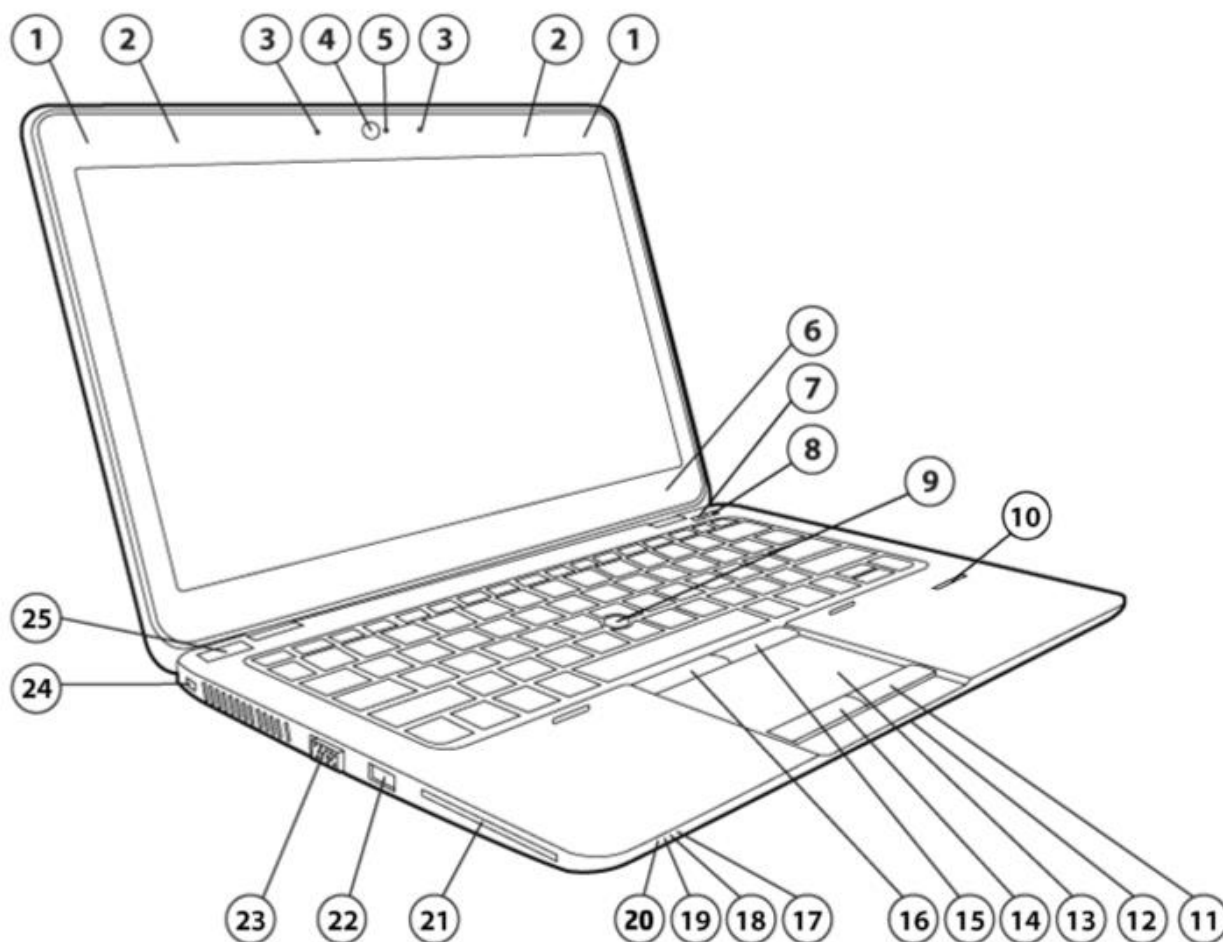


Overview

HP EliteBook 820 G2 Notebook PC



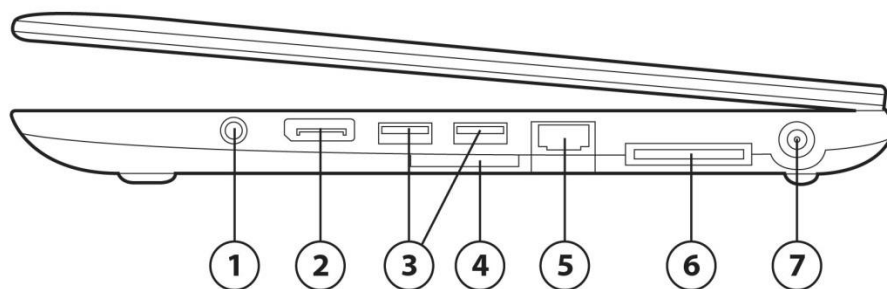
Front/Left

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



- 12. NFC sensor (optional)
- 13. TouchPad zone

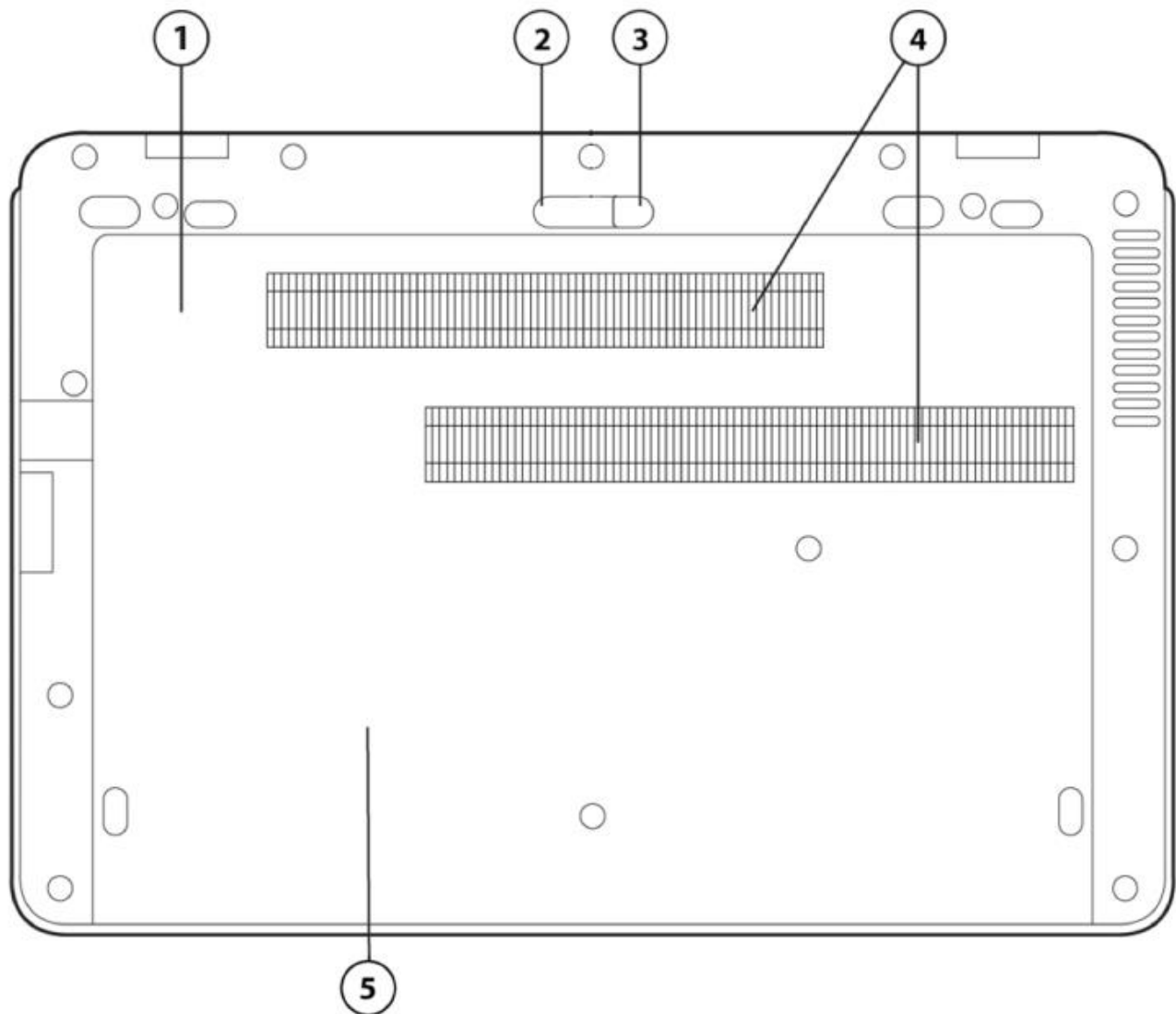
- 25. Power button



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
2. EasyAccess panel release latch
3. Security screw
4. Vents (2)
5. SIM slot (inside the panel)*



AT A GLANCE

- Windows 10 versions, Windows 8.1 versions , Windows 7 versions, Ubuntu Linux or FreeDOS 2.0
- Magnesium 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
- Choice of 5th Generation Intel® Core™ i7 and i5 processors
- Memory options up to 16 GB
- Weight starting at 2.94 lbs/1.33 kg
- Storage options up to 1 TB Hard Drives, 512 GB Solid State Drives, or 256GB PCIe Solid State Drive
- M.2 32GB Flash Cache for Intel Smart Response Technology installed in the factory
- M.2 120GB Solid State Drive & 256GB PCIe Solid State Drive can be configured as primary storage or combined with a SATA drive for dual storage performance
- Choice of Touch or Non Touch 12.5" diagonal displays
- Easily hot dock with the UltraSlim Docking Station
- DisplayPort for high resolution support
- Touchpad with scroll zone, on/off button with LED indicator
- Enhanced security features including HP Sure Start self-healing BIOS, HP Client Security 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
- Supports a broad range of wireless LAN and wireless WAN options, including 4G LTE, for connectivity on the go
- UEFI BIOS Compliant with 2.3.1 UEFI Specification

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



PRODUCT NAME

HP ELITEBOOK 820 G2 NOTEBOOK PC

OPERATING SYSTEM

Preinstalled

Windows 10 Pro 64*
Windows 10 Home 64*
Windows 8.1 Pro 64*
Windows 8.1 64*
Windows 7 Professional 64 (available through downgrade rights from Windows 10 Pro)***
Windows 7 Professional 32 (available through downgrade rights from Windows 10 Pro)***
Windows 7 Professional 64 (available through downgrade rights from Windows 8.1 Pro)**
Windows 7 Professional 32 (available through downgrade rights from Windows 8.1 Pro)**
Windows 7 Professional 64*
Windows 7 Professional 32*
Ubuntu Linux
FreeDOS 2.0

Web only support

Windows 10 Pro 64*
Windows 10 Home 64*
Windows 8.1 Pro 64*
Windows 8.1 64*
Windows 7 Professional 64 (available through downgrade rights from Windows 10 Pro)***
Windows 7 Professional 32 (available through downgrade rights from Windows 10 Pro)***
Windows 7 Professional 64 (available through downgrade rights from Windows 8.1 Pro)**
Windows 7 Professional 32 (available through downgrade rights from Windows 8.1 Pro)**
Windows 7 Professional 64*
Windows 7 Professional 32*
Windows 10 Enterprise 64*
Windows 8.1 Enterprise 64*
Windows 8 Pro 64*
Windows 8 64*
Windows 7 Enterprise 64*
Windows 7 Enterprise 32*

* Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.microsoft.com>

