

QuickSpecs

Features

MEMORY

Standard

DDR3L SDRAM (1600 MHz)
Two SODIMM slots supporting dual-channel memory
4 GB and 8 GB* SODIMMs

Maximum

Upgradeable to 16384 MB with optional 8192 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.

* Maximum memory capacities assume Windows 64-bit operating systems or Linux. With Windows 32-bit operating systems, memory above 3 GB may not all be available due to system resource requirements.

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.

NETWORKING/COMMUNICATIONS

Wireless

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 only. Integrated Bluetooth is also available (factory configurable only) and can be combined with any of the supported wireless LAN and wireless WAN options.

Broadband Wireless (WWAN)

HP hs3110 HSPA+ Mobile Broadband Module*
HP It4111 LTE/EV-DO/HSPA+ Gobi Mobile Broadband Module (US)*, **
HP It4112 LTE/HSPA+ Mobile Broadband Module (EMEA, APJ)

Wireless LAN (WLAN)**

Broadcom 802.11 (2x2) a/b/g/n + Bluetooth 4.0***
Intel Dual Band Wireless-AC 7260 802.11 ac (2x2) WiFi + BT 4.0 combo***
Intel Dual Band Wireless-N 7260AN 802.11 a/b/g/n (2x2) WiFi + BT 4.0 combo***
Intel Dual Band Wireless-N 7260NB 802.11 a/b/g/n (2x2) WiFi***

* WWAN is an optional feature sold separately or as an add on feature. WWAN connection requires wireless data service contract, network support, and is not available in all areas. Contact service provider to determine the coverage area and availability. Connection speeds will vary due to location, environment, network conditions, and other factors.

** 4G LTE not available on all products, in all regions and only available on products featuring Intel processors.

***Wireless access point and Internet service is required and is not included. Availability of public wireless access points limited.

Communications

Intel® Clarkville (I218-LM) Gigabit* Network Connection (10/100/1000 NIC)

* 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.



Features

AUDIO/MULTIMEDIA

Audio

HD Audio with DTS Studio Sound
2 Integrated stereo speakers
Integrated dual-microphone array; located in the display
Function keys for microphone mute, volume up, volume down
Stereo headphone/line out
Stereo microphone/line in

Webcam

Optional 720p HD* webcam

- HD format (widescreen)
- Supports videoconferencing (non-HD) 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
- Skype-ready**

* HD content required to view HD images.

**Internet access required.

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard

The HP spill-resistant keyboard is designed using a thin layer of Mylar film under the keyboard and includes an all-metal keyboard deck for greater rigidity, as well as HP DuraKeys. HP DuraKeys are 50 times more resistant to visible wear than keyboards without them.* 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, and function keys. US and International key layouts are available. Backlit keyboard available as an option.

Pointing Devices

Touchpad with scroll zone, on/off button with LED indicator, two-way scroll, two pick buttons

Buttons and Function Keys

Separate discrete buttons provide easy access to WLAN on/off and speaker mute. Function keys provide control of features including: standby mode, display brightness, external display, microphone mute, volume down, and volume up.

* In independent testing conducted by Trace Laboratories, HP DuraKeys showed no wear after 250,000 cycles. Competitor notebooks showed significant wear after only 5,000 cycles.)

SOFTWARE AND SECURITY

Preinstalled Software with Windows Operating System

BIOS

HP BIOSphere*
HP Sure Start**
HP DriveLock | HP Automatic Drive Lock
HP BIOS Protection***
HP Disk Sanitizer****
HP SpareKey*****
Update via Network
Master Record Security
Power On Authentication
Pre-Boot Security
Secure Erase*****

QuickSpecs

Features

Hybrid Boot
Measured Boot
Secure Boot
Absolute Persistence Module*****

* Available only on business PCs with HP BIOS.

** HP SureStart is the first and only self-healing technology solution created to protect against Malware and Security attacks aimed at the BIOS. Available only EliteBooks and ZBooks.

*** May require a manual recovery step for recovery if all copies of BIOS are compromised or deleted. Feature not supported on ElitePads. HP Business Desktops introduced prior to 2013 do not support this HP BIOS Protection auto-recovery feature.

**** For the use cases outlined in the DOD 5220.22-M Supplement. Only supports traditional Hard Drives.

***** Requires initial user set up.

***** For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88.

***** Absolute agent is shipped turned off, and will be activated when customers activate a purchased subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. The Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit: <http://www.absolute.com/company/legal/agreements/computrace-agreement>. Data Delete is an optional service provided by Absolute Software. If utilized, the Recovery Guarantee is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens from Absolute Software.

MultiMedia

CyberLink PowerDVD

Communication

HP Connection Manager (Windows 7 only)

HP GPS and Location*

HP Mobile Connect (Windows 8 only)**

HP Wireless Hotspot*** (Windows 8 only)

Intel WiDi Software****

HP Roaming Alert

Intel My WiFi and Wireless Drivers

HP Value Add Software

Getting Started with Windows 8

HP 3D DriveGuard (Windows required)

HP ePrint Driver (HP Exclusive)*****

HP Hotkey Support

HP PageLift (HP Exclusive with Windows 8)

HP Recovery Manager (Windows 8 only)

HP Support Assistant W8

HP Recovery Disc Creator (Windows 7 only)

UEFI System Diagnostics W8

3rd Party

Adobe® Flash Player (Commercial)

Bing Search

Skype*****

Buy Office

Lync certified*****

NOTE: 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 16 GB (for Windows 7) and 36 GB (for Windows 8) of system disk is reserved for the system recovery software.

*GPS access requires an unobstructed path to multiple satellites. Performance may be affected if/when used inside of buildings, bridges or heavily congested metropolitan areas. Requires separately purchased GPS navigation software



Features

available from multiple GPS applications.

**Internet access required.

*** The wireless hotspot application requires an active internet connection and separately purchased data plan. While HP wireless hotspot is active, on-device applications will continue to work and will use the same data plan as the wireless hotspot. Wireless hotspot data usage may incur additional charges. Check with your service provider for plan details. Requires Windows.

**** Integrated Intel Wi-Di feature is available on select configurations only and requires separately purchased projector, tv or computer monitor with an integrated or external Wi-Di receiver. External Wi-Di receivers connect to the projector, tv or computer monitor via a standard HDMI cable, also sold separately.

*****Requires an Internet connection to HP web-enabled printer and HP ePrint account registration (for a list of eligible printers, supported documents and image types and other HP ePrint details, see www.hp.com/go/eprintcenter).Requires optional broadband module. Broadband use requires separately purchased service contract. Check with service provider for coverage and availability in your area. Separately purchased data plans or usage fees may apply. Print times and connection speeds may vary.

***** Skype is not offered in China.

***** Lync software is sold separately. Requires internet access.

Standard Security Features

HP Client Security with Credential Manager and Password Manager (Windows only)

HP Device Access Manager with Just in Time Authentication

HP Drive Encryption (FIPS 140-2 certified)*

HP File Sanitizer**

Microsoft Security Essentials (Windows 7 only)***

HP Trust Circles Standard****

Central Management of Client Security Credential Manager with DigitalPersona Pro Workgroup*****

Computrace Support

TPM Embedded Security Chip 1.2 (EAL4+ Certified)

Optional Security Features

Intel® Anti-Theft*****

Intel Identity Protection*****

HP Fingerprint reader

NOTE: The Absolute Persistence agent is shipped turned off, and must be activated by customers when they purchase a subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S.

* Requires Windows. Data is protected prior to Drive Encryption login. Turning the PC off or into hibernate logs out of Drive

Encryption and prevents data access.

** For the use cases outlined in the DOD 5220.22-M Supplement. Supports standard Hard Drives. Initial setup required.

*** Opt in and internet connection required for updates.

**** HP Trust Circles Standard, when included, allows up to 5 Trust Circles with up to 5 contacts in each Trust Circle.

Optional Trust Circles Pro required for unrestricted number of Trust Circles and contacts. Trust Circles Reader is available to allow a contact to participate in an invited Trust Circle. Requires Windows. Available at

<http://hptc.cryptomill.com>.

***** In order to deploy and receive updated policies, the client needs to be connected to the network server and requires

separately purchased DigitalPersona Pro software. System access may not prevent users from logging into the system on the

first attempt if policy updates haven't yet been received and applied. Not all features are remotely manageable.

***** Intel Anti-Theft security is supported on Intel Core i processors and 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/>.

***** Intel Identity Protection feature is only available with Intel Core Processors. Intel® IPT security requires separate Symantec VIP software service subscription and must be activated and configured. Requires a website that uses Symantec VIP Authentication Service and Microsoft® Windows. Intel® and HP assume no liability for lost or

QuickSpecs

Features

stolen data and/or systems or any other damages resulting therefrom.

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

POWER

Power Supply

HP EliteBook 820 Notebook PC

HP 45W Smart AC Adapter

45W 2-prong 7.4mm DC jack AC Adapter (Only for Japan)

HP 65W Smart EM AC Adapter (China and India only)

HP 65W Slim Smart AC Adapter (Japan and Australia only)

Power cord is configurable; either 3.2 feet or 6 feet (1.0 or 1.8 meter)

Total length including external AC adapter is 9.2 feet or 12 feet (2.86 or 3.66 meter).

