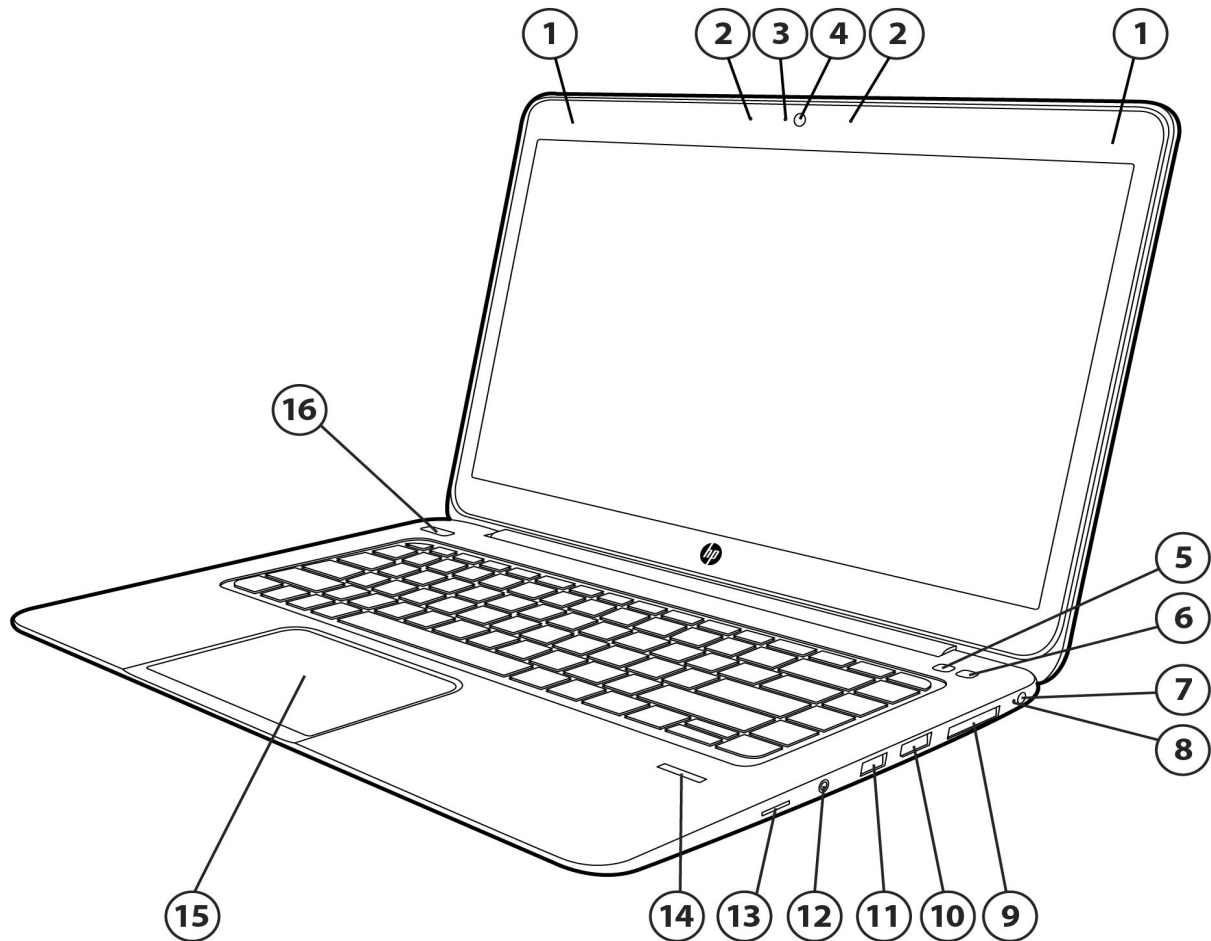
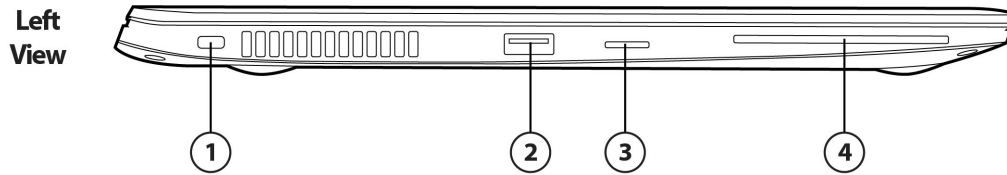


### Overview



- |  |   |
|--|---|
| 1. WLAN antennas (2)                         | 9. Docking connector  |
| 2. Dual-microphone array                     | 10. DisplayPort 1.2   |
| 3. Webcam light (only with optional webcam)  | 11. USB 3.0 port  |
| 4. Optional 720p HD webcam                   | 12. Headphone/microphone combo  |
| 5. Wireless on/off button with LED indicator | 13. WWAN sim slot with plug (Plug is removable only for units with optional WWAN) |
| 6. Speaker mute button with LED indicator    | 14. Fingerprint reader  |
| 7. Power connector                           | 15. ForcePad™   |
| 8. Power LED indicator                       | 16. Power button  |

### Overview



1. Security lock
2. USB 3.0 charging port
3. Micro-SD card slot
4. Smart Card Reader

### At A Glance

- Windows 8.1 versions, Windows 7 versions, SuSE Linux or FreeDOS 2.0
- Magnesium display enclosure, magnesium-reinforced chassis, wear-resistant platinum-colored HP DuraFinish, HP DisplaySafe frame, HP DuraKeys, precision metal-alloy hinges, aluminum keyboard deck
- 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 and i5 with Turbo Boost Technology
- Integrated Intel HD Graphics 4400 or 5000 (i7-4650U)
- 14.0-inch diagonal HD+ or FHD\* widescreen LED-backlit display
- Choice of 256 GB SED Solid State Drive (available May 2014), 256 GB Solid State Drive, 180 GB SED Solid State Drive (available Spring 2014), 180 GB Solid State Drive, or 128 GB Solid State Drive
- Built-in docking for a desktop-like experience
- DisplayPort 1.2 for high resolution support
- HD Audio with DTS Studio Sound™ optimized for high fidelity audio during video conferencing and web-based training
- 6-cell (42 WHr) HP Long Life battery for battery life up to 9 hours and 45 minutes
- ForcePad™ that enables multiple gestures and eliminates the need for repetitive motion and makes navigation easier
- Integrated Smart Card Reader and fingerprint reader for strong security authentication
- HP Premier Image with Microsoft Security Essentials and without trialware
- HP BIOSphere with HP Sure Start
- Flexible wireless connectivity options:
  - Optional integrated wireless mobile broadband 3G and 4G/LTE support
  - Integrated Intel® 802.11 a/b/g/n (2x2), Intel® 802.11 a/b/g/n (2x2) with Bluetooth® v4.0 Combo, or Intel® 802.11 a/b/g/n (2x2) AC with Bluetooth® v4.0 Combo
- Low halogen, ENERGY STAR qualified (with Microsoft OS) and EPEAT Gold registered in the U.S. (with Microsoft OS). EPEAT status varies by country- please see [epeat.net](http://epeat.net).

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

### Features

#### PRODUCT NAME

HP EliteBook Folio 1040 G1 Notebook PC

**NOTE:** Not all configurations qualify as an Ultrabook.

#### OPERATING SYSTEM

##### Preinstalled

Windows 8.1 Pro 64\*  
Windows 8.1 64\*  
Windows 7 Professional 32 (available through downgrade rights from Windows 8.1 Pro 64)\*\*  
Windows 7 Professional 64 (available through downgrade rights from Windows 8.1 Pro 64)\*\*  
Windows 7 Professional 32\*\*\*  
Windows 7 Professional 64\*\*\*  
Windows 7 Home Premium 32\*\*\*  
Windows 7 Home Premium 64\*\*\*  
FreeDOS 2.0  
SUSE Linux Enterprise

##### Supported

Windows 8 Enterprise\*  
Windows 7 Enterprise 32\*\*\*  
Windows 7 Enterprise 64\*\*\*  
Windows 7 Ultimate 32\*\*\*  
Windows 7 Ultimate 64\*\*\*

##### Certified

SUSE Linux Enterprise Desktop

\* Not all features are available in all editions of Windows 8.1. Systems may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows 8.1 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.