** This system is preinstalled with Windows 7 Professional 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.

***This system is preinstalled with Windows 7 Professional software and also comes with a license and media for Windows 10 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.

PROCESSOR

5th Generation Intel® Core™ i5-5200U 2.2 GHz (max turbo frequency 2.7-GHz), 3 MB L3 cache, 15W
5th Generation Intel® Core™ i5-5300U 2.3 GHz (max turbo frequency 2.9-GHz), 3 MB L3 Cache, 15W
5th Generation Intel® Core™ i7-5500U 2.4 GHz (max turbo frequency 3.0-GHz), 4 MB L3 Cache, 15W
5th Generation Intel® Core™ i7-5600U 2.6 GHz (max turbo frequency 3.2-GHz), 4 MB L3 Cache, 15W

* 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.

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.

GRAPHICS

Integrated:

Intel® HD* Graphics 5500

*HD content required to view HD images.

DISPLAY

HP EliteBook 820 G2 Notebook PC

Internal

Non Touch

12.5" diagonal LED-backlit HD* anti-glare SVA flat (1366x768)

12.5" diagonal LED-backlit HD* anti-glare SVA flat (1366x768) with camera

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

12.5" diagonal LED-backlit FHD anti-glare UWVA ultra slim (1920 x 1080) with camera

*HD content required to view HD images.

Touch

12.5" diagonal LED-backlit FHD UWVA ultra slim (1920 x 1080) with camera

Touch panel has chemically-strengthened Corning® Gorilla® Glass 3 top cover

External

Up to 32-bit per pixel color depth

VGA

Port supports resolutions up to 1920 x 1200 external resolution @75 Hz

DisplayPort

Supports resolutions up to 3840 x 2160 @ 60Hz. Supports Multi-Stream Transport (MST) where three displays can be daisy chained with digital displays through DisplayPort Only. The full resolution of each display will be limited as you reach 3 displays due to the bandwidth limitations with a maximum resolution of:

- 2560x1600@60Hz for 2 displays
- 1920x1200@60Hz for 3 displays

Number of Displays supported

3 With Optional* UltraSlim Docking Station -

*Sold separately.



STORAGE AND DRIVES

Primary Storage Bay

Hard Drives*

320 GB 7200rpm SATA Hard Drive
500 GB 7200rpm SATA Hard Drive
500 GB 7200rpm Self-Encrypting Drive
500 GB 5400 rpm Self Encrypting Drive (FIPS-140-2)
500 GB 5400rpm + 8GB NAND SATA Hybrid Hard Drive
1TB 5400rpm SATA Hard Drive

Solid State Drive*

120 GB M.2 Solid State Drive
128 GB SATA-3 MLC Solid State Drive
128 GB SATA-3 TLC Solid State Drive
180 GB SATA-3 MLC Solid State Drive
180 GB SATA-3 MLC Self-Encrypting Drive
240 GB SATA-3 MLC Solid State Drive
256 GB SATA-3 TLC Solid State Drive
256 GB SATA-3 MLC Self-Encrypting Drive
256 GB M.2 PCIe Solid State Drive
512 GB SATA-3 MLC Solid State Drive
512 GB SATA-3 TLC Solid State Drive

HP 3D DriveGuard (Windows only)

HP 3D DriveGuard mitigates the risk of hard drive failures, safeguarding your data when you are on the go by sensing sudden movement and protecting the hard drive. 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. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 16 GB (for Windows 7) and up to 30 GB (for Windows 8 and 10) of system disk is reserved for the 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.)