HP EliteBook 840 Notebook PC

Integrated graphics:

HP 45W Smart AC adapter

HP 65W Smart AC adapter

HP 65W EM Smart AC adapter (China and India only)

HP 65W Slim Smart AC adapter (Japan and Australia only)

Discrete graphics:

HP 65W Smart AC adapter

HP 65W EM Smart AC adapter (China and India only)

HP 65W Slim Smart AC adapter (Japan and Australia only)

Power cord is configurable; either 3.2 feet or 6 feet (1.0 or 1.8 meter)

Total length including external AC adapter is 9.2 feet or 12 feet (2.86 or 3.66 meter).

HP EliteBok 850 Notebook PC

Integrated graphics:

HP 45W Smart AC adapter

HP 65W Smart AC adapter

HP 65W EM Smart AC adapter (China and India only)

HP 65W Slim Smart AC adapter (Japan and Australia only)

Discrete graphics:

HP 65W Smart AC adapter

HP 65W EM Smart AC adapter (China and India only)

HP 65W Slim Smart AC adapter (Japan and Australia only)

Power cord is configurable; either 3.2 feet or 6 feet (1.0 or 1.8 meter)

Total length including external AC adapter is 9.2 feet or 12 feet (2.86 or 3.66 meter).

HP EliteBook 820 Notebook PC

Primary Battery

3-cell HP Long Life 26 WHr

3-cell HP Long Life 46 WHr

HP EliteBook 840 Notebook PC

Primary Battery

3-cell HP Long Life 24WHr

3-cell HP Long Life 50 WHr

Secondary Battery

6-cell HP Long Life Slice 60 WHr (optional)

HP EliteBook 850 Notebook PC



QuickSpecs

Features

Primary Battery

3-cell HP Long Life 24WHr

3-cell HP Long Life 50 WHr

NOTE: Battery warranty is one year or three years, depending on the platform warranty.

Battery Life*

	Configurations with integrated graphics (Windows 7)	Configurations with discrete graphics (Windows 7)
HP EliteBook 820 G1		
3-cell (46 WHr) battery with hard drive	Up to 11 hours 15 minutes	N/A
3-cell (26 WHr) battery with 2.5" solid state drive	Up to 7 hours 30 minutes	N/A
3-cell (46 WHr) battery with 2.5" solid state drive	Up to 13 hours 15 minutes	N/A
HP EliteBook 840 G1		
3-cell (50 WHr) battery with hard drive	Up to 13 hours 15 minutes	Up to 13 hours 15 minutes
3-cell (24 WHr) battery with 2.5" solid state drive	Up to 7 hours	Up to 7 hours 15 minutes
3-cell (50 WHr) battery with 2.5" solid state drive	Up to 15 hours 15 minutes	Up to 14 hours 30 minutes
3-cell (50 WHr) battery + Slice (60 WHr) with 2.5" solid state drive	Up to 33 hours 45 minutes	N/A
HP EliteBook 850 G1		
3-cell (50 WHr) battery with hard drive	Up to 13 hours	Up to 13 hours 15 minutes
3-cell (24 WHr) battery with 2.5" solid state drive	Up to 7 hours	Up to 7 hours 15 minutes
3-cell (50 WHr) battery with 2.5" solid state drive	Up to 15 hours	Up to 14 hours 30 minutes

System Standby Time**

Up to 166 hours UMA, 167 hours discrete

* *Windows 7 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 www.bapco.com for additional details.

Power Conservation

Supports enhanced Intel SpeedStep technology (allows Battery Optimized Mode, Maximum Performance Mode, or Automatic mode)

AMD PowerPlay technology (discrete models)

Hibernation

Standby

ACPI compliance



Features

WEIGHTS & DIMENSIONS

HP EliteBook 820 Notebook PC

Weight

Starting at 2.94 lb (1.33 kg) (weight will vary by configuration)

Dimensions (w x d x h)

12.2 x 8.48 x 0.83 in

31 x 21.53 x 2.1 cm

HP EliteBook 840 Notebook PC

Weight

Starting at 3.48 lb (1.58 kg) (non-Touch) (weight will vary by configuration)

Starting at 3.92 lb (1.78 kg) (Touch) (weight will vary by configuration)

Dimensions (w x d x h)

13.34 x 9.33 x 0.83 in (non-Touch)

33.89 x 23.7 x 2.10 cm (at front) (non-Touch)

13.34 x 9.33 x 0.89 in (Touch)

33.89 x 23.7 x 2.25 cm (Touch)

HP EliteBook 850 Notebook

Weight

Starting at 4.15 lb (1.88 kg) (weight will vary by configuration)

Dimensions (w x d x h)

14.78 x 9.98 x 0.84 in

37.5 x 25.3 x 2.142 cm

PORTS/SLOTS

Ports

USB 3.0 - Two for EliteBook 820, Three for EliteBook 840 and EliteBook 850

USB 3.0 (charging) - One

DisplayPort 1.2 - One

VGA - One

Headphone/Microphone combo port - One

RJ-45 (Ethernet) - One

Power connector - One

Side docking connector - One

Secondary battery connector* - One

Expansion Slots

Media Card Reader

- supports SD, SDHC, SDXC

* EliteBook 840 only.

Features

SERVICE AND SUPPORT

Limited 3-year, 1-year and 90-day warranty options available, depending on country, 3-year limited warranty on HP Long Life Battery (only available with 3-year platform warranty). Optional* HP Care Pack Services** are extended service contracts which go beyond your standard warranties. For more details visit: <http://www.hp.com/go/lookuptool>.

*Sold separately or as an optional feature.

** Service levels and response times for HP Care Packs may vary depending on your geographic location. Service starts on date of hardware purchase. Restrictions and limitations apply. Consult the HP Customer Support Center for details. <http://h20000.www2.hp.com/bizsupport/TechSupport/ProductRoot.jsp>

NOTE: Service levels and response times for HP Care Packs may vary depending on your geographic location. Service starts on date of hardware purchase. Restrictions and limitations apply. For details, visit: www.hp.com/go/cpc

NOTE: Battery warranty is 1 year or three years, depending on the platform warranty.

QuickSpecs

Technical Specifications

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)	Nominal Operating Voltage	19.5 V			
	Average Operating Power			Windows 7 (64-bit)	Windows 8 (64-bit)
		EliteBook 820 Integrated graphics		4.75 W	4.26 W
		EliteBook 840 Discrete graphics		4.18 W	5.42 W
		EliteBook 840 Integrated graphics		4.8 W	4.49 W
		EliteBook 850 Discrete graphics		4.14 W	3.91 W
		EliteBook 850 Discrete graphics		4.09 W	4.18 W
	Max Operating Power	Discrete < 90W UMA < 65W			
	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	40 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)			
Planned Industry Standard Certifications	UL	Yes			
	CSA	Yes			
	FCC Compliance	Yes			
	ENERGY STAR®	Select models*			
	EPEAT	Registered Gold in United States**			
	ICES	Yes			
	Australia / NZ A-Tick Compliance	Yes			
	CCC	Yes			
	Japan VCCI Compliance	Yes			
	KC	Yes			
	BSMI	Yes			
	CE Marking Compliance	Yes			
	BNCI or BELUS	Yes			
	CIT	Yes			
	GOST	Yes			
	Saudi Arabian Compliance (ICCP)	Yes			
	SABS	Yes			



QuickSpecs

Technical Specifications

UKRSERTCOMPUTER Yes

* Configurations of the HP EliteBook 820, HP EliteBook 840 and HP EliteBook 850 that are ENERGY STAR® qualified are identified as HP EliteBook 820 ENERGY STAR, HP EliteBook 840 ENERGY STAR and HP EliteBook 850 ENERGY STAR on HP websites and on www.energystar.gov.

** EPEAT® registration varies by country. See www.epeat.net for registration status by country. EPEAT status listed above applies to U.S.

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

DISPLAYS

12.5" diagonal LED-backlit HD anti-glare SVA flat (1366 x 768)	Outline Dimensions (W x H x D)	11.46 x 7.14 x 0.14 in (29.1 x 18.14 x 0.36 cm)		
	Active Area	10.89 x 6.12 in (27.6615 x 15.552 cm)		
	Weight	0.6 lb (270g) (max)		
	Diagonal Size	12.5 in (35.75 cm)		
	Surface Treatment	Anti-glare		
	Contrast Ratio	300:1 (min)		
	Refresh Rate	60 Hz		
	Brightness	200 nit (typical)		
	Pixel Resolution	Format	1366 x 768 (HD)	
		Configuration	RGB Stripe	
	Interface	eDP 1.2 (1 lane)		
	LCD Mode	TN		
	PPI	125 ppi		
	Viewing Angle	SVA 40/40/15/30 (Left/Right/Down/Up)		

12.5" diagonal LED-backlit HD Premium anti-glare UWVA slim (1366 x 768)	Outline Dimensions (W x H x D)	11.46 x 7.14 x 0.112 in (29.1 x 18.14 x 0.285 cm)		
	Active Area	10.85 x 6.1 in (27.559 x 15.494 cm)		
	Weight	0.49 lb (220g) (max)		
	Diagonal Size	12.5 in (35.75 cm)		
	Surface Treatment	Anti-glare		
	Contrast Ratio	500:1 (min)		
	Refresh Rate	60 Hz		
	Brightness	300 nit (typical)		
	Pixel Resolution	Format	1366 x 768 (HD)	
		Configuration	RGB Stripe	
	Interface	eDP 1.2 (1 lane)		
	LCD Mode	IPS/FFS/VA		
	PPI	125 ppi		
	Viewing Angle	UWVA 85/85/85/85 (Left/Right/Down/Up)		