### Features

#### 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™ i7-4650U with Intel HD Graphics 5000 (1.7 GHz, 4 MB cache, 2 cores)\*

Up to 3.3 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

† Not available with vPro

\* 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.

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

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#### CHIPSET

Integrated with processor

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

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#### GRAPHICS

Integrated:

Intel® HD Graphics 4400

Intel® HD Graphics 5000

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### Features

#### DISPLAY

##### Internal

14.0" diagonal eDP, slim, LED-backlit HD\*\* 16:9 widescreen anti-glare SVA (1600 x 900)

14.0" diagonal eDP, slim, LED-backlit FHD\* widescreen anti-glare UWVA (1920 x 1080), 300 nits

##### External

Up to 32-bit per pixel color depth (250 nits)

##### DisplayPort

Supports resolutions up to 2560 x 1600, 30-bit color depth at 60 Hz, and full HD\* (1920 x 1080) monitors, 24-bit color depth at 120 Hz\* HD content required to view HD images.

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

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#### STORAGE AND DRIVES

##### Primary Storage Bay

##### Solid State Drive

SATA 6 Gb/s 128 GB\* Solid State

SATA 6 Gb/s 180 GB\* Solid State

SATA 6 Gb/s 180 GB\* SED Solid State (available Spring 2014)

SATA 6 Gb/s 256 GB\* Solid State

SATA 6 Gb/s 256 GB\* SED Solid State (available Spring 2014)

\* For hard drives and solid state drives, GB = 1 billion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 7) and up to 36 GB (for Windows 8.1) of system disk is reserved for the system recovery software.

**NOTE:** The EliteBook Folio is available in standard thin and light configurations for customers who value the ultra-thin design but prefer options such as a standalone HDD or require a self-encrypting hard drive. These configurations will not meet Intel's definition of an Ultrabook.

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#### MEMORY

##### Standard

DDR3L SDRAM (1600 MHz, 1.3v)

One SODIMM slot

##### Standard memory

4 GB soldered down

##### Maximum

8 GB\*

**NOTE:** Memory is not upgradeable by the end user.

\*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.

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### Features

## 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. Wireless LAN and integrated Bluetooth are also available (both are factory configurable only) and can be combined with any of the supported wireless WAN options.

### Broadband Wireless (WWAN)

HP It4111 LTE/EV-DO/SHPA+ Mobile Broadband Module <sup>\*</sup>, <sup>\*\*</sup>

HP It4112 LTE/HSPA+ Mobile Broadband Module (EMEA only) <sup>\*</sup>, <sup>\*\*</sup>

HP hs3110 HSPA+ Mobile Broadband Module <sup>\*</sup>

### Integrated wireless LAN options

Intel® 802.11 a/b/g/n (2x2) <sup>\*\*\*</sup>

Intel® 802.11 a/b/g/n (2x2) with Bluetooth® v4.0 Combo <sup>\*\*\*</sup>

Intel® 802.11 a/b/g/n (2x2) AC with Bluetooth® v4.0 Combo <sup>\*\*\*</sup>, <sup>\*\*\*\*</sup>

<sup>\*</sup> WWAN modules are only available if preconfigured. 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.

<sup>\*\*</sup> 4G LTE not available on all products, in all regions and requires Windows.

<sup>\*\*\*</sup> Wireless access point and Internet service is required and is not included. Availability of public wireless access points limited.

<sup>\*\*\*\*</sup> The specifications for the 802.11ac WLAN are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ac WLAN devices.

### Communications

Intel® 1218LM Gigabit Network connection (internal) <sup>\*</sup>

Optional Near Field Communication with Secure Element <sup>\*\*</sup>, <sup>\*\*\*</sup>

<sup>\*</sup> 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.

<sup>\*\*</sup> NFC ships enabled by default on Windows 8.1 and disabled by default on Windows 7.

<sup>\*\*\*</sup> Sold separately or as an option.

### Features

#### AUDIO/MULTIMEDIA

##### Audio

HD Audio with DTS Studio Sound  
Integrated stereo speakers  
Integrated dual-microphone array located in display  
Button for speaker mute; function keys for volume up and down  
Headphone/Microphone combo port

##### Webcam

Optional\* 720p HD\*\* webcam

- HD format (widescreen)
- Supports videoconferencing and still image capture
- High quality fixed focus lens
- Video capture at various resolutions up to 1280x720 resolution (720p) and up to 30fps
- M-JPEG compression supports higher frame rates for video capture and videoconferencing
- Improved low light sensitivity
- Improved dynamic range

\* Sold separately as an optional feature.

\*\* HD content required to view HD images.

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#### KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

##### Keyboard

The HP spill-resistant, backlit keyboard is designed using a thin layer of Mylar film under the keyboard and a drain system that funnels fluid through a hole in the bottom of the notebook. This minimizes the risk of damage to sensitive components underneath. The 101/102-key compatible keyboard features a full-pitch key layout with desktop keyboard features, such as the isolated inverted-T cursor control keys, editing keys, both left and right control and alt keys, 12 function keys, and 19.05 x 19.05 mm key pitch (center-to-center spacing). U.S. and International key layouts are available. Other features include hot keys for instant access to power conservation and brightness.

##### Pointing Devices

A pressure-sensing ForcePad™ that eliminates the need for repetitive motion and makes navigation easier

##### Buttons and Function Keys

Discrete buttons provide easy access to the following features: wireless on/off, and speaker mute. Function keys provide control of the following features: sleep mode, external display switching, volume down, volume up, microphone mute, backlit keyboard, and display brightness.

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### Features

#### SOFTWARE AND SECURITY

##### Preinstalled Software with Windows Operating System

HP BIOSphere with HP Sure Start\*  
Buy Office  
HP Connection Manager (Win 7)  
HP Wireless HotSpot\*\*  
HP Mobile Connect (EMEA only)  
HP PageLift  
HP Recovery Manager  
HP Support Assistant  
HP ePrint\*\*\*  
Lync Optimized\*\*\*\*

\* HP Sure Start is only available on the EliteBook 800 series, Workstation ZBook series and HP EliteBook Folio 1040.

\*\* 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 8.

\*\*\* 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](http://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.

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

**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 30 GB (for Windows 7) and up to 36 GB (for Windows 8.1) of system disk is reserved for the system recovery software.

##### Security

###### Standard

HP Trust Circles Standard (Available in Fall 2013)\*  
HP Client Security  
TPM 1.2 Embedded Security Chip  
Integrated Smart Card Reader  
HP Fingerprint Sensor (100%)  
Full Volume Encryption  
Security Lock Slot  
Microsoft Security Essentials

\* HP Trust Circles Standard, when included, allows up to 5 Trust Circles with up to 5 contacts in each Trust Circle. Optional Trust Circles Professional required for unrestricted number of Trust Circles and members contacts. Trust Circles Reader is available to allow a contact to participate in an invited Trust Circle. Requires Windows.

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



### Features

#### POWER

##### Power Supply

45W Smart AC Adapter  
45W Slim Smart AC Adapter non-slim 2 prong (Japan only)  
65W Smart EM AC Adapter  
65W Slim Smart AC Adapter  
Power cord included is either 3.2 feet or 6 feet (1.0 or 1.8 meter).  
Total length including external AC adapter is TBD feet (TBD meter).