MEMORY

Standard

DDR3L-1600 (Transfer rates up to 1600 MT/s)
Two SODIMM slots supporting dual-channel memory

4 GB Total System Memory (4 GB x 1)
8 GB Total System Memory (4 GB x 2)
8 GB Total System Memory (8 GB x 1)
16 GB Total System Memory (8 GB x 2)

Maximum



Upgradeable to 16 GB with optional 8 GB 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 lt4112 LTE/HSPA+ Qualcomm® Gobi™ 4G Module

HP lt4211 LTE/EV-DO/HSPA+ Qualcomm® Gobi™ 4G Module**

HP hs3110 HSPA+ Mobile Broadband Module

Wireless LAN (WLAN)*

Intel® Dual Band Wireless-AC 7265 802.11 ac (2X2) Wi-Fi + Bluetooth®

Intel® Dual Band Wireless-7265AN 802.11 a/b/g/n (2X2) Wi-Fi + Bluetooth®

Intel® Dual Band Wireless-AC 3160 802.11 ac (1x1) Wi-Fi + Bluetooth®

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

**4G LTE WWAN is an optional feature, not available on all products, in all regions and requires separately purchased service contract. Check with service provider for coverage and availability. Connection speeds will vary due to location, environment, network conditions, and other factors.

Communications

Intel® I218LM 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.

Optional Near Field Communication (NFC)

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 ***

* Sold separately.

** 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. 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.

SOFTWARE AND SECURITY UPDAT

Preinstalled Software with Windows Operating System

BIOS

HP BIOSphere¹
HP Sure Start
HP DriveLock | HP Automatic Drive Lock
HP BIOS Protection²
HP Disk Sanitizer³
HP SpareKey⁴
BIOS Update via Network
Master Boot Record Security
Power On Authentication
Pre-Boot Security
Secure Erase⁵
Hybrid Boot



Measured Boot
Secure Boot
Absolute Persistence Module ⁶

1. Available only on business PCs with HP BIOS.
2. May require a manual recovery step if all copies of BIOS are compromised or deleted. BIOS adheres to NIST SP800-147.
3. For the use cases outlined in the DOD 5220.22-M Supplement. Does not support solid state drives.
4. Requires initial user set up.
5. For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88.
6. 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
CyberLink YouCam BE

Communication

HP Connection Manager with support for HP Mobile Connect (Windows 7 only)²
HP GPS and Location¹
HP Mobile Connect (Windows 8 only)²
HP Wireless Hotspot³ (Windows 8 only)
Intel WiDi Software⁴
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)⁵
HP Hotkey Support
HP PageLift
HP Recovery Manager (Windows 7 only)
HP Support Assistant
HP Recovery Disc Creator (Windows 7 only)
UEFI System Diagnostics W8

3rd Party

Adobe® Flash Player (Commercial)
Foxit PhantomPDF Express for HP
Bing Search
Skype⁶
Buy Office

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.



1. 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 available from multiple GPS applications.
2. HP Mobile Connect is only available on selective devices with wwan. For geographical availability refer to www.hp.com/go/mobileconnect
3. The wireless hotspot application requires an active internet connection that is shared with the connecting devices. Wireless hotspot data usage may incur additional charges. Check with your service provider for plan details.
4. 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.
5. 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/businessmobileprinting).
6. Skype is not offered in China.

Manageability

HP Driver Packs ¹
HP SoftPaq Download Manager (SDM)
HP System Software Manager (SSM)¹
HP BIOS Config Utility (BCU) ¹
HP Client Catalog / HP CIK for Microsoft SCCM¹
LANDESK Management ¹

1. Not preinstalled

For more information on HP Client Management Solutions refer to: <http://www.hp.com/go/clientmanagement>.

Standard Security Features

HP Client Security Manager (Windows only)
HP Device Access Manager
HP Drive Encryption¹
HP File Sanitizer²
Microsoft Security Essentials (Windows 7 only)³

For more information on HP Client Security Software Suite, refer to <http://www.hp.com/go/clientsecurity>.

Security Hardware

TPM Embedded Security Chip 1.2
Security lock slot
Fingerprint Reader
Integrated Smart Card Reader

1. 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.
2. For the use cases outlined in the DOD 5220.22-M Supplement. Supports standard Hard Drives. Initial setup required.
3. Opt in and internet connection required for updates.

POWER

Power Supply



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)

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).

Primary Battery

3-cell HP Long Life Polymer 46 WHr
3-cell HP Long Life Polymer 26 WHr

Battery Life*

Hardware details

HDD
SSD
SSD

Battery

3-cell (46 WHr)
3-cell (46 WHr)
3-cell (26 WHr)

UMA Graphics

Up to 12 hrs
Up to 15 hrs 15 mins
Up to 9 hrs 15 mins

**Windows 7 MM07 battery life will vary depending on various factors including 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.

System Standby Time**

223 hrs

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

WEIGHTS & DIMENSIONS

Weight

Non Touch

Starting at 2.94 lbs/1.36 kg
Weight will vary by configuration.

Touch

Starting at 3.35 lbs/1.52 kg
Weight will vary by configuration.



Dimensions (w x d x h)

Non Touch

12.2 x 8.48 x 0.83 in

31 x 21.53 x 2.1 cm

Touch

12.2 x 8.48 x 0.97 in

31 x 21.53 x 2.46 cm

PORTS/SLOTS

Ports

(1) DisplayPort 1.2

(1) USB 3.0 Charging Port

(2) USB 3.0 Port

(1) RJ-45 / Ethernet

(1) Side Docking connector

(1) Headphone/Microphone Combo

(1) AC Port

Expansion Slots

Media Card Reader

Supports SD, SDHC, SDXC

SERVICE AND SUPPORT

HP Services offers 3-year, 1-year and 90 day limited warranty options depending on country. Batteries have a default one year limited warranty except for Long Life batteries which will have same 1-year or 3-year limited warranty as the platform. On-site service and extended coverage is also available. HP Care Pack Services are optional extended service contracts that go beyond the standard limited warranties.* To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at: <http://www.hp.com/go/cpc>.