QuickSpecs

Technical Specifications

14" diagonal LED-backlit HD anti-glare SVA flat (1366 x 768)	Outline Dimensions (W x H x D)	12.6 x 8.09 x 0.14 in (32.09 x 20.56 x 0.36 cm)		
	Active Area	12.18 x 6.85 in (30.94 x 17.395 cm)		
	Weight	0.71 lb (320g) (max)		
	Diagonal Size	14.0 in (35.6cm)		
	Surface Treatment	Anti-glare		
	Contrast Ratio	300:1 (min)		
	Refresh Rate	60 Hz		
	Brightness	200 nit (typical)		
	Pixel Resolution	Format	1366 x 768 (HD)	
		Configuration	RGB Stripe	
	Interface	eDP 1.2 (1 lane)		
	LCD Mode	TN		
	PPI	125 ppi		
	Viewing Angle	SVA 40/40/15/30 (Left/Right/Down/Up)		

14" diagonal LED-backlit HD+ anti-glare SVA flat (1600 x 900)	Outline Dimensions (W x H x D)	12.6 x 8.09 x 0.14 in (32.09 x 20.56 x 0.36 cm)		
	Active Area	12.19 x 6.86 in (30.96 x 17.415 cm)		
	Weight	0.72 lb (325 g) (max)		
	Diagonal Size	14.0 in (35.6cm)		
	Surface Treatment	Anti-glare		
	Contrast Ratio	300:1 (min)		
	Refresh Rate	60 Hz		
	Brightness	250 nit (typical)		
	Pixel Resolution	Format	1600 x 900 (HD+)	
		Configuration	RGB Stripe	
	Interface	eDP 1.2 (1 lane)		
	LCD Mode	TN		
	PPI	131 ppi		
	Viewing Angle	SVA 40/40/15/30 (Left/Right/Down/Up)		

QuickSpecs

Technical Specifications

14" diagonal LED-backlit HD+ SVA flat + touch (1600 x 900)	Outline Dimensions (W x H x D)	12.6 x 8.09 x 0.14 in (32.09 x 20.56 x 0.36 cm)		
	Active Area	12.19 x 6.86 in (30.96 x 17.415 cm)		
	Weight	0.72 lb (325 g) (max)		
	Diagonal Size	14.0 in (35.6cm)		
	Touch enabled	Yes		
	Contrast Ratio	300:1 (min)		
	Refresh Rate	60 Hz		
	Brightness	250 nit (typical)		
	Pixel Resolution	Format	1600 x 900 (HD+)	
		Configuration	RGB Stripe	
	Interface	eDP 1.2 (1 lane)		
	LCD Mode	TN		
	PPI	131 ppi		
	Viewing Angle	SVA 40/40/15/30 (Left/Right/Down/Up)		

14" diagonal LED-backlit FHD anti-glare UWVA slim (1920 x 1080)	Outline Dimensions (W x H x D)	12.6 x 8.09 x 0.12 in (32.09 x 20.56 x 0.3 cm)		
	Active Area	12.18 x 6.85 in (30.93 x 17.4 cm)		
	Weight	0.75 lb (340 g) (max)		
	Diagonal Size	14.0 in (35.6cm)		
	Surface Treatment	Anti-glare		
	Contrast Ratio	600:1 (min)		
	Refresh Rate	60 Hz		
	Brightness	300 nit (typical)		
	Pixel Resolution	Format	1920 x 1080 (FHD)	
		Configuration	RGB Stripe	
	Interface	eDP 1.3+PSR (2 lane)		
	LCD Mode	IPS/FFS/VA		
	PPI	157 ppi		
	Viewing Angle	UWVA 85/85/85/85 (Left/Right/Down/Up)		

QuickSpecs

Technical Specifications

15.6" diagonal LED-backlit HD anti-glare SVA flat (1366 x 768)	Outline Dimensions (W x H x D)	14.17 x 8.83 x 0.15 in (36.0 x 22.43 x 0.38 cm)		
	Active Area	13.55 x 7.62 in (34.42 x 19.35 cm)		
	Weight	< 1.1 lb (500 g) (max)		
	Diagonal Size	15.6 in (39.62 cm)		
	Surface Treatment	Anti-glare		
	Contrast Ratio	300:1 (min)		
	Refresh Rate	60 Hz		
	Brightness	200 nit (typical)		
	Pixel Resolution	Format	1366 x 768 (HD)	
		Configuration	RGB Stripe	
	Interface	eDP 1.2 (1 lane)		
	LCD Mode	TN		
	PPI	101 ppi		
	Viewing Angle	SVA 40/40/15/30 (Left/Right/Down/Up)		

15.6" diagonal LED-backlit FHD anti-glare SVA flat (1920 x 1080)	Outline Dimensions (W x H x D)	14.17 x 8.83 x 0.15 in (36.0 x 22.43 x 0.32 cm)		
	Active Area	13.55 x 7.62 in (34.42 x 19.36 cm)		
	Weight	< 0.84 lb (380 g) (max)		
	Diagonal Size	15.6 in (39.62 cm)		
	Surface Treatment	Anti-glare		
	Contrast Ratio	400:1 (typical)		
	Refresh Rate	60 Hz		
	Brightness	300 nit (typical)		
	Pixel Resolution	Format	1920 x 1080 (FHD)	
		Configuration	RGB Stripe	
	Interface	eDP 1.2 (2 lane)		
	LCD Mode	TN		
	PPI	142 ppi		
	Viewing Angle	SVA 45/45/25/35 (Left/Right/Down/Up)		

STORAGE AND DRIVES

Internal Storage

QuickSpecs

Technical Specifications

320 GB* 5400 rpm SATA Hard Drive

Drive Weight	0.25 lbs (115 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)	300 MB/s (Drive Capability)
Seek Time (typical reads, including settling)	Single Track	1.5 ms
	Average	11 ms
	Maximum	22 ms
Rotational Speed	7200 rpm	
Logical Blocks	625,142,448	
Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
Features	ATA Security	

500 GB* 5400 rpm SATA Hard Drive

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)	300 MB/s (Drive Capability)
Seek Time (typical reads, including settling)	Single Track	3 ms
	Average	13 ms
	Maximum	24 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	

1 TB* 5400 rpm SATA Hard Drive

Drive Weight	0.254 lb (115 g)	
Capacity	1 TB	
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)	300 MB/s (Drive Capability)
Seek Time (typical reads, including settling)	Single Track	3 ms
	Average	13 ms
	Maximum	24 ms
Rotational Speed	5400 rpm	
Logical Blocks	1,953,525,168	
Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
Features	ATA Security	

QuickSpecs

Technical Specifications

500 GB* 5400 rpm SATA FIPS** Hard Drive	Drive Weight	0.25 lbs (95g)
	Capacity	500 GB
	Height	0.28 in (7 mm)
	Width	2.75 in (70 mm)
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ
	Transfer Rate	Synchronous 300 MB/s (Drive Capability) (maximum)
	Seek Time	Single Track 1.5 ms
(typical reads, including settling)	Average	11 ms
	Maximum	22 ms
	Cache	16 MB
	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* 7200 rpm SATA Hard Drive	Drive Weight	0.25 lbs (115 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 300 MB/s (Drive Capability) (maximum)
	Seek Time	Single Track 1.5 ms
(typical reads, including settling)	Average	11 ms
	Maximum	22 ms
	Cache	16 MB
	Rotational Speed	7200 rpm
	Logical Blocks	625,142,448
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]
	Features	ATA Security

QuickSpecs

Technical Specifications

500 GB* 7200 rpm SATA Hard Drive

Drive Weight	0.25 lbs (115g)	
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)	300 MB/s (Drive Capability)
Seek Time (typical reads, including settling)	Single Track	1.5 ms
	Average	11 ms
	Maximum	22 ms
Rotational Speed	7200 rpm	
Logical Blocks	976,773,168	
Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
Features	ATA Security	

500 GB* 7200 rpm SMART SATA II Self Encrypting Drive

Drive Weight	0.25 lbs (115g)	
Capacity	500 GB	
Height	0.37 in (9.5 mm)	
Width	2.50 in (63.5 mm)	
Interface	ATA-8, SATA 2.6, 3.0 Gb/s	
Transfer Rate	Synchronous (maximum)	300 MB/s (Drive Capability)
Seek Time (typical reads, including settling)	Single Track	1 ms
	Average	12 ms
	Maximum	20 ms
Cache	16 MB	
Rotational Speed	7200 rpm	
Logical Blocks	976,773,168	
Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
Features	ATA Security	

SATA 6 Gb/s 128 GB*, 2.5-inch Solid State Drive

Drive Weight	73 Grams	
Capacity	128 GB	
Height	0.276 in (7 mm)	
Width	2.76 in (70 mm)	
Interface	SATA 3 (6 Gb/s)	
Performance	Maximum Sequential Read	Maximum Sequential Write
	415 MB/s	175 MB/s
Logical Blocks	250,069,680	
Operating Temperature	32° to 158° F (0° to 70° C) [case temp]	
Features	ATA Security; ATA-8; SATA 3.0; DIPM; TRIM	