##### Primary Battery

HP 6-Cell (42Whr) polymer long life battery

##### Battery Life\*

Up to 12 hours

##### System Standby Time

Up to TBD weeks

\* Windows 7 testing conducted by HP consisting of full battery discharge while running a series of productivity scripts against the following applications (**which may or may not be included with your particular product**): Adobe® AcrobatReader 7.0, Adobe® Illustrator® CS2, Adobe® Photoshop® CS2, Apple® Quicktime 7.1, Intervideo® WinDVD® 8, Macromedia® Flash 8, Microsoft® Office® 2003 Pro, Microsoft® Project 2003, and Winzip® 10.0. Prior to testing, the system was fully charged, display brightness was set at 60 nits, wireless was turned off, and auto dim, suspend, hibernate and all other programs, utilities, and services not essential to running the computer system or battery life test were disabled. 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.

##### Power Conservation

Hibernation  
Standby  
ACPI compliance

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#### ENVIRONMENTAL

US ENERGY STAR® qualified (with Microsoft OS)  
Low Halogen (does not cover adapters and power cords)  
IT ECO Declaration  
EPEAT® Gold in the U.S. See [www.epeat.net](http://www.epeat.net) for registration status by country.

**NOTE:** 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.

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### Features

#### WEIGHTS & DIMENSIONS

**Weight**

Starting at 3.3 lbs (1.49 kg) (Weight will vary by configuration.)

**Dimensions** (w x d x h)

13.31 x 9.19 x 0.63 in

33.8 x 23.35 x 1.59 cm

**NOTE:** Weight varies by configuration and components. Weight includes 6-cell battery, mSATA solid state drive, and 4 GB memory. Weight varies by configuration and components.

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#### PORTS/SLOTS

**Ports**

DisplayPort - One (v1.2)

Headphone/Microphone combo port - One

Power Connector - One

Docking Connector - One

USB 3.0 - One

USB 3.0 charging port - One

**Digital Media Slots**

Micro-SD card reader supports SD, SDHC, SDXC

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#### 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/cpc>.

\*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](http://www.hp.com/go/cpc)

### Technical Specifications

#### SYSTEM UNIT

<b>Stand-Alone Power Requirements (AC Power)</b>	<b>Nominal Operating Voltage</b>	18.5 V	
	<b>Average Operating Power</b>	<b>Windows 7 (32-bit)</b>	<b>Windows 7 (64-bit)</b>
		TBD W	TBD W
	<b>Max Operating Power</b>	< 65 W	
<b>Temperature</b>	<b>Operating</b>	32° to 95° F (0° to 35° C) (not writing optical)	
	<b>Non-operating</b>	-4° to 140° F (-20° to 60° C)	
<b>Relative Humidity</b>	<b>Operating</b>	10% to 90%, non-condensing	
	<b>Non-operating</b>	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature	
<b>Shock</b>	<b>Operating</b>	40 G, 2 ms, half-sine	
	<b>Non-operating</b>	200 G, 2 ms, half-sine	
<b>Random Vibration</b>	<b>Operating</b>	0.75 grms	
	<b>Non-operating</b>	1.50 grms	
<b>Altitude (unpressurized)</b>	<b>Operating</b>	-50 to 10,000 ft (-15.24 to 3,048 m)	
	<b>Non-operating</b>	-50 to 40,000 ft (-15.24 to 12,192 m)	
<b>Planned Industry Standard Certifications</b>	<b>UL</b>	Yes	
	<b>CSA</b>	Yes	
	<b>FCC Compliance</b>	Yes	
	<b>ENERGY STAR®</b>	Select models (Microsoft OS)*	
	<b>EPEAT</b>	Registered Gold in United States**	
	<b>ICES</b>	Yes	
	<b>Australia / NZ A-Tick Compliance</b>	Yes	
	<b>CCC</b>	Yes	
	<b>Japan VCCI Compliance</b>	Yes	
	<b>KC</b>	Yes	
	<b>BSMI</b>	Yes	
	<b>CE Marking Compliance</b>	Yes	
	<b>BNCI or BELUS</b>	Yes	
	<b>CIT</b>	Yes	
	<b>GOST</b>	Yes	
	<b>Saudi Arabian Compliance (ICCP)</b>	Yes	
<b>SABS</b>	Yes		
<b>UKRSERTCOMPUTER</b>	Yes		

### Technical Specifications

\* Configurations of the HP EliteBook Folio 1040 G1 that are ENERGY STAR qualified are identified as HP EliteBook Folio 1040 G1 ENERGY STAR on HP websites and on [www.energystar.gov](http://www.energystar.gov).

\*\*EPEAT® Gold in the U.S. See [www.epeat.net](http://www.epeat.net) for registration status by country.

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

### DISPLAY

<b>14" diagonal LED-backlit HD+ anti-glare SVA flat (1600 x 900)</b>	<b>Outline Dimensions</b> (W x H x D)	12.6 x 8.09 x 0.12 in (32.09 x 20.56 x 0.3 cm)	
	<b>Active Area</b>	12.19 x 6.86 in (30.96 x 17.415 cm)	
	<b>Weight</b>	0.72 lb (325 g) (max)	
	<b>Diagonal Size</b>	14.0 in (35.6cm)	
	<b>Surface Treatment</b>	Anti-glare	
	<b>Contrast Ratio</b>	300:1 (min)	
	<b>Refresh Rate</b>	60 Hz	
	<b>Brightness</b>	250 nit (typical)	
	<b>Pixel Resolution</b>	<b>Format</b>	1600 x 900 (HD+)
		<b>Configuration</b>	RGB Stripe
	<b>Interface</b>	eDP 1.2 (1 lane)	
	<b>LCD Mode</b>	TN	
	<b>PPI</b>	131 ppi	
	<b>Viewing Angle</b>	SVA 40/40/15/30 (Left/Right/Down/Up)	

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

### Technical Specifications

**Viewing Angle** UWVA 85/85/85/85 (Left/Right/Down/Up)

## STORAGE AND DRIVES

### Internal Storage

The EliteBook Folio is available in standard thin and light configurations for customers who value the ultra-thin design but prefer options such as a standalone HDD or require a self-encrypting hard drive. These configurations will not meet Intel's definition of an Ultrabook.

<b>128 GB* M.2 Solid State Drive</b>	<b>Drive Weight</b>	Up to 10 grams	
	<b>Capacity</b>	128 GB	
	<b>Height</b>	0.091 in (2.3 mm)	
	<b>Width</b>	0.87 in (22 mm)	
	<b>Interface</b>	SATA 3 (6 Gb/s)	
	<b>Performance</b>	<b>Maximum Sequential Read</b>	<b>Maximum Sequential Write</b>
		Up to 500 MB/s	Up to 300 MB/s
	<b>Logical Blocks</b>	250,069,680	
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [case temp]	
	<b>Features</b>	ATA Security; ATA-8; SATA 3.0; DIPM; TRIM	

<b>180 GB* M.2 Solid State Drive</b>	<b>Drive Weight</b>	Up to 10 grams	
	<b>Capacity</b>	180 GB	
	<b>Height</b>	0.091 in (2.3 mm)	
	<b>Width</b>	0.87 in (22 mm)	
	<b>Interface</b>	SATA Gen 3 (6 Gb/s)	
	<b>Performance</b>	<b>Maximum Sequential Read</b>	<b>Maximum Sequential Write</b>
		Up to 510 MB/s	Up to 470 MB/s
	<b>Logical Blocks</b>	351,651,888	
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [case temp]	
	<b>Features</b>	ATA Security; ATA-8; SATA 3.0; DIPM; TRIM	
<b>Security Feature</b>	TCG Opal 1 compliant		