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

*HP Care Packs are sold separately. Service levels and response times for HP Care Services 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>

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)

Nominal Operating Voltage

19.5 V

Average Operating Power

Windows 7 (64-bit)

Windows 8.1 (64-bit)

Integrated graphics

4.75 W

4.26 W

Max Operating Power

Discrete < 90W

UMA < 65W

Temperature

Operating

32° to 95° F (0° to 35° C) (not writing optical)



Relative Humidity	Non-operating Operating Non-operating	41° to 95° F (5° to 35° C) (writing optical) -4° to 140° F (-20° to 60° C) 10% to 90%, non-condensing 5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
Shock	Operating Non-operating	40 G, 2 ms, half-sine 200 G, 2 ms, half-sine
Random Vibration	Operating Non-operating	0.75 grms 1.50 grms
Altitude (unpressurized)	Operating Non-operating	-50 to 10,000 ft (-15.24 to 3,048 m) -50 to 40,000 ft (-15.24 to 12,192 m)
Planned Industry Standard Certifications	UL CSA FCC Compliance ENERGY STAR® EPEAT® ICES Australia / NZ A-Tick Compliance CCC Japan VCCI Compliance KC BSMI CE Marking Compliance BNCI or BELUS CIT GOST Saudi Arabian Compliance (ICCP) SABS UKRSERTCOMPUTER	Yes Yes Yes Select models* Registered Gold in United States** Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes Yes

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

DISPLAYS

12.5" diagonal LED-backlit FHD anti Premium anti-glare UWVA -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)
	Contrast Ratio	300:1 (min)



QuickSpecs

HP EliteBook 820 G2 Notebook PC

	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 30/30/20/10 (min) (Left/Right/Down/Up) SVA 45/45/35/25 (typical) (Left/Right/Down/Up)	
12.5" diagonal LED-backlit FHD Premium anti-glare UWVA slim (1920 x 1080)	Outline Dimensions (W x H x D)	291.0mm x 181.4mm (max) x 2.85mm (max)	
	Active Area	276.48mm typ. (W) x 155.52mm typ. (H)	
	Weight	0.50 lb (230g) (max)	
	Diagonal Size	12.5 in (35.75 cm)	
	Contrast Ratio	600:1 (typ) - AG	
	Refresh Rate	60 Hz	
	Brightness	300 nit (typical)	
	Pixel Resolution	Format	1920 x 1080 (FHD)
		Configuration	RGB Stripe
	Interface	eDP 1.3 (2 lane)	
	LCD Mode	IPS/FFS/VA	
	PPI	176 ppi	
	Viewing Angle	UWVA 75/75/75/75 (min) (Left/Right/Down/Up) UWVA 85/85/85/85 (typical) (Left/Right/Down/Up)	
12.5" diagonal LED-backlit HD Premium anti-glare UWVA slim (1920 x 1080)+Touch	Outline Dimensions (W x H x D)	291.0mm x 181.4mm (max) x 2.85mm (max)	
	Active Area	276.48mm typ. (W) x 155.52mm typ. (H)	
	Weight	0.50 lb (230g) (max)	
	Diagonal Size	12.5 in (35.75 cm)	
	Touch enabled	Yes	
	TSP Type	Capacitive	
	Touch point supported	Min 5-point & Max 10-point for Win8	
	Contrast Ratio	600:1 (typ) - AG	
	Refresh Rate	60 Hz	
	Brightness	300 nit (typical)	
	Pixel Resolution	Format	1920 x 1080 (FHD)
		Configuration	RGB Stripe



Interface	eDP 1.3 (2 lane)
LCD Mode	IPS/FFS/VA
PPI	176 ppi
Viewing Angle	UWVA 75/75/75/75 (min) (Left/Right/Down/Up) UWVA 85/85/85/85 (typical) (Left/Right/Down/Up)

STORAGE AND DRIVES

500 GB* 7200 rpm SATA Hard Drive

Drive Weight	0.20lbs(92g- 0.21 lbs (95g)
Capacity	500 GB
Height	0.28 in (7 mm)
Width	2.75 in (69.85 mm)
Interface	ATA-8, SATA 3.0
Transfer Rate	Synchronous (maximum) 600 MB/s (Drive Capability)
Seek Time (typical reads, including settling)	Single Track 1.5 ms-2ms
	Average 12 ms-13ms
	Maximum 18ms-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; S.M.A.R.T.IV, NCQ, Ultra DMA

500 GB* 5400 rpm FIPS 140-2 OPAL 2 SATA HDD

Drive Weight	0.21 lbs (95g)
Capacity	500 GB
Height	0.28 in (7 mm)
Width	2.75 in (69.85 mm)
Interface	ATA-8, SATA 3.0
Transfer Rate	Synchronous (maximum) 300 MB/s (Drive Capability)
Seek Time (typical reads, including settling)	Single Track 2 ms
	Average 13 ms
	Maximum 18 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; TCG OPAL v2.00, FIPS 140-2



QuickSpecs

HP EliteBook 820 G2 Notebook PC

1TB* 7200 rpm SATA Hard Drive	Drive Weight	0.21 lbs (95g)
	Capacity	1 TB
	Height	0.28 in (7 mm)
	Width	2.75 in (69.85 mm)
	Interface	ATA-8, SATA 3.0
	Transfer Rate	Synchronous (maximum) 600 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track 2 ms Average 12ms-13 ms Maximum 18 ms-24ms
	Cache	16MB-32MB
	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; S.M.A.R.T.IV, NCQ, Ultra DMA

500 GB 5400rpm + 8GB NAND SATA Hybrid Hard Drive	Drive Weight	95g
	Capacity	500GB
	Height	7mm
	Width	70.1mm
	Interface	ATA-8, SATA 3.0
	Transfer Rate	600MB/s
	Seek Time (typical reads, including settling)	5.6ms (Average Latency)
	Rotational Speed	5400rpm
	Logical Blocks	976,733,168
	Operating Temperature	0-60 degree C
	Features	ATA Security, S.M.A.R.T., NCQ, Ultra DMA

SATA 3 (6 Gb/s) 32 GB*, M.2 2242 Solid State Drive	Drive Weight	10 Grams
	Capacity	32 GB
	Height	0.09 in (3.7 mm)
	Width	0.87 in (22 mm)
	Interface	ATA-8, SATA 3.0
	Performance	Maximum Sequential Read Maximum Sequential Write



QuickSpecs

HP EliteBook 820 G2 Notebook PC

Up to 380 MB/s Up to 110 MB/s

Logical Blocks 62,533,296
Operating Temperature 32° to 158°F (0° to 70°C) [ambient temp]
Features ATA Security; DIPM; TRIM; DEVSLP

120 GB SATA 3 (6 Gb/s) M.2 2242 Solid State Drive

Drive Weight 10 Grams
Capacity 120 GB
Height 0.09 in (3.7 mm)
Width 0.87 in (22 mm)
Interface ATA-8, SATA 3.0
Performance **Maximum Sequential Read** **Maximum Sequential Write**
Up to 540 MB/s Up to 480 MB/s
Logical Blocks 234,441,648
Operating Temperature 32° to 158°F (0° to 70°C) [ambient temp]
Features ATA Security; DIPM; TRIM; DEVSLP

128 GB SATA 3 (6Gb/s) 2.5-inch TLC Solid State Drive

Drive Weight 78 Grams
Capacity 128 GB
Height 0.28 in (7 mm)
Width 2.75 in (69.85 mm)
Interface ATA-8, SATA 3.0
Performance **Maximum Sequential Read** **Maximum Sequential Write**
Up to 520 MB/s Up to 140 MB/s
Logical Blocks 250,069,680
Operating Temperature 32° to 158°F (0° to 70°C) [ambient temp]
Features ATA Security; DIPM; TRIM; DEVSLP