QuickSpecs

Technical Specifications

SATA 6 Gb/s 180 GB*, 2.5-inch SATA Solid State Drive	Drive Weight	78 Grams	
	Capacity	180 GB	
	Height	0.276 in (7 mm)	
	Width	2.76 in (70 mm)	
	Interface	SATA Gen 3 (6 Gb/s)	
	Performance	Maximum Sequential Read	Maximum Sequential Write
		Up to 510 MB/s	Up to 470 MB/s
	Logical Blocks	351,651,888	
	Operating Temperature	32° to 158°F (0° to 70°C) [case temp]	
	Features	ATA Security; ATA-8, SATA 3.0; DIPM; TRIM	
Security Features	TCG Opal 1 compliant		

SATA 6 Gb/s 240 GB*, 2.5-inch Solid State Drive	Drive Weight	78 Grams	
	Capacity	240 GB	
	Height	0.276 in (7 mm)	
	Width	2.76 in (70 mm)	
	Interface	SATA Gen 3 (6 Gb/s)	
	Performance	Maximum Sequential Read	Maximum Sequential Write
		550 MB/s	520 MB/s
	Logical Blocks	468,862,128	
	Operating Temperature	32° to 158°F (0° to 70°C) [case temp]	
	Features	ATA Security; ATA-8, SATA 3.0; DIPM; TRIM	

SATA 6 Gb/s 256 GB*, 2.5-inch SATA SED Solid State Drive	Drive Weight	78 Grams	
	Capacity	256 GB	
	Height	0.276 in (7 mm)	
	Width	2.76 in (70 mm)	
	Interface	SATA 3 (6 Gb/s)	
	Performance	Maximum Sequential Read	Maximum Sequential Write
		Up to 510 MB/s	Up to 450 MB/s
	Logical Blocks	500,118,192	
	Operating Temperature	32° to 158°F (0° to 70°C) [case temp]	
	Features	ATA Security; ATA-8 compliant; SATA 3.0; DIPM; TRIM	
Security Features	TCG Opal 2 Compliant		

QuickSpecs

Technical Specifications

512 GB 2.5" Solid State Drive	Weight	73 Grams	
	Capacity	512 GB	
	Height	0.276 in (7 mm)	
	Width	2.76 in (70 mm)	
	Interface	SATA 3 (6 Gb/s)	
	Performance	Maximum Sequential Read	Maximum Sequential Write
		Up to 460 MB/s	Up to 260 MB/s
	Logical Blocks	1,000,215,216	
	Operating Temperature	32° to 158°F (0° to 70°C) [case temp]	
	Features	ATA Security; ATA-8 compliant; SATA 3.0; DIPM; TRIM	

SATA 6Gb/s 120 GB*, 2242 M.2 Solid State Drive (EliteBook 820 only, will be available on EliteBook 840 and 850 in 1Q 2014)	Drive Weight	Up to 10 Grams	
	Capacity	120 GB	
	Height	0.138 in (3.5mm)	
	Width	0.866 in (22 mm)	
	Interface	M.2 SATA Gen3 (6 Gb/s)	
	Performance	Maximum Sequential Read	Maximum Sequential Write
		Up to 540 MB/s	Up to 520 MB/s
	Logical Blocks	234,441,648	
	Operating Temperature	32° to 158°F (0° to 70°C) [case temp]	
	Features	ATA Security; ATA-8, SATA 3.0; DIPM; TRIM	

* For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 16 GB (for Windows 7) and 36 GB (for Windows 8) of system disk is reserved for the system recovery software.

** * FIPS-certified, hardware-based AES-256 encryption image.

SECURITY

HP Fingerprint Reader (optional)	Mobile Voltage Operation	3.0V-3.6V
	Operating Temperature	14° - 167°F (-10° - 75°C)
	Current Consumption Image	36 mA peak
	Low Latency Wait for Finger	950 uA
	Capture Rate	6000 lines/sec
	ESD Resistance	IEC 61000-4-2 4B (±15KV)
	Detection Matrix	200*1 (plus another secondary line) 508 dpi 12*3 mm sensor area

Technical Specifications

Smart Card Reader	Smart card standard	PC/SC 2.0 for Windows smart card standard				
	Dimensions (L x W x H)	0.41x 0.08 x 0.32 in (10.5 x 2 x 8.2 mm)				
	Smart Card support	ISO 7816 Class A and AB smart cards				
	Smart Card Interface	Smart Card Interface with T = 0 and T = 1 support Support I2C memory card, SLE4418, SLE4428, SLE4432, SLE4442, SLE4436, SLE5536, SLE6636, AT88SC1608, AT45D041 card and AT45DB041 card via external EEPROM				
	Operating systems	No driver is required for this device. Native support is provided by the operating system.				
	Power	<table border="0"> <tr> <td style="vertical-align: top;">Normal Mode</td> <td>With card present, before being suspended: 40.9 mA Without card present, before being suspended: 33.16 mA After being suspended with smart card present: 380 µA After being suspended without smart card present: 380 µA</td> </tr> <tr> <td style="vertical-align: top;">Power Saving Mode</td> <td>With card present, before being suspended: 40.6 mA Without card present: 380 µA After being suspended with smart card present: 380 µA</td> </tr> </table>	Normal Mode	With card present, before being suspended: 40.9 mA Without card present, before being suspended: 33.16 mA After being suspended with smart card present: 380 µA After being suspended without smart card present: 380 µA	Power Saving Mode	With card present, before being suspended: 40.6 mA Without card present: 380 µA After being suspended with smart card present: 380 µA
Normal Mode	With card present, before being suspended: 40.9 mA Without card present, before being suspended: 33.16 mA After being suspended with smart card present: 380 µA After being suspended without smart card present: 380 µA					
Power Saving Mode	With card present, before being suspended: 40.6 mA Without card present: 380 µA After being suspended with smart card present: 380 µA					
	Features	<ul style="list-style-type: none"> • Support single slot • Support T0, T1 protocol • Support I2C memory card, SLE4418, SLE4428, SLE4432, SLE4442, SLE4436, • SLE5536, SLE6636, AT88SC1608, AT45D041 card and AT45DB041 card via external EEPROM • Support ISO7816 Class A, B and C (5V/3V/1.8V) card • Implemented as an USB full speed device with bulk transfer endpoint, Mass • Storage endpoint • Built-in PLL for USB and Smart Card clocks requirement • Support EEPROM for USB descriptors customization (PID/VID/iManufacturer/iProduct/Serial Number), Direct Web Page Link, and accessing memory card module. • EEPROM programmable via USB interface • Support software update for memory card module • Support Direct Web Page Link via configuration in external EEPROM • Support short APDU and extended APDU • Compatible with Microsoft USB-CCID driver • Support remote wake up through inserting card/removing card • Support USB selective suspend • Support Power Saving Mode (Using one pin to select between Normal/PWR Saving Mode) • Support card power over current protection mechanism • Built in resonator. • Support USB LPM (Link Power Management) features. • Embedded clock source. 				

Technical Specifications

NETWORKING/COMMUNICATIONS

HP 3110 HSPA+ Mobile Broadband Module*	Technology/Operating Bands	WCDMA/HSDPA/HSUPA/HSPA+: 850 MHz/900 MHz/1700 MHz (AWS)/1900 MHz/2100 MHz GPRS/EDGE: 850 MHz/900 MHz/1800 MHz/1900 MHz GPS: L1
	Wireless Protocol Standards	GSM/GPRS/EDGE: Class C, Multi-slot class 10 operation, coding schemes CS1 - CS4 and MSC1 - MSC9. UMTS/WCDMA: Release 99 and Release 7 Advanced Receiver Type 3i
	Wireless Parametric Standards	Complies with 3GPP specifications
	Maximum Data Rates	GPRS: UL 85.6 kbps/DL 107kbps EDGE: UL 236.8 kbps/DL 296 kbps WCDMA CS:UL 64 kbps/DL 64 kbps
	GPS	Standalone, A-GPS (Internet- and Network assisted)
	GPS Bands	1575.42 MHz (± 1.023 MHz)
	Maximum Output Power	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 +1 / -3 dBm (class 3)
	Maximum Power Consumption	>33 dBm (peak); >24 dBm (average)
	Power Consumption, Sleep Mode	5 mA
	Power Management	USB selective suspend; Integrated notebook wireless button
	Antenna Type	Dual high efficiency 5 band antennae with spatial diversity, mounted in the display enclosure
	Form Factor	PCI-Express MiniCard, USB 2.0 interface
	Weight	<6 g
	Dimensions (Length x Width x Thickness)	2.01 x 1.18 x 0.18 in (42 x 30 x 2.3 mm)
	Voltage, Operating	3.135 v - 4.4V (3.3 V is typical)
	Temperature, operating (from TIA/EIA/IS-98-D)	14° to 131° F (-10° to 55° C) (full RF performance) -4° to 158° F (-20° to 70° C) (reduced RF performance)
	Temperature, Non-operating, 96 hours (from MIL-STD 202 Method 108)	-40° to 185° F (-40° to 85° C)
	Humidity, Non-operating	RH5% to RH95%
	Configuration utilities	HP Connection Manager
	LED Activity	LED Off - Radio Off; Solid LED On - Radio On

Technical Specifications

* Mobile Broadband is an optional feature sold separately or as an add on feature. Connection requires wireless data service contract, network support, and is not available in all areas. Contact service provider to determine the coverage area and availability. Connection speeds will vary due to location, environment, network conditions, and other factors.