### Technical Specifications

<b>256 GB* M.2 Solid State Drive</b>	<b>Drive Weight</b>	Up to 10 grams		
	<b>Capacity</b>	256 GB		
	<b>Height</b>	0.091 in (2.3 mm)		
	<b>Width</b>	0.87 in (22 mm)		
	<b>Interface</b>	SATA Gen 3 (6 Gb/s)		
	<b>Performance</b>	<b>Maximum Sequential Read</b>	<b>Maximum Sequential Write</b>	
		Up to 510 MB/s	Up to 465 MB/s	
	<b>Logical Blocks</b>	500,118,192		
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [case temp]		
	<b>Features</b>	ATA Security; ATA-8, SATA 3.0; DIPM; TRIM		
<b>Security Feature</b>	TCG Opal 2 compliant			

<b>180 GB* M.2 SED Solid State Drive (available Spring 2014)</b>	<b>Drive Weight</b>	10 Grams		
	<b>Capacity</b>	180 GB		
	<b>Height</b>	0.091 in (2.3 mm)		
	<b>Width</b>	0.87 in (22 mm)		
	<b>Interface</b>	SATA 3 (6 Gb/s)		
	<b>Performance</b>	<b>Maximum Sequential Read</b>	<b>Maximum Sequential Write</b>	
		Up to 540 MB/s	Up to 490 MB/s	
	<b>Logical Blocks</b>	351,651,888		
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [case temp]		
	<b>Features</b>	ATA Security; ATA-8, SATA 3.0; DIPM; TRIM; TCG Opal 1.0		

<b>SATA 6 Gb/s 256 GB*, 2.5-inch SATA SED Solid State Drive (available Spring 2014)</b>	<b>Drive Weight</b>	TBD Grams		
	<b>Capacity</b>	256 GB		
	<b>Height</b>	TBD in (TBD mm)		
	<b>Width</b>	TBD in (TBD mm)		
	<b>Interface</b>	SATA 3 (6 Gb/s)		
	<b>Performance</b>	<b>Maximum Sequential Read</b>	<b>Maximum Sequential Write</b>	
		Up to TBD MB/s	Up to TBD MB/s	
	<b>Logical Blocks</b>	TBD		
	<b>Operating Temperature</b>	TBD		
	<b>Features</b>	TBD		

### Technical Specifications

#### SECURITY

<b>HP Fingerprint Reader</b>	<b>Mobile Voltage Operation</b>	3.0V-3.6V	
	<b>Operating Temperature</b>	14° - 167°F (-10° - 75°C)	
	<b>Current Consumption Image</b>	36 mA peak	
	<b>Low Latency Wait for Finger</b>	950 uA	
	<b>Capture Rate</b>	3000. lines/sec	
	<b>ESD Resistance</b>	IEC 61000-4-2 4B (±15KV)	
	<b>Detection Matrix</b>	200*1 (plus another secondary line) 508 dpi 12*3 mm sensor area	
	<hr/>		
<b>Smart Card Reader</b>	<b>Smart card standard</b>	PC/SC 2.0 for Windows smart card standard	
	<b>Dimensions (L x W x H)</b>	0.41x 0.08 x 0.32 in (10.5 x 2 x 8.2 mm)	
	<b>Smart Card support</b>	ISO 7816 Class A and AB smart cards	
	<b>Smart Card Interface</b>	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	
	<b>Operating systems</b>	No driver is required for this device. Native support is provided by the operating system.	
	<b>Power</b>	<b>Normal Mode</b>	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
		<b>Power Saving Mode</b>	With card present, before being suspended: 40.6 mA Without card present: 380 µA After being suspended with smart card present: 380 µA
<b>Features</b>	<ul style="list-style-type: none"> <li>● Support single slot</li> <li>● Support T0, T1 protocol</li> <li>● Support I2C memory card, SLE4418, SLE4428, SLE4432, SLE4442, SLE4436,</li> <li>● SLE5536, SLE6636, AT88SC1608, AT45D041 card and AT45DB041 card via external EEPROM</li> <li>● Support ISO7816 Class A, B and C (5V/3V/1.8V) card</li> <li>● Implemented as an USB full speed device with bulk transfer endpoint, Mass</li> </ul>		

### Technical Specifications

- 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.

### NETWORKING/COMMUNICATIONS

<b>Intel I218LM Gigabit Network Connection (internal)</b>	<b>System Interface</b>	Integrated on PCA
	<b>Controller</b>	Intel I218LM GbE platform LAN connect networking controller
	<b>Memory</b>	24 KB FIFO packet buffer memory
	<b>Data rates supported</b>	10/100/1000 Mbps
	<b>IEEE Compliance</b>	802.1P 802.1Q 802.2 802.3 802.3ab 802.3az 802.3u
	<b>Bus architecture</b>	PCI Express and SMBus
	<b>Data transfer mode</b>	PCIe-based interface for active state operation (S0 state) and SMBus for host and management traffic (Sx low power state)
	<b>Power requirement</b>	Requires 3.3V and 0.9V or just 3.3V with integrated regulators Power consumption 0.733 Watts
	<b>Boot ROM support</b>	Yes
	<b>Network transfer mode</b>	Full-duplex Half-duplex (not supported for the 1000BASE-T transceiver)
	<b>Network transfer rate</b>	10BASE-T (half-duplex) 10 Mbps 10BASE-T (full-duplex) 20 Mbps 100BASE-TX (half-duplex) 100 Mbps 100BASE-TX (full-duplex) 200 Mbps 1000BASE-T (full-duplex) 2000 Mbps



### Technical Specifications

<b>Environmental</b>	Operating Temperature: 0° to 85° C Operating Humidity: 60% RH
<b>Management</b>	WOL, auto MDI crossover, PXE, Multi-port teaming, RSS, Advanced cable diagnostic.
<b>Alerting</b>	ASF 2.0 support; iAMT 9.0 support

#### Optional Near Field Communications (NFC)\*, \*\*

<b>NFC Specifications</b>	ISO/IEC 14443A, ISO/IEC 14443B PCD 106 kbps to 848 kbps ISO/IEC 14443A, ISO/IEC 14443B PICC 106 kbps to 424 kbps ISO/IEC 15693/ICODE reader NFC-IP1 and NFC-IP2 protocols, 106 kbps to 424 kbps MIFARE reader encryption mechanism NFC Forum Types 1-4 card reader
<b>Supported Host Interfaces</b>	I2C Automatic wakeup from Standby via host control interface
<b>Dimensions</b>	0.18 x 0.18 x 0.04 in (4.5 x 4.5 x 0.9 mm)
<b>Frequency Band</b>	13.56 MHz ISO Band
<b>RF Output Voltage</b>	3.3 V max 150 mA max (@3.0V output)
<b>Power Consumption</b>	1.5 W (max)
<b>Antenna</b>	Built-in
<b>Antenna Range</b>	Up to 0.79 in (2 cm)
<b>Secure Element Interfaces</b>	SWP/HCI according to ETSI/SCP standardization ISO/IEC 28361 (ECMA 373) NFC-WI. Data rate restricted to 106kbps
<b>Embedded Secure Element (eSE)</b>	P5CN145 SmartMX Secure Dual Interface PKI Smart Card Controller
<b>eSE Memory</b>	144 kB EEPROM 264 kB User ROM 7.5 kB RAM (5 kB standard, 2.5 kB FameXE RAM)
<b>Operating Temperature</b>	-13 to 185 oF (-25 to +85oC)

\* NFC ships enabled by default on Windows 8.1 and disabled by default on Windows 7.

\*\* Sold separately or as an option.