180 GB SATA 3 (6 Gb/s) 2.5-inch MLC Solid State Drive

Drive Weight 78 Grams
Capacity 180 GB
Height 0.28 in (7 mm)
Width 2.75 in (69.85 mm)
Interface ATA-8, SATA 3.0
Performance **Maximum Sequential** **Maximum Sequential Write**
Read Up to 540 MB/s Up to 490 MB/s
Logical Blocks 351,651,888
Operating Temperature 32° to 158°F (0° to 70°C) [ambient temp]
Features ATA Security; DIPM; TRIM; DEVSLP



QuickSpecs

HP EliteBook 820 G2 Notebook PC

180 GB SATA 3 (6 Gb/s) 2.5 MLC SED OPAL 2 Solid State Drive	Drive Weight	Up to 78 Grams	
	Capacity	180 GB	
	Height	0.28 in (7 mm)	
	Width	2.75 in (69.85 mm)	
	Interface	ATA-8, SATA 3.0	
	Performance	Maximum Sequential Read	Maximum Sequential Write
	Logical Blocks	Up to 540 MB/s	Up to 490 MB/s
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]		
Features	ATA Security; DIPM; TRIM; DEVSLP; TCG Opal 1x		

240 GB SATA 3 (6 Gb/s) 2.5 MLC SSD- Drive	Drive Weight	78 Grams	
	Capacity	240 GB	
	Height	0.28 in (7 mm)	
	Width	2.75 in (69.85 mm)	
	Interface	ATA-8, SATA 3.0	
	Performance	Maximum Sequential Read	Maximum Sequential Write
	Logical Blocks	Up to 540 MB/s	Up to 490 MB/s
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]		
Features	ATA Security; DIPM; TRIM; DEVSLP		

256 GB SATA 3 (6 Gb/s) 2.5 MLC SED OPAL 2 Solid State Drive	Drive Weight	78 Grams	
	Capacity	256 GB	
	Height	0.28 in (7 mm)	
	Width	2.75 in (69.85 mm)	
	Interface	ATA8, SATA 3.0	
	Performance	Maximum Sequential Read	Maximum Sequential Write
	Logical Blocks	Up to 520 MB/s	Up to 280 MB/s
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]		
Features	ATA Security; DIPM; TRIM; DEVSLP		

256 GB SATA 3 (6 Gb/s) 2.5 TLC Solid State Drive	Drive Weight	78 Grams
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Capacity	256 GB	
Height	0.28 in (7 mm)	
Width	2.75 in (69.85 mm)	
Interface	ATA8, SATA 3.0	
Performance	Maximum Sequential Read	Maximum Sequential Write
	Up to 550 MB/s	Up to 500 MB/s
Logical Blocks	500,118,192	
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]	
Features	ATA Security; TCG Opal 2.x; DIPM; TRIM; DEVSLP	

256 GB*, 2256 M2 PCIe Solid State Drive

Drive Weight	10 Grams	
Capacity	256 GB	
Height	0.24 in (60 mm)	
Width	0.87 in (22 mm)	
Interface	ATA-8, PCIe 2.0	
Performance	Maximum Sequential Read	Maximum Sequential Write
	Up to 730 MB/s	620 MB/s
Logical Blocks	500,118,192	
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]	
Features	ATA Security; DIPM; TRIM; DEVSLP	

512 GB SATA 3 (6 Gb/s) 2.5 MLC Solid State Drive

Drive Weight	78 Grams	
Capacity	32 GB	
Height	0.28 in (7 mm)	
Width	2.75 in (69.85 mm)	
Interface	ATA-8, SATA 3.0	
Performance	Maximum Sequential Read	Maximum Sequential Write
	Up to 550 MB/s	Up to 550 MB/s
Logical Blocks	1,000,215,216	
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]	
Features	ATA Security; DIPM; TRIM; DEVSLP	

512 GB SATA-3 TLC Solid State Drive

Drive Weight	78 Grams
Capacity	512 GB
Height	0.28 in (7 mm)
Width	2.75 in (69.85 mm)



Interface	ATA-8, SATA 3.0
Performance	Maximum Sequential Read Up to 540 MB/s
Logical Blocks	1,000,215,216
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
Features	ATA Security; DIPM; TRIM; DEVSLP

NETWORKING/COMMUNICATIONS

*For storage drives, GB = 1 billion bytes. TN = 1 trillion bytes. Actual formatted capacity is less. Up to 16Gb (for Windows 7) and up to 30GB (for Windows 8) of system disk is reserved for system recovery software.

WIRELESS WAN (WWAN)

HP It4112 LTE/HSPA+ Qualcomm® Gobi™ 4G Module *

Technology/Operating bands	LTE: 2100 (Band 1), 1900 (Band 2), 1800 (Band 3), 850 (Band 5), 2600 (Band 7), 900 (Band 8), 800 MHz (Band 20, DD800) MHz HSPA+: 2100 (Band 1), 1900 (Band 2), 850 (Band 5), 900 (Band 8) MHz E-GPRS: 1900 (Band 2), 1800 (Band 3), 850 (Band 5), 900 (Band 8) MHz
Wireless protocol standards	3GPP Release 8 LTE Specification WCDMA R99, 3GPP Release 5, 6 and 7 UMTS Specification E-GPRS: Class B, Multi-slot class 33, coding schemes CS1 - CS4 and MSC1 - MSC9
GPS	Standalone
GPS bands	1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz
Maximum data rates	LTE: 100 Mbps (Download), 50 Mbps (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)
Maximum output power	LTE: 23 dBm HSPA+: 23.5 dBm E-GPRS 1900/1800: 26.5 dBm E-GPRS 900/850: 27.5 dBm GPRS 1900/1800: 29.5 dBm GPRS 900/850: 32.5 dBm
Maximum power consumption	LTE: 1,200 mA (peak); 900 mA (average) HSPA+: 1,100 mA (peak); 800 mA (average) E-GPRS: 2,800 mA (peak); 700 mA (average)
Form Factor	M.2, 3042-S3 Key B
Weight	6 g



Dimensions 1.65 x 1.18 x 0.09 in (42 x 30 x 2.3 mm)
(Length x Width x Thickness)

* Mobile Broadband is an optional 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. 4G LTE not available on all products or in all countries.