HP It4111 LTE/EV-DO/HSPA+ Gobi 4G WWAN*	Technology/Operating Bands	LTE FDD all bands with diversity: 1900 MHz (Band II) ¹ , 1700/2100MHz (Band IV (AWS), 850 MHz (Band V), 700MHz (Band XIII), 700MHz (Band XVII), 1900MHz G Block (Band XXV) WCDMA/HSDPA/HSUPA/HSPA+: all bands with diversity: 2100 MHz (Band I), 1900 MHz (Band II) , AWS 1700/2100MHz (Band IV), 850 MHz (Band V), 800 MHz (Band VIII) GSM/GPRS/EDGE: 1900 MHz, 1800 MHz , 850 MHz , 900 MHz CDMA: Cellular 800MHz (BC0), PCS 1900MHz (BC1)
	Wireless Protocol Standards	3GPP Release 8 LTE Specification WCDMA R99, 3GPP Release 5, 6 and 7 UMTS Specification EVDO Release 0 and Release A
	Wireless Parametric Standards	Complies with 3GPP specifications Release 8 for LTE
	Maximum Data Rates	LTE (Category 3): 100 Mbps (Download), 50Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21.6 Mbps (Download), 5.76 Mbps (Upload) EDGE: 236.8 kbps (Download), 236.8 kbps (Upload) GPRS: 85.6 kbps(Download), 85.6 kbps (Upload)
	GPS	Standalone GPS, A-GPS, GPS XTRA
	GPS Bands	1575.42 MHz (± 1.023 MHz), GLONASS 1596-1607MHz
	Maximum Output Power	LTE: +23 dBm (+/- 1 dBm) WCDMA: +23 dBm (+/- 1 dBm) GSM850/900, GMSK: +32dBm (+/- 1dBm) GSM850/900, 8PSK: +27dBm (+/- 1dBm) DCS1800 / PCS 1900, GMSK: +29dBm (+/- 1dBm) DCS1800 / PCS 1900, 8PSK: +26dBm (+/- 1dBm) CDMA: +24dBm (+/- 1dBm)
	Maximum Power Consumption	LTE: 1,200 mA (peak); <900 mA (average) WCDMA: 1,100 mA (peak); <800 mA (average) EGPRS: 2,500 mA (peak); <700 mA (average)
	Power Consumption, Sleep Mode	2 mA
	Power Management	USB selective suspend, Integrated notebook wireless button
	Antenna Type	Dual high efficiency multi-band antennae with spatial diversity
	Form Factor	M.2, 3042-S3 Key B
	Weight	6 g
	Dimensions (Length x Width x Thickness)	42 mm × 30 mm × 2.3 mm
	Voltage, Operating	3.135 V to 4.4 V (3.3 V +1.1V/-0.165V)
	Temperature, operating (from TIA/EIA/IS-98-D)	-13° to 140° F (-25° to 60° C)
	Temperature, non-operating, 96 hours (from MIL-STD 202 Method 108)	-40° to 185° F (-40° to 85° C)
	Humidity, Non-operating	95% relative humidity for 48 hours @ 185° F (85° C) (non-condensing)

Technical Specifications

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

¹ 1900 MHz (Band II) and 850 MHz (Band V) not supported at launch but support planned in a future firmware update.

* 4G LTE not available on all products, in all regions and only available on products featuring Intel processors. WWAN use requires separately purchased service contract. Check with service provider for coverage and availability in your area. Connection speeds will vary due to location, environment, network conditions, and other factors.

HP It4112 LTE/HSPA+ Gobi 4G Module*	Technology/Operating Bands	LTE FDD all bands with diversity: 2100 MHz (Band I), 1900 MHz (Band II), 1800 MHz (Band III), 850 MHz (Band V), 2600 MHz (Band VII), 900 MHz (Band VIII), 800 MHz (Band XX, DD800) WCDMA/HSDPA/HSUPA/HSPA+ all bands with diversity: 2100 MHz (Band I), 1900 MHz (Band II), 800 MHz (Band V), 900 MHz (Band VIII) GSM/GPRS/EDGE: 1900 MHz (Band II), 1800 MHz (Band III), 850 MHz (Band V), 900 MHz (Band VIII)
	Wireless Protocol Standards	3GPP Release 8 LTE Specification WCDMA R99, 3GPP Release 5, 6 and 7 UMTS Specification
	Wireless Parametric Standards	Complies with 3GPP specifications Release 8 for LTE
	Maximum Data Rates	LTE (Category 3): 100 Mbps (Download), 50Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21.6 Mbps (Download), 5.76 Mbps (Upload) EDGE: 236.8 kbps (Download), 236.8 kbps (Upload) GPRS: 85.6 kbps(Download), 85.6 kbps (Upload)
	GPS	Standalone
	GPS Bands	1575.42 MHz (± 1.023 MHz), GLONASS 1596-1607MHz
	Maximum Output Power	LTE: +23 dBm (+/- 2 dBm) WCDMA: +23.5 dBm (+/- 1 dBm) GPRS Band II, III: +29.5 dBm (+/- 1 dBm) GPRS Band V, VIII: +32.5 dBm (+/- 1 dBm) EGPRS Band II, III: +26.5 dBM (+/-1.5 dBm) EGPRS Band V, VIII: +27.5 dBM (+/-1.5 dBm)
	Maximum Power Consumption	LTE: 1,200 mA (peak); <900 mA (average) WCDMA: 1,100 mA (peak); <800 mA (average) EGPRS: 2,800 mA (peak); <700 mA (average)
	Power Consumption, Sleep Mode	3 mA
	Power Management	USB selective suspend, Integrated notebook wireless button
	Antenna Type	Dual high efficiency multi-band antennae with spatial diversity
	Form Factor	M.2, USB 2.0 interface
	Weight	6 g
	Dimensions (Length x Width x Thickness)	42 mm × 30 mm × 2.3 mm
	Voltage, Operating	3.135 V to 4.4 V (3.3 V +1.1V/-0.165V)
	Temperature, operating (from TIA/EIA/IS-98-D)	14° to 131° F (-10° to 55° C)
	Temperature, non-operating, 96 hours (from MIL-STD 202 Method 108)	-40° to 185° F (-40° to 85° C)
	Humidity, Non-operating	95% relative humidity for 48 hours @ 185° F (85° C) (non-condensing)

Technical Specifications

LED Activity

LED Off - Radio Off; Solid LED On - Radio On

* 4G LTE not available on all products, in all regions and only available on products featuring Intel processors. WWAN use requires separately purchased service contract. Check with service provider for coverage and availability in your area. Connection speeds will vary due to location, environment, network conditions, and other factors.

Broadcom 802.11 a/b/g/n (2x2) with Bluetooth® v4.0 combo*

Wireless LAN Standards

IEEE 802.11a
IEEE 802.11b
IEEE 802.11g
IEEE 802.11n

Interoperability Frequency Band

Wi-Fi certified
802.11b/g/n

- 2.402 - 2.482 GHz

802.11a/n

- 4.9 - 4.95 GHz (Japan)
- 5.15 - 5.25 GHz
- 5.25 - 5.35 GHz
- 5.47 - 5.725 GHz
- 5.825 - 5.850 GHz
- 2.402 - 2.482 GHz

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: MCS 0 ~ MCS 15, (20MHz, and 40MHz)

Modulation

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

Security¹

- IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only
- AES-CCMP: 128 bit in hardware
- 802.1x authentication
- WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.
- WPA2 certification
- IEEE 802.11i
- Cisco Certified Extensions, all versions through V5
- WAPI

Network Architecture Models

Ad-hoc (Peer to Peer)
Infrastructure (Access Point Required)

Roaming

IEEE 802.11 compliant roaming between access points

Output Power²

- 2.4G: +13.5dBm minimum
- 5G: +12dBm minimum
- Maximum output power must be able to achieve modular regulatory certification with notebooks that have antennas >20cm from the user and peak gain of +3dBi at 2.4GHz and +4dBi at 5GHz

Power Consumption

Transmit: 2.0 W (max)
Receive: 1.6 W (max)
Idle mode (PSP): 250 mW (WLAN Associated)
Idle mode: 100 mW (WLAN unassociated)
Radio disabled: 75 mW

Power Management

ACPI and PCI Express compliant power management
802.11 compliant power saving mode

Technical Specifications

Receiver Sensitivity³	802.11b:-95 dBm (1 Mbps), -93 dBm (2 Mbps), -91 dBm (5.5 Mbps), -88 dBm (11 Mbps)
	802.11a/g:-90 dBm (6 Mbps), -89 dBm (9 Mbps), -87 dBm (12 Mbps), -85 dBm (18 Mbps), -82 dBm (24 Mbps), -79 dBm (36 Mbps), -76 dBm (48 Mbps), -74 dBm (54 Mbps)
	802.11n:-69 dBm (72.2 Mbps), -66 dBm (300 Mbps)
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications
Form Factor	PCI-Express Half-MiniCard
Dimensions	0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm)
Weight	3.1g
Operating Voltage	3.3v +/- 9%
Temperature	Operating 14° to 158° F (-10° to 70° 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)
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 (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
Bluetooth Specification	
	V4.0 High Speed, V2.1+EDR, backwards compatible with V1.1, 1.2 and 2.0
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)
Receiver Sensitivity	Better than -80 dBm at 0.1 % raw bit error rate
Power Consumption	Peak (Tx) 330 mW Peak (Rx) 230 mW Sleep <17 mW
Antenna	Internally integrated within module
Range	Up to 33 ft (10 m)
Electrical Interface	USB 2.0 compliant Microsoft Windows Plug and Play compliant
Bluetooth Software Supported	Broadcom Bluetooth for Windows Microsoft Windows Bluetooth Software
Link Topology	Point to Point, Multipoint Pico Nets up to 7 slaves
Security	Full support of Bluetooth Security Provisions

QuickSpecs

Technical Specifications

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
Bluetooth Profiles Supported	Generic Access Profile (GAP) Service Discovery Application Profile (SDAP) Serial Port Profile (SPP) Dial_Up Networking Profile (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) Generic Audio/Video Distribution Profile (GAVDP) Advanced Audio/Video Distribution Profile (A2DP) FAX Profile (FAX) Basic Imaging Profile (BIP) Headset Profile (HSP) Hands Free Profile (HFP) Basic Printing Profile (BPP) VDP (Video Distribution Profile) AVRCP (Audio Video Remote Control Profile)

* Wireless access point and internet service required. Availability of public wireless access points limited.