#### HP hs3110/3114 HSPA+ Mobile Broadband Module\*

<b>Technology/Operating Bands</b>	Modes: WCDMA/HSDPA/HSUPA/HSPA+/AWS/GSM/EDGE/GPRS Penta-band WCDMA/HSDPA/HSUPA/HSPA+/AWS: 850/900/1900/2100/AWS MHz GSM/GPRS/EDGE: 850/900/1800/1900 MHz
<b>Wireless Protocol Standards</b>	GSM/GPRS/EDGE: Class B, Multi-slot class 33, coding schemes CS1 - CS4 and MSC1 - MSC9. UMTS/WCDMA: Release 99 and Release 7 Advanced Receiver Type 3i
<b>GPS</b>	GPS Standalone, A-GPS: L1 (Internet- and Network assisted)
<b>Wireless parametric standards</b>	Complies with 3GPP specifications

### Technical Specifications

<b>Maximum data rates</b>	GPRS/EDGE: Multi-slot Class 33, Class B WCDMA PS: UL (384 kbps) / DL (384 kbps) UL/DL HSPA: UL (5.76 Mbps)/ DL (7.2 Mbps) UL/DL HSPA+: UL (5.76 Mbps)/ DL (21Mbps)
<b>Maximum output power</b>	WCDMA/HSPA/HSPA+ 2100/1900/900/850/AWS MHz: +24dBm (Power Class 3) GPRS 1900/1800 MHz: +30dBm (Power Class 1) GPRS 900/850 MHz: +33dBm (Power Class 4) EDGE 1900/1800 MHz: +26dBm (Power Class E2) EDGE 900/850 MHz: +27dBm (Power Class E2)
<b>Maximum power consumption</b>	2500mA (peak); 600mA (average)
<b>Power consumption, sleep mode</b>	3.6 mA
<b>Power management</b>	USB selective suspend, Connected Standby Integrated notebook wireless button
<b>Antenna type</b>	Dual high efficiency 5 band antennae with spatial diversity, mounted in the display enclosure
<b>Form Factor</b>	M.2 Socket 2, USB 2.0 interface high speed
<b>Weight</b>	<6 g
<b>Dimensions</b> (Length x Width x Thickness)	2.01 x 1.18 x 0.18 in (42 x 30 x 2.3 mm)
<b>SIM card supply voltage</b>	1.8 V/3.0 V UICC (SIM/UICC/USIM)
<b>Voltage, Operating</b>	3.135V~4.4V (3.3 V recommended)
<b>Temperature, Operating</b>	14° to 131° F (-10° to 55° C) (Normal operation) -4° to 158° F (-20° to 70° C) (Extended operation)
<b>Temperature, storage</b>	-40° to 185° F (-40° to 85° C)
<b>Humidity</b>	LED Off - Radio Off; Solid LED On - Radio On
<b>Configuration utilities</b>	HP Connection Manager
<b>LED Activity</b>	LED Off - Radio Off; Solid LED On - Radio On

\* 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+ 4G WWAN\*

<b>Technology/Operating Bands</b>	LTE FDD all bands with diversity: 1900 MHz (Band II) <sup>1</sup> , 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)
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### Technical Specifications

<b>Wireless Protocol Standards</b>	3GPP Release 8 LTE Specification WCDMA R99, 3GPP Release 5, 6 and 7 UMTS Specification EVDO Release 0 and Release A
<b>Wireless Parametric Standards</b>	Complies with 3GPP specifications Release 8 for LTE
<b>Maximum Data Rates</b>	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)
<b>GPS</b>	Standalone GPS, A-GPS, GPS XTRA
<b>GPS Bands</b>	1575.42 MHz ( $\pm$ 1.023 MHz), GLONASS 1596-1607MHz
<b>Maximum Output Power</b>	LTE: +23 dBm ( $\pm$ 1 dBm) WCDMA: +23 dBm ( $\pm$ 1 dBm) GSM850/900, GMSK: +32dBm ( $\pm$ 1dBm) GSM850/900, 8PSK: +27dBm ( $\pm$ 1dBm) DCS1800 / PCS 1900, GMSK: +29dBm ( $\pm$ 1dBm) DCS1800 / PCS 1900, 8PSK: +26dBm ( $\pm$ 1dBm) CDMA: +24dBm ( $\pm$ 1dBm)
<b>Maximum Power Consumption</b>	LTE: 1,200 mA (peak); <900 mA (average) WCDMA: 1,100 mA (peak); <800 mA (average) EGPRS: 2,500 mA (peak); <700 mA (average)
<b>Power Consumption, Sleep Mode</b>	2 mA
<b>Power Management</b>	USB selective suspend, Integrated notebook wireless button
<b>Antenna Type</b>	Dual high efficiency multi-band antennae with spatial diversity
<b>Form Factor</b>	M.2, 3042-S3 Key B
<b>Weight</b>	6 g
<b>Dimensions</b> (Length x Width x Thickness)	42 mm x 30 mm x 2.3 mm
<b>Voltage, Operating</b>	3.135 V to 4.4 V (3.3 V +1.1V/-0.165V)
<b>Temperature, operating</b> (from TIA/EIA/IS-98-D)	-13° to 140° F (-25° to 60° C)
<b>Temperature, non-operating, 96 hours</b> (from MIL-STD 202 Method 108)	-40° to 185° F (-40° to 85° C)
<b>Humidity, Non-operating</b>	95% relative humidity for 48 hours @ 185° F (85° C) (non-condensing)
<b>LED Activity</b>	LED Off - Radio Off; Solid LED On - Radio On

<sup>1</sup> 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 requires Windows. 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.

### Technical Specifications

<b>HP It4112 LTE/HSPA+ Gobi 4G Module*</b>	<b>Technology/Operating Bands</b>	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), 850 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)
	<b>Wireless Protocol Standards</b>	3GPP Release 8 LTE Specification WCDMA R99, 3GPP Release 5, 6 and 7 UMTS Specification
	<b>Wireless Parametric Standards</b>	Complies with 3GPP specifications Release 8 for LTE
	<b>Maximum Data Rates</b>	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)
	<b>GPS</b>	Standalone
	<b>GPS Bands</b>	1575.42 MHz (± 1.023 MHz), GLONASS 1596-1607MHz
	<b>Maximum Output Power</b>	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)
	<b>Maximum Power Consumption</b>	LTE: 1,200 mA (peak); <900 mA (average) WCDMA: 1,100 mA (peak); <800 mA (average) EGPRS: 2,800 mA (peak); <700 mA (average)
	<b>Power Consumption, Sleep Mode</b>	3 mA
	<b>Power Management</b>	USB selective suspend, Integrated notebook wireless button
	<b>Antenna Type</b>	Dual high efficiency multi-band antennae with spatial diversity
	<b>Form Factor</b>	M.2, USB 2.0 interface
	<b>Weight</b>	6 g
	<b>Dimensions</b> (Length x Width x Thickness)	42 mm × 30 mm × 2.3 mm
	<b>Voltage, Operating</b>	3.135 V to 4.4 V (3.3 V +1.1V/-0.165V)
	<b>Temperature, operating</b> (from TIA/EIA/IS-98-D)	14° to 131° F (-10° to 55° C)
	<b>Temperature, non-operating, 96 hours</b> (from MIL-STD 202 Method 108)	-40° to 185° F (-40° to 85° C)
	<b>Humidity, Non-operating</b>	95% relative humidity for 48 hours @ 185° F (85° C) (non-condensing)
	<b>LED Activity</b>	LED Off - Radio Off; Solid LED On - Radio On

### Technical Specifications

\* 4G LTE not available on all products, in all regions and requires Windows. 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.