HP Lt4211 LTE/EV-DO/HSPA+ Qualcomm® Gobi™ 4G Module*

Technology/Operating bands LTE: 1900 (Band 2), 1700 (Band 4), 850 (Band 5), 700 (Band 13), 700 (Band 17), 1900 (Band 25) MHz
HSPA+: 2100 (Band 1), 1900 (Band 2), 1700 (Band 4), 850 (Band 5), 800 (Band 8) MHz
E-GPRS: 1900 (Band 2), 1800 (Band 3), 850 (Band 5), 900 (Band 8) MHz
EV-DO: 800 (BC0), 1900 (BC1) MHz

Wireless protocol standards 3GPP Release 9 LTE Specification
WCDMA R99, 3GPP Release 5, 6 and 7 UMTS Specification
E-GPRS: Class B, Multi-slot class 33, coding schemes CS1 - CS4 and MSC1 - MSC9
EVDO Release 0 and Release A

GPS Standalone

GPS bands 1575.42 MHz (± 1.023 MHz), GLONASS 1596-1607MHz

Maximum data rates LTE: 100 Mbps (Download), 50Mbps (Upload)
DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload)
HSPA+: 21.6 Mbps (Download), 5.76 Mbps (Upload)
WCDMA PS: 384 kbs (Download), 384 kbs (Upload)
WCDMA CS: 64 kbs (Download), 64 kbs (Upload)
E-GPRS: 236.8 kbps (Download), 236.8 kbps (Upload)
GPRS: 85.6 kbps(Download), 85.6 kbps (Upload)

Maximum output power LTE: 23 dBm
HSPA+: 24 dBm
E-GPRS 1900/1800: 25 dBm
E-GPRS 900/850: 26 dBm
GPRS 1900/1800 : 30 dBm
GPRS 900/850: 32 dBm
CDMA: 24 dBm

Maximum power consumption LTE: 1,200 mA (peak); 900 mA (average)
HSPA+: 1,100 mA (peak); 800 mA (average)
E-GPRS: 2,800 mA (peak); 500 mA (average)
EV-DO: 1000 mA (peak); 700 mA (average)

Form Factor M.2, 3042-S3 Key B

Weight 6 g

Dimensions 1.65 x 1.18 x 0.09 in (42 x 30 x 2.3 mm)
(Length x Width x Thickness)

* Mobile Broadband is an optional 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. 4G LTE not available on all products or in all countries.



HP hs3110HSPA+ Mobile Broadband Module*

Technology/Operating bands	HSPA+: 2100 (Band 1), 1900 (Band 2), 1700 (Band 4), 850 (Band 5), 900 (Band 8) MHz E-GPRS: 1900 (Band 2), 1800 (Band 3), 850 MHz (Band 5), 900 (Band 8) MHz
Wireless protocol standards	E-GPRS: Class B, Multi-slot class 33, coding schemes CS1 - CS4 and MSC1 - MSC9. UMTS/WCDMA: Release 99 and Release 7
GPS	Standalone, A-GPS
GPS bands	1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz
Maximum data rates	HSPA+: 21.6 Mbps (Download), 5.76 Mbps (Upload) HSPA: 7.2 Mbps (Download), 5.76 Mbps (Upload) WCDMA PS: 384 kbps (Download), 384 kbps (Upload) WCDMA CS: 64 kbps (Download), 64 kbps (Upload) E-GPRS: 296 kbps (Download), 236.8 kbps (Upload) GPRS: 107 kbps (Download), 85.6 kbps (Upload)
Maximum output power	HSPA+: 24 dBm E-GPRS 1800/1900: 26 dBm E-GPRS 850/900: 27 dBm GPRS 1800/1900: 30 dBm GPRS 850/900: 33 dBm
Maximum power consumption	2500 mA (peak); 600 mA (average)
Form Factor	M.2, 3042-S3 Key B
Weight	6 g
Dimensions (Length x Width x Thickness)	1.65 x 1.18 x 0.09 in (42 x 30 x 2.3 mm)

* Mobile Broadband is an optional 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.

WIRELESS LAN (WLAN)

Intel® Dual Band Wireless-AC 7265 802.11 ac (2X2) Wi-Fi + Bluetooth®*

Wireless LAN Standards	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 <p>Note: The FCC has declared as of January 1, 2015 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.</p> 802.11a <ul style="list-style-type: none"> • 4.9 – 4.95 GHz (Japan)



	<ul style="list-style-type: none">• 5.15 – 5.25 GHz• 5.25 – 5.35 GHz• 5.47 – 5.725 GHz• 5.825 – 5.850 GHz <p>Note: Indonesia only supports 5.725 - 5.825 GHz (CH149 - CH161)</p>
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	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output Power²	<ul style="list-style-type: none">• 802.11b : +16dBm minimum• 802.11g : +14dBm minimum• 802.11a : +14dBm minimum• 802.11n HT20(2.4GHz) : +13dBm minimum• 802.11n HT40(2.4GHz) : +13dBm minimum• 802.11n HT20(5GHz) : +12dBm minimum• 802.11n HT40(5GHz) : +12dBm minimum• 802.11ac 80MHz(5GHz) : +11dBm minimum
Power Consumption	Transmit: 2.0 W (max) Receive: 1.6 W (max) Idle mode (PSP): 180 mW (WLAN Associated) Idle mode: 60 mW (WLAN unassociated) Radio disabled: 30 mW
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity³	802.11b, 1Mbps : -94dBm maximum 802.11b, 11Mbps : -86dBm maximum 802.11g, 6Mbps : -88dBm maximum



	802.11g, 54Mbps : -74dBm maximum
	802.11a, 6Mbps : -86dBm maximum
	802.11a, 54Mbps : -72dBm maximum
	802.11n, MCS07 : -69dBm maximum
	802.11n, MCS15 : -66dBm maximum
	802.11ac, 1SS, MCS-0 : -86dBm maximum
	802.11ac, 1SS, MCS-9 : -61dBm maximum
	802.11ac, 2SS, MCS-0 : -83dBm maximum
	802.11ac, 2SS, MCS-9 : -58dBm maximum
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure
Form Factor	Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications
Dimensions	PCI-Express M.2 MiniCard
	Type 2230 : 2.3 x 22.0 x 30.0 mm
	Or
	Type 1630 : 2.3 x 16.0 x 30.0 mm
Weight	Type 2230 : 2.8g
	Or
	Type 1630 : 2g
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 Amber – Radio OFF; LED White – Radio ON
	1. Check latest software/driver release for updates on supported security features.
	2. Maximum output power may vary by country according to local regulations.
	3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

HP Integrated Module with Bluetooth 4.0+EDR Wireless Technology

Bluetooth Specification	4.0+EDR Compliant												
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	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of +4 dBm for BR and EDR.												
Receiver Sensitivity	<table border="1"> <thead> <tr> <th>Modulation</th> <th>0.01% BER</th> <th>0.001% BER</th> </tr> </thead> <tbody> <tr> <td>GFSK</td> <td>-80 dBm</td> <td>-70 dBm</td> </tr> <tr> <td>π/4-DQPSK</td> <td>-80 dBm</td> <td>-70 dBm</td> </tr> <tr> <td>8DPSK</td> <td>-80 dBm</td> <td>-70 dBm</td> </tr> </tbody> </table>	Modulation	0.01% BER	0.001% BER	GFSK	-80 dBm	-70 dBm	π/4-DQPSK	-80 dBm	-70 dBm	8DPSK	-80 dBm	-70 dBm
Modulation	0.01% BER	0.001% BER											
GFSK	-80 dBm	-70 dBm											
π/4-DQPSK	-80 dBm	-70 dBm											
8DPSK	-80 dBm	-70 dBm											
Power Consumption	Peak (Tx) 330 mW												
	Peak (Rx) 230 mW												
	Selective Suspend 17 mW												



Range	Up to 33 ft (10 m)
Electrical Interface	USB 2.0 compliant
Bluetooth Software Supported Link Topology	Microsoft Windows Bluetooth Software
Electrical Interface	Point to Point, Multipoint Pico Nets up to 7 slaves
Bluetooth Software Supported Security	Full support of Bluetooth Security Provisions
Power Management	Microsoft Windows ACPI, and USB Bus Support
Power Management Certifications	Self-configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff
Security Certifications	All necessary regulatory approvals for supported countries, including: FCC (47 CFR) Part 15C, Section 15.247 & 15.249
Bluetooth Profiles Supported	ETS 300 328, ETS 300 826
Power Management Certifications	Low Voltage Directive IEC950 UL, CSA, and CE Mark 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)
Certifications	
Bluetooth Profiles Supported	

Intel® Dual Band Wireless-7265AN 802.11 a/b/g/n (2X2) Wi-Fi + Bluetooth®

Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n
Interoperability	Wi-Fi certified
Frequency Band	802.11b/g/n <ul style="list-style-type: none"> • 2.402 – 2.482 GHz
	Note: The FCC has declared as of January 1, 2015 products that utilize passive scanning on channel 12/13 and are capable of transmitting



must fully comply with requirements of 15.247 or otherwise disable those channels.