Intel Dual Band Wireless-N 7260AN 802.11 a/b/g/n (2x2) WiFi + Bluetooth 4.0 Combo Adaptor*	Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n
	Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliant with Microsoft Windows 7, Windows Vista and XP (details at: http://www.hp.com/go/notebooks/WLAN)
	Frequency Band	802.11b/g/n 2.402 - 2.482 GHz 802.11a/n 4.9 - 4.95 GHz (Japan) 5.15 - 5.25 GHz 5.25 - 5.35 GHz 5.47 - 5.725 GHz 5.825 - 5.850 GHz
	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: card will support rates for NSS=1 and NSS=2 for RX and TX for 20 and 40 MHz channels. Short and long guard interval shall be supported.
	Modulation	Direct Sequence Spread Spectrum CCK, BPSK, QPSK, 16-QAM, 64-QAM

Technical Specifications

Security¹	<ul style="list-style-type: none"> ● IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only ● AES-CCMP: 128 bit in hardware ● 802.1x authentication ● WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. ● WPA2 certification ● IEEE 802.11i ● Cisco Certified Extensions, all versions through CCX4 and CCX Lite ● WAPI
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between band Access Points
Output Power²	<ul style="list-style-type: none"> ● 2.4G: +13.5dBm minimum ● 5G: +12dBm minimum
Power Consumption	Transmit: 2.0 Watts Receive: 1.6 Watts Idle mode ³ : 250 mW (WLAN Associated) Idle mode: 100 mW (WLAN unassociated) Radio off: 75 mW
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity⁴	<p>802.11g:-90 dBm (6 Mbps), -89 dBm (9 Mbps), -87 dBm (12 Mbps), -85 dBm (18 Mbps), -82 dBm (24 Mbps), -79 dBm (36 Mbps), -76 dBm (48 Mbps), -74 dBm (54 Mbps)</p> <p>802.11b:-95 dBm (1 Mbps), -93 dBm (2 Mbps), -91 dBm (5.5 Mbps), -88 dBm (11 Mbps)</p> <p>802.11g:-90 dBm (6 Mbps), -89 dBm (9 Mbps), -87 dBm (12 Mbps), -85 dBm (18 Mbps), -82 dBm (24 Mbps), -79 dBm (36 Mbps), -76 dBm (48 Mbps), -74 dBm (54 Mbps)</p> <p>802.11n:-69 dBm (150 Mbps), -66 dBm (300 Mbps)</p>
Antenna Connections	2 U.FL type connectors (output impedance of 50 ± 2 ohms)
Form Factor	PCI-Express Half-MiniCard
Dimensions	0.12 x 1.06 x 1.18 in (3.1 x 26.8 x 30.0 mm)
Weight	3.1g
Operating Voltage	3.3v +/- 9%
Temperature	Operating 14° to 158° F (-10° to 70° 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)
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. 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

Technical Specifications

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

HP Integrated Module with Bluetooth 4.0+EDR Wireless Technology

Bluetooth Specification 4.0+EDR Compliant

Dimensions 1.18 x 0.26 x 0.13 in (30 x 6.5 x 3.25 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 -1.5 dBm to 4 dBm (Bluetooth Class II)

Receiver Sensitivity Better than -20 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 to 33 ft (10 m)

Electrical Interface USB 2.0 compliant

Microsoft Windows Plug and Play compliant

Bluetooth Software Supported Broadcom Bluetooth for Windows
Microsoft Windows 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

Bluetooth Profiles Supported Serial Port Profile (SPP)¹
Service Discovery Application Profile (SDAP)

Dial-Up Networking (DUN)^{1,2}

Generic Object Exchange Profile (GOEP)^{1,2}

Object Push Profile (OPP)^{1,2}

File Transfer Profile (FTP)

Synchronization Profile (SYNC)

Hard Copy Cable Replacement (HCRP)^{1,2}

Personal Area Networking Profile (PAN)^{1,2}

Human Interface Device Profile (HID)^{1,2}

FAX Profile (FAX)

Basic Imaging Profile (BIP)²

Headset Profile (HSP)

Hands Free Profile (HFP)

Advanced Audio Distribution Profile (A2DP)

Technical Specifications

1. indicates the profile is supported by Microsoft Windows XP SP2
 2. indicates the profile is part of Windows Vista
- * Wireless access point and internet service required. Availability of public wireless access points limited.

Intel Dual Band Wireless-AC 7260 802.11 ac (2x2) WiFi + BT 4.0 combo Adapter*	Wireless LAN Standards	<ul style="list-style-type: none"> IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac
	Interoperability	Wi-Fi certified
	Frequency Band	802.11b/g/n <ul style="list-style-type: none"> • 2.402 - 2.482 GHz 802.11a/n <ul style="list-style-type: none"> • 4.9 - 4.95 GHz (Japan) • 5.15 - 5.25 GHz • 5.25 - 5.35 GHz • 5.47 - 5.725 GHz • 5.825 - 5.850 GHz • 2.402 - 2.482 GHz
	Data Rates	<ul style="list-style-type: none"> • 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) • 802.11ac : MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz)
	Modulation	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM
	Security¹	<ul style="list-style-type: none"> • IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware • 802.1x authentication • WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification • IEEE 802.11i • Cisco Certified Extensions, all versions through CCX4 and CCX Lite • WAPI
	Network Architecture Models	Network Architecture Models
	Roaming	IEEE 802.11 compliant roaming between access points
	Output Power²	<ul style="list-style-type: none"> • 2.4G: +13.5dBm minimum • 5G: +12dBm minimum • Maximum output power must be able to achieve modular regulatory certification with notebooks that have antennas >20cm from the user and peak gain of +3dBi at 2.4GHz and +4dBi at 5GHz
	Power Consumption	Transmit: 2.0 W (max) Receive: 1.6 W (max) Idle mode (PSP): 250 mW (WLAN Associated) Idle mode: 100 mW (WLAN unassociated) Radio disabled: 75 mW

Technical Specifications

Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode	
Receiver Sensitivity³	802.11b:-95 dBm (1 Mbps), -93 dBm (2 Mbps), -91 dBm (5.5 Mbps), -88 dBm (11 Mbps) 802.11a/g:-90 dBm (6 Mbps), -89 dBm (9 Mbps), -87 dBm (12 Mbps), -85 dBm (18 Mbps), -82 dBm (24 Mbps), -79 dBm (36 Mbps), -76 dBm (48 Mbps), -74 dBm (54 Mbps) 802.11n:-69 dBm (72.2 Mbps), -66 dBm (300 Mbps)	
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications	
Form Factor	PCI-Express Half-MiniCard	
Dimensions	0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm)	
Weight	3.1g	
Operating Voltage	3.3v +/- 9%	
Temperature	Operating	14° to 158° F (-10° to 70° 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)
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. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).	
Bluetooth Specification	V4.0 High Speed, V2.1+EDR, backwards compatible with V1.1, 1.2 and 2.0	
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)	
Receiver Sensitivity	Better than -80 dBm at 0.1 % raw bit error rate	
Power Consumption	Peak (Tx) 330 mW Peak (Rx) 230 mW Sleep <17 mW	
Antenna	Internally integrated within module	
Range	Up to 33 ft (10 m)	
Electrical Interface	USB 2.0 compliant Microsoft Windows Plug and Play compliant	
Bluetooth Software Supported	Broadcom Bluetooth for Windows Microsoft Windows Bluetooth Software	

Technical Specifications

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
Bluetooth Profiles Supported	Generic Access Profile (GAP) Service Discovery Application Profile (SDAP) Serial Port Profile (SPP) Dial_Up Networking Profile (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) Generic Audio/Video Distribution Profile (GAVDP) Advanced Audio/Video Distribution Profile (A2DP) FAX Profile (FAX) Basic Imaging Profile (BIP) Headset Profile (HSP) Hands Free Profile (HFP) Basic Printing Profile (BPP) VDP (Video Distribution Profile) AVRCP (Audio Video Remote Control Profile)

* Wireless access point and internet service required. Availability of public wireless access points limited.