<b>Intel Dual Band Wireless-N 7260NB 802.11 a/b/g/n (2x2) WiFi Adapter*</b>	<b>Wireless LAN Standards</b>	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n
	<b>Interoperability</b>	Wi-Fi certified  Cisco Compatible Extensions Program compliant with Microsoft Windows 7, Windows Vista and XP (details at: <a href="http://www.hp.com/go/notebooks/WLAN">http://www.hp.com/go/notebooks/WLAN</a> )
	<b>Frequency Band</b>	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
	<b>Antenna Structure</b>	2 transmit; 2 receive (2x2)
	<b>Data Rates</b>	802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: 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.
	<b>Modulation</b>	Direct Sequence Spread Spectrum CCK, BPSK, QPSK, 16-QAM, 64-QAM
	<b>Security<sup>1</sup></b>	<ul style="list-style-type: none"><li>• IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only</li><li>• AES-CCMP: 128 bit in hardware</li><li>• 802.1x authentication</li><li>• WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.</li><li>• WPA2 certification</li><li>• IEEE 802.11i</li><li>• Cisco Certified Extensions, all versions through CCX4 and CCX Lite</li><li>• WAPI</li></ul>
	<b>Sub-channels</b>	Multinational support with frequency bands and channels compliant to local regulations.
	<b>Network Architecture Models</b>	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
	<b>Roaming</b>	IEEE 802.11 compliant roaming between band Access Points
	<b>Output Power<sup>2</sup></b>	<ul style="list-style-type: none"><li>• 2.4G: +13.5dBm minimum</li><li>• 5G: +12dBm minimum</li></ul>
	<b>Power Consumption</b>	Transmit: 2.0 Watts Receive: 1.6 Watts Idle mode <sup>3</sup> : 250 mW (WLAN Associated) Idle mode: 100 mW (WLAN unassociated) Radio off: 75 mW

### Technical Specifications

<b>Power Management</b>	ACPI and PCI Express compliant power management 802.11 compliant power saving mode	
<b>Receiver Sensitivity<sup>4</sup></b>	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)	
<b>Antenna Connections</b>	2 U.FL type connectors (output impedance of 50 ± 2 ohms)	
<b>Form Factor</b>	PCI-Express Half-MiniCard	
<b>Dimensions</b>	0.12 x 1.06 x 1.18 in (3.1 x 26.8 x 30.0 mm)	
<b>Weight</b>	3.1g	
<b>Operating Voltage</b>	3.3v +/- 9%	
<b>Temperature</b>	Operating	14° to 158° F (-10° to 70° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
<b>Humidity</b>	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
<b>Altitude</b>	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
<b>LED Activity</b>	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.

**Intel Dual Band Wireless-N 7260AN 802.11 a/b/g/n (2x2) WiFi + Bluetooth 4.0 Combo Adaptor\***

<b>Wireless LAN Standards</b>	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n	
<b>Interoperability</b>	Wi-Fi certified	
	Cisco Compatible Extensions Program compliant with Microsoft Windows 7, Windows Vista and XP (details at: <a href="http://www.hp.com/go/notebooks/WLAN">http://www.hp.com/go/notebooks/WLAN</a> )	
<b>Frequency Band</b>	802.11b/g/n	2.402 - 2.482 GHz

### Technical Specifications

	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
<b>Antenna Structure</b>	2 transmit; 2 receive (2x2)	
<b>Data Rates</b>	802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: 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.	
<b>Modulation</b>	Direct Sequence Spread Spectrum CCK, BPSK, QPSK, 16-QAM, 64-QAM	
<b>Security<sup>1</sup></b>	<ul style="list-style-type: none"><li>• IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only</li><li>• AES-CCMP: 128 bit in hardware</li><li>• 802.1x authentication</li><li>• WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.</li><li>• WPA2 certification</li><li>• IEEE 802.11i</li><li>• Cisco Certified Extensions, all versions through CCX4 and CCX Lite</li><li>• WAPI</li></ul>	
<b>Sub-channels</b>	Multinational support with frequency bands and channels compliant to local regulations.	
<b>Network Architecture Models</b>	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)	
<b>Roaming</b>	IEEE 802.11 compliant roaming between band Access Points	
<b>Output Power<sup>2</sup></b>	<ul style="list-style-type: none"><li>• 2.4G: +13.5dBm minimum</li><li>• 5G: +12dBm minimum</li></ul>	
<b>Power Consumption</b>	Transmit: 2.0 Watts Receive: 1.6 Watts Idle mode <sup>3</sup> : 250 mW (WLAN Associated) Idle mode: 100 mW (WLAN unassociated) Radio off: 75 mW	
<b>Power Management</b>	ACPI and PCI Express compliant power management 802.11 compliant power saving mode	
<b>Receiver Sensitivity<sup>4</sup></b>	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)	

### Technical Specifications

<b>Antenna Connections</b>	2 U.FL type connectors (output impedance of 50 ± 2 ohms)	
<b>Form Factor</b>	PCI-Express Half-MiniCard	
<b>Dimensions</b>	0.12 x 1.06 x 1.18 in (3.1 x 26.8 x 30.0 mm)	
<b>Weight</b>	3.1g	
<b>Operating Voltage</b>	3.3v +/- 9%	
<b>Temperature</b>	Operating	14° to 158° F (-10° to 70° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
<b>Humidity</b>	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
<b>Altitude</b>	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
<b>LED Activity</b>	LED Off - Radio OFF; Solid LED On - Radio ON	
	1. Check latest software/driver release for updates on supported security features.	
	2. Maximum output power may vary by country according to local regulations.	
	3. In Power Save Polling mode and on battery power.	
	4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).	
	5. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.	
<b>HP Integrated Module with Bluetooth 4.0+EDR Wireless Technology</b>		
<b>Bluetooth Specification</b>	4.0+EDR Compliant	
<b>Dimensions</b>	1.18 x 0.26 x 0.13 in (30 x 6.5 x 3.25 mm)	
<b>Frequency Band</b>	2402 to 2480 MHz	
<b>Number of Available Channels</b>	79 (1 MHz) available channels	
<b>Data Rates and Throughput</b>	3 Mbps data rate; throughput up to 2.17 Mbps	
	Synchronous Connection Oriented links up to 3, 64 kbps, voice channels	
	Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric	
<b>Transmit Power</b>	-1.5 dBm to 4 dBm (Bluetooth Class II)	
<b>Receiver Sensitivity</b>	Better than -20 dBm at 0.1 % raw bit error rate	
<b>Power Consumption</b>	Peak (Tx) 264 mW	
	Peak (Rx) 231 mW	
	Sleep <1 mW	
<b>Antenna</b>	Internally integrated within module	
<b>Range</b>	Up to 33 ft (10 m)	
<b>Electrical Interface</b>	USB 2.0 compliant	
	Microsoft Windows Plug and Play compliant	
<b>Bluetooth Software Supported</b>	Broadcom Bluetooth for Windows	
	Microsoft Windows Bluetooth Software	
<b>Link Topology</b>	Point to Point, Multipoint Pico Nets up to 7 slaves	
<b>Security</b>	Full support of Bluetooth Security Provisions	



### Technical Specifications

<b>Power Management</b>	Microsoft Windows ACPI, and USB Bus Support Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff
<b>Certifications</b>	All necessary regulatory approvals for supported countries, including: FCC (47 CFR) Part 15C, Section 15.247 & 15.249 ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark
<b>Bluetooth Profiles Supported</b>	Serial Port Profile (SPP) <sup>1</sup> Service Discovery Application Profile (SDAP) Dial-Up Networking (DUN) <sup>1,2</sup> Generic Object Exchange Profile (GOEP) <sup>1,2</sup> Object Push Profile (OPP) <sup>1,2</sup> File Transfer Profile (FTP) Synchronization Profile (SYNC) Hard Copy Cable Replacement (HCRP) <sup>1,2</sup> Personal Area Networking Profile (PAN) <sup>1,2</sup> Human Interface Device Profile (HID) <sup>1,2</sup> FAX Profile (FAX) Basic Imaging Profile (BIP) <sup>2</sup> Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP)