802.11a

- 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

Note:

Indonesia only supports 5.725 - 5.825 GHz (CH149 - CH161)

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

Modulation

Direct Sequence Spread Spectrum

CCK, BPSK, QPSK, 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 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

- 802.11b : +16dBm minimum
- 802.11g : +14dBm minimum
- 802.11a : +14dBm minimum
- 802.11n HT20(2.4GHz) : +13dBm minimum
- 802.11n HT40(2.4GHz) : +13dBm minimum
- 802.11n HT20(5GHz) : +12dBm minimum
- 802.11n HT40(5GHz) : +12dBm minimum

Power Consumption

Transmit: 2.0 W (max)

Receive: 1.6 W (max)

Idle mode (PSP): 180 mW (WLAN Associated)

Idle mode: 60 mW (WLAN unassociated)

Radio disabled: 30 mW



Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode	
Receiver Sensitivity⁴	802.11b, 1Mbps : -94dBm maximum 802.11b, 11Mbps : -86dBm maximum 802.11g, 6Mbps : -88dBm maximum 802.11g, 54Mbps : -74dBm maximum 802.11a, 6Mbps : -86dBm maximum 802.11a, 54Mbps : -72dBm maximum 802.11n, MCS07 : -69dBm maximum 802.11n, MCS15 : -66dBm maximum	
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 and Bluetooth communications	
Form Factor	PCI-Express M.2 MiniCard	
Dimensions	Type 2230 : 2.3 x 22.0 x 30.0 mm Or Type 1630 : 2.3 x 16.0 x 30.0 mm	
Weight	Type 2230 : 2.8g Or Type 1630 : 2g	
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 Amber - Radio OFF; LED White - Radio ON	
	<ol style="list-style-type: none"> 1. Check latest software/driver release for updates on supported security features. 2. Maximum output power may vary by country according to local regulations. 3. In Power Save Polling mode and on battery power. 4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation). 5. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista. <p>*Wireless is an optional feature. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited.</p>	

HP Integrated Module with Bluetooth 4.0+EDR Wireless Technology

Bluetooth Specification	4.0+EDR Compliant
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



Transmit Power	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												
Receiver Sensitivity	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of +4 dBm for BR and EDR. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">Modulation</th> <th style="text-align: center;">0.01% BER</th> <th style="text-align: center;">0.001% BER</th> </tr> </thead> <tbody> <tr> <td style="text-align: center;">GFSK</td> <td style="text-align: center;">-80 dBm</td> <td style="text-align: center;">-70 dBm</td> </tr> <tr> <td style="text-align: center;">π/4-DQPSK</td> <td style="text-align: center;">-80 dBm</td> <td style="text-align: center;">-70 dBm</td> </tr> <tr> <td style="text-align: center;">8DPSK</td> <td style="text-align: center;">-80 dBm</td> <td style="text-align: center;">-70 dBm</td> </tr> </tbody> </table>	Modulation	0.01% BER	0.001% BER	GFSK	-80 dBm	-70 dBm	π/4-DQPSK	-80 dBm	-70 dBm	8DPSK	-80 dBm	-70 dBm
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Power Consumption	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW												
Range	Up to 33 ft (10 m)												
Electrical Interface	USB 2.0 compliant												
Bluetooth Software Supported	Microsoft Windows Bluetooth Software												
Link Topology	Point to Point, Multipoint Pico Nets up to 7 slaves												
Electrical Interface	Full support of Bluetooth Security Provisions												
Bluetooth Software Supported	Microsoft Windows ACPI, and USB Bus Support												
Security	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												
Bluetooth Profiles Supported	ETS 300 328, ETS 300 826												
Power Management	Low Voltage Directive IEC950												
Certifications	UL, CSA, and CE Mark												
Bluetooth Profiles Supported	Serial Port Profile (SPP) ¹												
Certifications	Service Discovery Application Profile (SDAP)												
Bluetooth Profiles Supported	Dial-Up Networking (DUN) ^{1,2}												
Certifications	Generic Object Exchange Profile (GOEP) ^{1,2}												
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Certifications	Basic Imaging Profile (BIP) ²												
Bluetooth Profiles Supported	Headset Profile (HSP)												
Certifications	Hands Free Profile (HFP)												
Bluetooth Profiles Supported	Advanced Audio Distribution Profile (A2DP)												

Intel® 802.11 ac (2x2) WiFi + Bluetooth® 4.0 combo (Indonesia only)*



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 Frequency Band	<ul style="list-style-type: none"> Wi-Fi certified 802.11b/g/n <ul style="list-style-type: none"> • 2.402 – 2.482 GHz <p>Note: The FCC has declared as of January 1, 2015 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.</p>
	<p>802.11a</p> <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 <p>Note: Indonesia only supports 5.725 - 5.825 GHz (CH149 - CH161)</p>
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	<p>Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM</p>
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 Roaming Output Power²	<p>Ad-hoc (Peer to Peer) Infrastructure (Access Point Required) IEEE 802.11 compliant roaming between access points</p> <ul style="list-style-type: none"> • 802.11b : +16dBm minimum • 802.11g : +14dBm minimum • 802.11a : +14dBm minimum



	<ul style="list-style-type: none"> • 802.11n HT20(2.4GHz) : +13dBm minimum • 802.11n HT40(2.4GHz) : +13dBm minimum • 802.11n HT20(5GHz) : +12dBm minimum • 802.11n HT40(5GHz) : +12dBm minimum • 802.11ac 80MHz(5GHz) : +11dBm minimum
Power Consumption	Transmit: 2.0 W (max) Receive: 1.6 W (max) Idle mode (PSP): 180 mW (WLAN Associated) Idle mode: 60 mW (WLAN unassociated) Radio disabled: 30 mW
Power Management	ACPI and PCI Express compliant power management
Receiver Sensitivity³	802.11 compliant power saving mode 802.11b, 1Mbps : -94dBm maximum 802.11b, 11Mbps : -86dBm maximum 802.11g, 6Mbps : -88dBm maximum 802.11g, 54Mbps : -74dBm maximum 802.11a, 6Mbps : -86dBm maximum 802.11a, 54Mbps : -72dBm maximum 802.11n, MCS07 : -69dBm maximum 802.11n, MCS15 : -66dBm maximum 802.11ac, 1SS, MCS-0 : -86dBm maximum 802.11ac, 1SS, MCS-9 : -61dBm maximum 802.11ac, 2SS, MCS-0 : -83dBm maximum 802.11ac, 2SS, MCS-9 : -58dBm maximum
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 M.2 MiniCard
Dimensions	Type 2230 : 2.3 x 22.0 x 30.0 mm Or Type 1630 : 2.3 x 16.0 x 30.0 mm
Weight	Type 2230 : 2.8g Or Type 1630 : 2g
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 Amber – Radio OFF; LED White – Radio ON
	<ol style="list-style-type: none"> 4. Check latest software/driver release for updates on supported security features. 5. Maximum output power may vary by country according to local regulations. 6. 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).
	* Wireless is an optional feature. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. The specifications for the 802.11n 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 802.11n WLAN devices.