Intel Dual Band Wireless-N 7260NB 802.11 a/b/g/n (2x2) WiFi Adapter*

Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n
Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliant with Microsoft Windows 7, Windows Vista and XP (details at: http://www.hp.com/go/notebooks/WLAN)
Frequency Band	802.11b/g/n 2.402 - 2.482 GHz 802.11a/n 4.9 - 4.95 GHz (Japan) 5.15 - 5.25 GHz 5.25 - 5.35 GHz 5.47 - 5.725 GHz 5.825 - 5.850 GHz
Antenna Structure	2 transmit; 2 receive (2x2)

Technical Specifications

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: card will support rates for NSS=1 and NSS=2 for RX and TX for 20 and 40 MHz channels. Short and long guard interval shall be supported.
Modulation	Direct Sequence Spread Spectrum CCK, BPSK, QPSK, 16-QAM, 64-QAM
Security¹	<ul style="list-style-type: none"> • IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware • 802.1x authentication • WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification • IEEE 802.11i • Cisco Certified Extensions, all versions through CCX4 and CCX Lite • WAPI
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between band Access Points
Output Power²	<ul style="list-style-type: none"> • 2.4G: +13.5dBm minimum • 5G: +12dBm minimum
Power Consumption	Transmit: 2.0 Watts Receive: 1.6 Watts Idle mode ³ : 250 mW (WLAN Associated) Idle mode: 100 mW (WLAN unassociated) Radio off: 75 mW
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity⁴	802.11g:-90 dBm (6 Mbps), -89 dBm (9 Mbps), -87 dBm (12 Mbps), -85 dBm (18 Mbps), -82 dBm (24 Mbps), -79 dBm (36 Mbps), -76 dBm (48 Mbps), -74 dBm (54 Mbps) 802.11b:-95 dBm (1 Mbps), -93 dBm (2 Mbps), -91 dBm (5.5 Mbps), -88 dBm (11 Mbps) 802.11g:-90 dBm (6 Mbps), -89 dBm (9 Mbps), -87 dBm (12 Mbps), -85 dBm (18 Mbps), -82 dBm (24 Mbps), -79 dBm (36 Mbps), -76 dBm (48 Mbps), -74 dBm (54 Mbps) 802.11n:-69 dBm (150 Mbps), -66 dBm (300 Mbps)
Antenna Connections	2 U.FL type connectors (output impedance of 50 ± 2 ohms)
Form Factor	PCI-Express Half-MiniCard
Dimensions	0.12 x 1.06 x 1.18 in (3.1 x 26.8 x 30.0 mm)
Weight	3.1g
Operating Voltage	3.3v +/- 9%
Temperature	Operating 14° to 158° F (-10° to 70° 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)

QuickSpecs

Technical Specifications

Altitude	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
LED Activity	LED Amber - 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.
- * Wireless access point and internet service required. Availability of public wireless access points limited.

AUDIO/MULTIMEDIA - DTS SOUND+

Hardware	Implementation	IDT 92HD91
	Function Key	Volume up, volume down, and mute
	Volume Controls	
	Full Duplex	Yes
	Microphone In	Stereo
	Headphone/Line Out	Stereo
	Integrated Microphone	Yes, dual digital microphone array when equipped with optional webcam

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	2 Watts
	Impedance	4 Ohms

POWER



Technical Specifications

HP 45W Smart AC Adapter	Dimensions	3.78 x 1.95 x 0.88 in (9.6 x 4.95 x 2.24 cm)	
		Input	90 to 265 VAC
	Output	Input Efficiency	87% min at 115 VAC
		Input frequency range	47 to 63 Hz
		Input AC current	1.4 A at 90 VAC and maximum load
		Output power	45W
		DC output	19.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<8A, Over voltage protection- 29V max automatic shutdown
	Connector	3 pin/grounded, mates with interchangeable cords	
	Environmental Design	Operating temperature	32° to 95° F (0° to 35° C)
		Non-operating (storage) temperature	-4° to 121° F (-20° to 85° C)
		Altitude	0 to 16,405 ft (0 to 5,000 m)
Humidity		0% to 95%	
Storage Humidity		0% to 95%	
EMI and Safety Certifications	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; Reliability - failure rate of less than 0.1% annually within the first three years of operation.		

HP 65W EM Smart AC Adapter	Dimensions	4.98 x 1.97 x 1.18 in (12.65 x 5.0 x 3.0 cm)	
		Weight	0.62 lb (290 g) max
	Output	Input	90 to 265 VAC
		Input Efficiency	87% min at 115 VAC
		Input frequency range	47 to 63 Hz
		Input AC current	1.7 A at 90 VAC
		Output power	65W
		DC output	19.5V
		Hold-up time	5 msec at 115 VAC input
	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 95° F (0° to 35° C)
		Non-operating (storage) temperature	-4° to 185° F (-20° to 85° C)
Altitude		0 to 10,000 ft (0 to 3,048 m)	
Humidity		20% to 95%	
Storage Humidity		10% to 95%	
EMI and Safety Certifications	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.		

QuickSpecs

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	87% min at 115 VAC
		Input frequency range	47 to 63 Hz
		Input AC current	1.7 A at 90 VAC, 0.85 A at 180 VAC
	Output	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
	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%
	Storage Humidity	10% to 90%	
EMI and Safety Certifications	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.		

3-cell HP Long Life (24Whr) Lithium-Ion Polymer	Dimensions (H x W x L)	0.85 x 1.76 x 10.59 in (2.16 x 4.46 x 26.9cm)		
	Weight	169.3 g		
	Cells/Type	3-cell Lithium-Ion Polymer		
	Energy	Voltage	11.1	
		Amp-hour capacity	4.4Ah	
		Watt-hour capacity	24Wh	
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)	
		Operating (Discharging)	14° to 122° F (-10° to 50° C)	
		Non-operating	-4° to 122° F (-20° to 50° C)	
	Battery Re-Charge Time	System in OFF or Standby Mode	2.5 hours	
	Fuel Gauge LED	No		
Warranty	1 year or 3 year* *Battery warranty depends on the platform warranty.			
Optional Travel Battery Available	No			



QuickSpecs

Technical Specifications

3-cell HP Long Life (26Whr) Lithium-Ion Polymer	Dimensions (H x W x L)	0.85 x 1.76 x 10.59 in (2.16 x 4.46 x 26.9cm)		
	Weight	168.5 g		
	Cells/Type	3-cell Lithium-Ion Polymer		
	Energy	Voltage	11.1	
		Amp-hour capacity	4.4Ah	
		Watt-hour capacity	26.3Wh	
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)	
		Operating (Discharging)	14° to 122° F (-10° to 50° C)	
		Non-operating	-4° to 122° F (-20° to 50° C)	
	Battery Re-Charge Time	System in OFF or Standby Mode	2.5 hours	
	Fuel Gauge LED	No		
Warranty	1 year or 3 year* *Battery warranty depends on the platform warranty.			
Optional Travel Battery Available	No			

3-cell HP Long Life (46Whr) Lithium-Ion Polymer	Dimensions (H x W x L)	0.85 x 1.76 x 10.59 in (2.16 x 4.46 x 26.9cm)		
	Weight	259 g		
	Cells/Type	3-cell Lithium-Ion Polymer		
	Energy	Voltage	11.1	
		Amp-hour capacity	4.4Ah	
		Watt-hour capacity	46Wh	
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)	
		Operating (Discharging)	14° to 122° F (-10° to 50° C)	
		Non-operating	-4° to 122° F (-20° to 50° C)	
	Battery Re-Charge Time	System in OFF or Standby Mode	3 hours	
	Fuel Gauge LED	No		
Warranty	1 year or 3 year* *Battery warranty depends on the platform warranty.			
Optional Travel Battery Available	No			

QuickSpecs

Technical Specifications

3-cell HP Long Life (50Whr) Lithium-Ion Polymer	Dimensions (H x W x L)	0.85 x 1.76 x 10.59 in (2.16 x 4.46 x 26.9 cm)		
	Weight	262 g		
	Cells/Type	3-cell Lithium-Ion Polymer		
	Energy	Voltage	11.1	
		Amp-hour capacity	4.4Ah	
		Watt-hour capacity	50Wh	
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)	
		Operating (Discharging)	14° to 122° F (-10° to 50° C)	
		Non-operating	-4° to 122° F (-20° to 50° C)	
	Battery Re-Charge Time	System in OFF or Standby Mode	3 hours	
	Fuel Gauge LED	No		
Warranty	1 year or 3 year* *Battery warranty depends on the platform warranty.			
Optional Travel Battery Available	No			

HP 6-cell Lithium-Ion Long Life Slice Battery (60 WHr)	Dimensions (H x W x L)	0.28 x 12.6 x 8.39in (0.7 x 32 x 21.3 cm)		
	Weight	1.72 lb (0.78 kg)		
	Cells/Type	6-cell Lithium-Ion		
	Energy	Voltage	11.4V	
		Amp-hour capacity	5.4Ah	
		Watt-hour capacity	60Wh	
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)	
		Operating (Discharging)	14° to 122° F (-10° to 50° C)	
		Non-operating	-4° to 122° F (-20° to 50° C)	
	Battery Re-Charge Time	System in OFF or Standby Mode	3.5 to 5 hours	
		System ON	4 to 7 hours	
Fuel Gauge LED	No			
Optional Travel Battery Available	No			

QuickSpecs

Technical Specifications

ENVIRONMENTAL

Eco-Label Certifications & Declarations

This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- IT ECO declaration
- US ENERGY STAR®
- EPEAT Gold registered in the United States. See <http://www.epeat.net> for registration status in your country.