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

2. indicates the profile is part of Windows Vista

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

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<b>Intel Dual Band Wireless-AC 7260 802.11 ac (2x2) WiFi + BT 4.0 combo Adapter*</b>	<b>Wireless LAN Standards</b>	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac
	<b>Interoperability</b>	Wi-Fi certified
	<b>Frequency Band</b>	802.11b/g/n <ul style="list-style-type: none"><li>● 2.402 - 2.482 GHz</li></ul> 802.11a/n <ul style="list-style-type: none"><li>● 4.9 - 4.95 GHz (Japan)</li><li>● 5.15 - 5.25 GHz</li><li>● 5.25 - 5.35 GHz\</li><li>● 5.47 - 5.725 GHz</li><li>● 5.825 - 5.850 GHz</li><li>● 2.402 - 2.482 GHz</li></ul>

### Technical Specifications

<b>Data Rates</b>	<ul style="list-style-type: none"><li>● 802.11b: 1, 2, 5.5, 11 Mbps</li><li>● 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps</li><li>● 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps</li><li>● 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)</li><li>● 802.11ac : MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz)</li></ul>
<b>Modulation</b>	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM
<b>Security<sup>1</sup></b>	<ul style="list-style-type: none"><li>● IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only</li><li>● AES-CCMP: 128 bit in hardware</li><li>● 802.1x authentication</li><li>● WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.</li><li>● WPA2 certification</li><li>● IEEE 802.11i</li><li>● Cisco Certified Extensions, all versions through CCX4 and CCX Lite</li><li>● WAPI</li></ul>
<b>Network Architecture Models</b>	Network Architecture Models
<b>Roaming</b>	IEEE 802.11 compliant roaming between access points
<b>Output Power<sup>2</sup></b>	<ul style="list-style-type: none"><li>● 2.4G: +13.5dBm minimum</li><li>● 5G: +12dBm minimum</li><li>● Maximum output power must be able to achieve modular regulatory certification with notebooks that have antennas &gt;20cm from the user and peak gain of +3dBi at 2.4GHz and +4dBi at 5GHz</li></ul>
<b>Power Consumption</b>	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
<b>Power Management</b>	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
<b>Receiver Sensitivity<sup>3</sup></b>	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)
<b>Antenna Connections</b>	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
<b>Form Factor</b>	PCI-Express Half-MiniCard
<b>Dimensions</b>	0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm)
<b>Weight</b>	3.1g
<b>Operating Voltage</b>	3.3v +/- 9%

### Technical Specifications

<b>Temperature</b>	Operating	14° to 158° F (-10° to 70° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
<b>Humidity</b>	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
<b>Altitude</b>	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
<b>LED Activity</b>	LED Off - Radio OFF; Solid LED On - Radio ON	
	<ol style="list-style-type: none"> <li>1. Check latest software/driver release for updates on supported security features.</li> <li>2. Maximum output power may vary by country according to local regulations.</li> </ol>	
	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).	
<b>Bluetooth Specification</b>	V4.0 High Speed, V2.1+EDR, backwards compatible with V1.1, 1.2 and 2.0	
<b>Number of Available Channels</b>	79 (1 MHz) available channels	
<b>Data Rates and Throughput</b>	3 Mbps data rate; throughput up to 2.17 Mbps	
	Synchronous Connection Oriented links up to 3, 64 kbps, voice channels	
	Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric	
<b>Transmit Power</b>	-6 dBm to 4 dBm (Bluetooth Class II)	
<b>Receiver Sensitivity</b>	Better than -80 dBm at 0.1 % raw bit error rate	
<b>Power Consumption</b>	Peak (Tx) 330 mW	
	Peak (Rx) 230 mW	
	Sleep <17 mW	
<b>Antenna</b>	Internally integrated within module	
<b>Range</b>	Up to 33 ft (10 m)	
<b>Electrical Interface</b>	USB 2.0 compliant	
	Microsoft Windows Plug and Play compliant	
<b>Bluetooth Software Supported</b>	Broadcom Bluetooth for Windows	
	Microsoft Windows Bluetooth Software	
<b>Link Topology</b>	Point to Point, Multipoint Pico Nets up to 7 slaves	
<b>Security</b>	Full support of Bluetooth Security Provisions	
<b>Power Management</b>	Microsoft Windows ACPI, and USB Bus Support	
	Self-configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff	
<b>Certifications</b>	All necessary regulatory approvals for supported countries, including:	
	FCC (47 CFR) Part 15C, Section 15.247 & 15.249	
	ETS 300 328, ETS 300 826	
	Low Voltage Directive IEC950	
	UL, CSA, and CE Mark	
<b>Bluetooth Profiles Supported</b>	Generic Access Profile (GAP)	
	Service Discovery Application Profile (SDAP)	
	Serial Port Profile (SPP)	

### Technical Specifications

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. The specifications for the 802.11ac WLAN are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ac WLAN devices

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### AUDIO/MULTIMEDIA - DTS SOUND+

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

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

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### Technical Specifications

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

### POWER

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

### Technical Specifications

<b>HP 45W Slim Smart AC Adapter non-slim</b>	<b>Dimensions (H x W x D)</b>	95.0 x 40.0 x 26.5mm	
	<b>Input</b>	90 to 265 VAC	
		<b>Input Efficiency</b>	88% min at 115 VAC / 89% min at 230VAC
	<b>Output</b>	<b>Input frequency range</b>	47 to 63 Hz
		<b>Input AC current</b>	1.4 A at 90 VAC and maximum load
		<b>Output power</b>	45W
		<b>DC output</b>	19.5V
		<b>Hold-up time</b>	5 msec at 115 VAC input
		<b>Output current limit</b>	<8A, Over voltage protection- 29V max automatic shutdown
		<b>Connector</b>	3 pin/grounded, mates with 4.5mm barrel type Smart ID DC connector
	<b>Environmental Design</b>	<b>Operating temperature</b>	32° to 95° F (0° to 35° C)
		<b>Non-operating (storage) temperature</b>	-4° to 121° F (-20° to 85° C)
		<b>Altitude</b>	0 to 16,405 ft (0 to 5,000 m)
		<b>Humidity</b>	0% to 95%
<b>EMI and Safety Certifications</b>	<b>Storage Humidity</b>	0% to 95%	
	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.		

<b>HP 45W Slim Smart AC Adapter non-slim 2 prong</b>	<b>Dimensions (H x W x D)</b>	95.0 x 40.0 x 26.5mm	
	<b>Input</b>	90 to 265 VAC	
		<b>Input Efficiency</b>	88% min at 115 VAC / 89% min at 230VAC
	<b>Output</b>	<b>Input frequency range</b>	47 to 63 Hz
		<b>Input AC current</b>	1.4 A at 90 VAC and maximum load
		<b>Output power</b>	45W
		<b>DC output</b>	19.5V
		<b>Hold-up time</b>	5 msec at 115 VAC input
		<b>Output current limit</b>	<8A, Over voltage protection- 29V max automatic shutdown
		<b>Connector</b>	2 pin/non-grounded, mates with 4.5mm barrel type Smart ID DC connector
	<b>Environmental Design</b>	<b>Operating temperature</b>	32° to 95° F (0° to 35° C)
		<b>Non-operating (storage) temperature</b>	-4° to 121° F (-20° to 85° C)
		<b>Altitude</b>	0 to 16,405 ft (0 to 5,000 m)
		<b>Humidity</b>	0% to 95%

### Technical Specifications

<b>EMI and Safety Certifications</b>	<b>Storage Humidity</b>	0% to 95%
	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.	