System Configuration

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a "Typically Configured Notebook".

HP EliteBook 820 G1 Notebook PC

Energy Consumption (in accordance with US ENERGY STAR® test method)

	115VAC, 60Hz	230VAC, 50Hz	100VAC, 60Hz
Normal Operation	5.61 W	5.88 W	5.64 W
Sleep	0.34 W	0.37 W	0.34 W
Off	0.21 W	0.24 W	0.21 W

NOTE:

Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.

Heat Dissipation*

	115VAC, 60Hz	230VAC, 50Hz	100VAC, 60Hz
Normal Operation	19 BTU/hr	20 BTU/hr	19 BTU/hr
Sleep	1 BTU/hr	1 BTU/hr	1 BTU/hr
Off	1 BTU/hr	1 BTU/hr	1 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)

	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Typically Configured - Idle	2.96	23
Fixed Disk - Random writes	3.13	24

Batteries

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

Batteries used in the product do not contain:

- Mercury greater than 1ppm by weight
- Cadmium greater than 20ppm by weight

Battery size: CR2032 (coin cell)

Battery type: Lithium

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

Battery type:

Additional Information

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/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).



Technical Specifications

- This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold level, see www.epeat.net
- Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.
- This product contains 0.0% post-consumer recycled plastic (by wt.)
- This product is 97.3% recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
 - PAPER/Corrugated 600.9 g
- Internal:
 - PLASTIC/EPE (Expanded Polyethylene) 34.3 g
 - PLASTIC/Polyethylene low density 27.2 g
- The PAPER/Corrugated packaging material is made from 80 % recycled content.
- The PLASTIC/EPE (Expanded Polyethylene) packaging materials contains at least 50% recycled content.
- The PLASTIC/Polyethylene low density packaging materials contains at least 50% recycled content.

HP EliteBook 840 G1 Notebook PC

Energy Consumption (in accordance with US ENERGY STAR® test method)

	115VAC, 60Hz	230VAC, 50Hz	100VAC, 60Hz
Normal Operation	5.51 W	5.15 W	5.36 W
Sleep	0.85 W	0.88 W	0.85 W
Off	0.36 W	0.36 W	0.35 W

NOTE:

Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.

Heat Dissipation*	115VAC, 60Hz	230VAC, 50Hz	100VAC, 60Hz
Normal Operation	19 BTU/hr	18 BTU/hr	18 BTU/hr
Sleep	3 BTU/hr	3 BTU/hr	3 BTU/hr
Off	1 BTU/hr	1 BTU/hr	1 BTU/hr

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

QuickSpecs

Technical Specifications

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

	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Typically Configured - Idle	3.3	26
Fixed Disk - Random writes	4	33

Batteries

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

Batteries used in the product do not contain:

- Mercury greater than 1ppm by weight
- Cadmium greater than 20ppm by weight

Battery size: CR2032 (coin cell)

Battery type: Lithium

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

Battery type:

Additional Information

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/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
- Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.
- This product contains 9.3% post-consumer recycled plastic (by wt.)
- This product is 98.1% recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
 - PAPER/Corrugated 539.5 g
- Internal:
 - PLASTIC/EPE (Expanded Polyethylene) 49.5 g
 - PLASTIC/Polyethylene low density 26 g
- The PAPER/Corrugated packaging material is made from 80 % recycled content.
- The corrugated paper packaging materials contains at least 60% recycled content.

QuickSpecs

Technical Specifications

HP EliteBook 850 G1 Notebook PC

Energy Consumption (in accordance with US ENERGY STAR® test method)

	115VAC, 60Hz	230VAC, 50Hz	100VAC, 60Hz
Normal Operation	5.31 W	5.41 W	5.25 W
Sleep	0.93 W	0.91 W	0.95 W
Off	0.4 W	0.4 W	0.41 W

NOTE:

Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.

Heat Dissipation*

	115VAC, 60Hz	230VAC, 50Hz	100VAC, 60Hz
Normal Operation	18 BTU/hr	19 BTU/hr	18 BTU/hr
Sleep	3 BTU/hr	3 BTU/hr	3 BTU/hr
Off	1 BTU/hr	1 BTU/hr	1 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)

	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Typically Configured - Idle	3.27	26
Fixed Disk - Random writes	4.03	33

Batteries

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

Batteries used in the product do not contain:

- Mercury greater than 1ppm by weight
- Cadmium greater than 20ppm by weight

Battery size: CR2032 (coin cell)

Battery type: Lithium

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

Battery type:

Additional Information

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/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
- Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.
- This product contains 8.4 % post-consumer recycled plastic (by wt.)
- This product is 98.1 % recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
 - PAPER/Corrugated 513.5 g



Technical Specifications

- Internal:
 - PLASTIC/EPE (Expanded Polyethylene) 37.1 g
 - PLASTIC/Polyethylene low density 26 g
- The PAPER/Corrugated packaging material is made from 80 % recycled content.
- The PLASTIC/EPE (Expanded Polyethylene) materials contains at least 50% recycled content.
- The PLASTIC/Polyethylene low density) materials contains at least 50% recycled content.

All models

Material Usage

This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at:

<http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf>):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants - may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel - finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) - except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

Packaging Usage

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

End-of-life Management and Recycling

Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: <http://www.hp.com/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

QuickSpecs

Technical Specifications

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>

Eco-label certifications

<http://www8.hp.com/us/en/hp-information/environment/ecolabels.html>

ISO 14001 certificates:

http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf

and

<http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf>

Country of Origin

TBD

QuickSpecs

Options and Accessories (sold separately and availability may vary by country)

Type	Description	Part #
Cases	HP Essential Top Load Case (up to 15.6")	H2W17AA#xxx
	HP Business Top Load Case	H5M92AA
	HP Business Slim Top Load Case	H5M91AA
	HP Professional Series Carrying Case (up to 15.6")	H4J90AA
	HP Professional Slim Top Load Case (up to 17.3")	H4J91AA
	HP Professional Leather Case (up to 17.3")	H4J94AA
Docking	HP 2013 UltraSlim Docking Station	D9Y32AA#xxx
	HP Display and Notebook Stand	AW662AA#xxx
	HP USB 2.0 Port Replicator	H1L07AA#xxx
	HP USB 3.0 Port Replicator	H1L08AA#xxx
Input/Output - Mice	HP Comfort Grip Wireless Mouse	H2L63AA
	HP 3-button USB Laser Mouse	H4B81AA
	HP X4000b Bluetooth Mouse	H3T50AA#xxx
	HP Ultra Mobile Wireless Mouse	H6F25AA
Input/Output - Keyboards	HP Stylish Wireless KB/Mouse	H4B79AA
Memory	HP 2GB DDR3L-1600 1.35V SODIMM	H6Y73AA#xxx
	HP 4GB DDR3L-1600 1.35V SODIMM	H6Y75AA#xxx
	HP 8GB DDR3L-1600 1.35V SODIMM	H6Y77AA#xxx
Adapters	90W Slim Combo Adapter	H4A41AA#xxx
	HP Smart 65W Travel AC Adapter	AU155AA#xxx
	90W Smart AC Adapter	ED495AA#xxx
	HP 65W Slim Adapter	H6Y82AA
	HP 90W Slim Combo Adapter w/ USB	H6Y84AA
Batteries	HP CO06XL Notebook Battery (EliteBook 840 only)	E7U23AA
	HP CM03XL Notebook Battery (EliteBook 840 and 850 only)	E7U24AA
	HP SB03XL Notebook Battery (EliteBook 820 only)	E7U25AA
Security	HP ExpressCard Smart Card Reader	AJ451AA
	HP Docking Station Cable Lock	AU656AA#xxx
	HP UltraSlim Keyed Cable Lock	H4D73AA
Storage - External Storage	HP External USB Optical Drive	F2B56AA



Options and Accessories (sold separately and availability may vary by country)

Storage - SSD	HP 180GB* Solid State Drive	H4T75AA
	HP 256GB* SED Solid State Drive	H2C38AA
	<i>* For hard drives and solid state drives, GB = 1 billion bytes. Actual formatted capacity is less. Up to 16 GB (for Windows 7) and 36 GB (for Windows 8) of system disk is reserved for the system recovery software.</i>	
Health and Education	20 Notebook Managed Charging Cart	QL489AA#xxx
	20 Notebook Charging Cart	QL488AA
	30 Notebook Managed Charging Cart	QL490AA
	30 Notebook Charging Cart	H4F31AA#ABA
	HP Presentation Station 1000	QL815AA
Monitors	HP EliteDisplay E231 23-inch LED Monitor	C9V75AA/A8/AS/AT
	HP LA1956x 19-inch LED Monitor	A9S75AA/A8/AS/AT
	HP LA2405x 24-inch LED Monitor	A9P21AA/A8/AT
	HP ProDisplay P221 21.5" LED Monitor	C9E49AA/A8/AS/AT
	HP ProDisplay P201 20" LED Monitor	C9F26AA/A8/AS/AT

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