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<b>HP 65W EM Smart AC Adapter</b>	<b>Dimensions</b>	126.0 x 50.0 x 30.0 mm	
	<b>Weight</b>	300 g	
	<b>Input</b>	<b>Input</b>	90 to 265 VAC
		<b>Input Efficiency</b>	87% min at 115 VAC
		<b>Input frequency range</b>	47 to 63 Hz
	<b>Output</b>	<b>Input AC current</b>	1.7 A at 90 VAC
		<b>Output power</b>	65W
		<b>DC output</b>	19.5V
		<b>Hold-up time</b>	5 msec at 115 VAC input
		<b>Output current limit</b>	<11A, Over voltage protection- 29V max automatic shutdown
	<b>Connector</b>	3 pin/grounded, mates with interchangeable cords	
	<b>Environmental Design</b>	<b>Operating temperature</b>	32° to 95° F (0° to 35° C)
		<b>Non-operating (storage) temperature</b>	-4° to 185° F (-20° to 85° C)
<b>Altitude</b>		0 to 10,000 ft (0 to 3,048 m)	
<b>Humidity</b>		20% to 95%	
<b>EMI and Safety Certifications</b>	<b>Storage Humidity</b>	10% to 95%	
	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.		

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### Technical Specifications

<b>HP 65W Smart Travel AC Adapter</b>	<b>Dimensions</b>	120.0 x 57.6 x 16.7 mm	
	<b>Weight</b>	250 g	
	<b>Input</b>	<b>Input</b>	90 to 265 VAC
		<b>Input Efficiency</b>	88% min at 115 VAC / 89% min at 230VAC
		<b>Input frequency range</b>	47 to 63 Hz
	<b>Output</b>	<b>Input AC current</b>	1.7 A at 90 VAC
		<b>Output power</b>	65W
		<b>DC output</b>	18.5V
		<b>Hold-up time</b>	5 msec at 115 VAC input
		<b>Output current limit</b>	<11A, Over voltage protection- 29V max automatic shutdown
	<b>Connector</b>	3 pin/grounded, mates with interchangeable cords	
	<b>Environmental Design</b>	<b>Operating temperature</b>	32° to 104° F (0° to 40° C)
		<b>Non-operating (storage) temperature</b>	-4° to 149° F (-20° to 65° C)
		<b>Altitude</b>	0 to 10,000 ft (0 to 3,048 m)
<b>Humidity</b>		20% to 80%	
<b>EMI and Safety Certifications</b>	<b>Storage Humidity</b>	10% to 90%	
	CE Mark - full compliance with LVD and EMC directives; Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; MTBF - over 200,000 hours at 25°C ambient condition.		

<b>HP 6-cell (42 WHr) Polymer Primary battery</b>	<b>Dimensions (L x W x H)</b>	13.3 x 4.94 x 0.31 in (33.79 x 12.545 x 0.785 cm)		
	<b>Weight (max)</b>	0.225kg		
	<b>Cells/Type</b>	6-cell Polymer		
	<b>Energy</b>	<b>Voltage</b>	11.1V	
		<b>Amp-hour capacity</b>	3.86Ah	
		<b>Watt-hour capacity</b>	42Wh	
	<b>Temperature</b>	<b>Operating (Charging)</b>	32° to 113° F (0° to 45° C)	
		<b>Operating (Discharging)</b>	14° to 140° F (-10° to 60° C)	
		<b>Non-operating</b>	-4° to 140° F (-20° to 60° C)	
	<b>Battery Re-Charge Time</b>	<b>System in OFF or Standby Mode</b>	This depends on system setting	
		<b>System ON</b>	This depends on system setting	
<b>Fuel Gauge LED</b>	No			
<b>Optional Travel Battery Available</b>	No			



### Technical Specifications

#### ENVIRONMENTAL

##### Environmental Data

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

- 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 Commercial Notebook model is based on a "Typically Configured Notebook"

<b>Energy Consumption</b>	<b>115 VAC</b>	<b>230 VAC</b>	<b>100 VAC</b>
Normal Operation	3.40 W	3.26 W	3.32 W
Sleep	0.92 W	0.94 W	0.93 W
Off	0.38 W	0.45 W	0.38 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.

<b>Heat Dissipation*</b>	<b>115 VAC</b>	<b>230 VAC</b>	<b>100 VAC</b>
Normal Operation	12 BTU/hr	11 BTU/hr	11 BTU/hr
Sleep	3 BTU/hr	3 BTU/hr	3 BTU/hr
Off	1 BTU/hr	2 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)**

System Fan Off	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Typically Configured - Idle	2.8	25
Fixed Disk - Random writes	2.8	25

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

Batteries used in the product do not contain:

### Technical Specifications

#### Additional information

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

Battery size: CR2025 (coin cell)

Battery type: Lithium

- 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](http://www.epeat.net)
- Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.
- This product contains 2.6 % post-consumer recycled plastic (by wt.)
- This product is 97.2 % recycle-able when properly disposed of at end of life.

#### Packaging Materials

- External:
  - PAPER/Cardboard & misc - 295 g
  - PAPER/Corrugated - 14 g
- Internal:
  - PLASTIC/Polyethylene low density - 65 g
  - PLASTIC/EPE-Expanded Polyethylene - 2 g
  - PLASTIC/PET - 1 g
  - OTHER/OTHER - 24 g
- The PAPER/Cardboard & misc packaging material is made from 80 % recycled content.
- The PAPER/Corrugated packaging material is made from 80 % recycled content.
- The PLASTIC/Polyethylene low density packaging materials contains at least 65% recycled content.
- The PLASTIC/EPE-Expanded Polyethylene packaging materials contains at least 65% recycled content.
- The PLASTIC/PET packaging materials contains at least 65% recycled content.
- The OTHER/OTHER materials contains at least 65% recycled content.

#### 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

### Technical Specifications

- 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 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:

### Technical Specifications

[http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC\\_GBU\\_Product\\_Design\\_ISO\\_14K\\_Certificate.pdf](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>

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### COUNTRY OF ORIGIN

China

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

Type	Description	Part #
<b>Cases</b>	HP Slim Ultrabook Messenger	F3W14AA
	HP Slim Ultrabook Top Load Case (15.6")	F3W15AA
	HP Slim Ultrabook Backpack	F3W16AA
	HP 4 Wheel Roller	H5M93AA
<b>Docking</b>	HP Display and Notebook II Stand	E8G00AA
	HP Dual Hinge Notebook II Stand	E8F99AA
	HP Adjustable Dual Display Stand	AW664AA
	HP UltraSlim Side Docking Station	D9Y32AA
	HP 2005pr USB 2.0 Port Replicator	H1L07AA#xxx
	HP 3005pr USB 3.0 Port Replicator	H1L08AA#xxx
<b>Input/Output - Mice</b>	HP Slim Bluetooth Mouse	F3J9AA
	HP Wireless Mobile Mouse	H2L63AA
	HP Touch To Pair Mouse	H6E52AA
	HP Stylish USB Keyboard and Mouse	H4B80AA
<b>Adapters</b>	HP Smart 65W Travel AC Adapter	AU155AA#xxx
	HP 65W Slim Adapter	AX727AA#xxx
	HP 90W Smart AC/Auto/Air Combo Adapter	AJ652AA#xxx
	HP EliteFolio RJ45/VGA Adapter	F3W44AA
	HP DisplayPort to HDMI Adapter	BP937AA
<b>Storage - External Storage</b>	HP External USB DVD/RW Drive	F2B56AA
<b>Health and Education</b>	HP 20-Notebook Managed Charging Cart	QL489AA
	HP 20-Notebook Charging Cart	QL488AA
	HP 30-Notebook Managed Charging Cart	QL490AA
<b>Security</b>	HP UltraSlim Keyed Cable Lock	H4D73AA
<b>Monitors</b>	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

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

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