HP Integrated Module with Bluetooth 4.0+EDR Wireless Technology*

Bluetooth Specification	4.0+EDR Compliant												
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	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of +4 dBm for BR and EDR.												
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Headset Profile (HSP)
Hands Free Profile (HFP)
Advanced Audio Distribution Profile (A2DP)

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Intel® Dual Band Wireless-AC 3160 802.11 ac (1x1) Wi-Fi + Bluetooth®*

Wireless LAN Standards	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 Note: The FCC has declared as of January 1, 2015 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels. 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 Note: Indonesia only supports 5.725 - 5.825 GHz (CH149 - CH161)
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 ~ MCS7, (1SS) (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



	<ul style="list-style-type: none">• 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	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
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Output Power²	<ul style="list-style-type: none">• 802.11b : +16dBm minimum• 802.11g : +14dBm minimum• 802.11a : +14dBm minimum• 802.11n HT20(2.4GHz) : +13dBm minimum• 802.11n HT40(2.4GHz) : +13dBm minimum• 802.11n HT20(5GHz) : +12dBm minimum• 802.11n HT40(5GHz) : +12dBm minimum• 802.11ac 80MHz(5GHz) : +11dBm minimum
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Power Management	ETS 300 328, ETS 300 826
Certifications	Low Voltage Directive IEC950 UL, CSA, and CE Mark 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)
Certifications	
Bluetooth Profiles Supported	

AUDIO/MULTIMEDIA - DTS STUDIO SOUND™

Hardware	Implementation	ALC3228
	Function Key Volume Controls	Volume up, volume down, and mute
	Full Duplex	Yes
	Microphone In	Stereo
	Headphone/Line Out	Stereo
	Integrated Microphone	Yes, dual digital microphone array
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



SECURITY

HP Fingerprint Reader (optional)	Mobile Voltage Operation	3.0V-3.6V	
	Operating Temperature	14° – 167°F (-10° – 75°C)	
	Current Consumption	36 mA peak	
	Image		
	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	
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	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.

POWER

HP 45W Smart AC Adapter Non-Slim & Non-Slim 2 Prong

Dimensions	95.0 x 40.0 x 26.5mm
Input	90 to 265 VAC
Input Efficiency	88% min at 115 VAC / 89% min at 230VAC
Input frequency range	47 to 63 Hz
Input AC current	1.4 A at 90 VAC and maximum load
Output	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.

Dimensions 4.98 x 1.97 x 1.18 in (12.65 x 5.0 x 3.0 cm)



QuickSpecs

HP EliteBook 820 G2 Notebook PC

	Weight	0.62 lb (300 g) max	
	Input	90 to 265 VAC	
		Input Efficiency 87% min at 115 VAC/230VAC	
		Input frequency range 47 to 63 Hz	
		Input AC current 1.7 A at 90 VAC	
	Output	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	
HP 65W EM AC Adapter (China and India only)	Connector	3 pin/grounded, mates with 4.5mm barrel type Smart ID DC connector	
	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 16,405 ft (0 to 5,000 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.	
3-cell HP Long Life (46Whr) Lithium-Ion Polymer	Dimensions (H x W x L)	7.47x3.85x0.51in (18.97x9.78x1.29cm)	
	Weight	255 g	
	Cells/Type	3-cell Lithium-Ion Polymer	
	Energy	Voltage	11.1
		Amp-hour capacity	4.15Ah
		Watt-hour capacity	46Wh
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 140° F (-10° to 60° C)
		Non-operating	-4° to 140° F (-20° to 60° C)
	Battery Re-Charge Time	System in OFF or Standby Mode	3 hours
Fuel Gauge LED		No	
Warranty		1 year or 3 years* *Battery warranty depends on the platform warranty.	
Optional Travel Battery Available		No	



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”.

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

	115VAC, 60Hz	230VAC, 50Hz	100VAC , 60Hz
Normal Operation (Short idle)	9.28 W	9.92 W	9.88 W
Normal Operation (Long idle)	4.43 W	4.35 W	6.64 W
Sleep	0.63 W	0.66 W	0.63 W
Off	0.26 W	0.28 W	0.26 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
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QuickSpecs

HP EliteBook 820 G2 Notebook PC

Normal Operation (Short idle)	32 BTU/hr	34 BTU/hr	34 BTU/hr
Normal Operation (Long idle)	15 BTU/hr	15 BTU/hr	23 BTU/hr
Sleep	2 BTU/hr	2 BTU/hr	2 BTU/hr
Off	1 BTU/hr	1 BTU/hr	1 BTU/hr

*NOTE: 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	2.9	24
Fixed Disk – Random writes	3.1	26

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: CR2320 (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 0% post-consumer recycled plastic (by wt.)
- This product is 96.6% recycle-able when properly disposed of at end of life.

Packaging Materials

1.	External:	PAPER/Corrugated	372 g
2.	Internal:	PLASTIC/EPE (Expanded Polyethylene)	43.7 g
3.		PLASTIC/Polyethylene low density	26 g
4.	The plastic packaging material contains at least 50% recycled content.		
5.	The corrugated paper packaging materials contains at least 70% 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
- 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 (PBEBs)



- 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)

6.

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:

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

[U](http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GB)

[Product Design ISO 14K Certificate.pdf](http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GB)

and

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

COUNTRY OF ORIGIN

China



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

Type	Description	Part #
Cases	HP Slim Ultrabook Messenger (up to 15.6" x .88"/22/5mm)	F3W14AA
	HP Slim Ultrabook Top Load (up to 15.6" x .88"/22/5mm)	F3W15AA
	HP Slim Ultrabook Backpack (up to 15.6" x .88"/22/5mm)	F3W16AA
	HP Ultrabook Sleeve (up to 14.0/35.6cm x 1"/25.4mm)	F7Z99AA
	HP Ultrabook Sleeve (up to 15.6"/39.8cm x 1"/25.4mm)	F8A00AA
Docking	HP UltraSlim Docking Station	D9Y32AA#xxx
	HP USB 3.0 Port Replicator	H1L08AA#xxx
Input/Output – Mice	Universal Port Replicator	E6D70AA#xxx
	HP USB Travel Mouse	G1K28AA
	HP Comfort Grip Wireless Mouse	H2L63AA
	HP 3-Button USB Laser Mouse	H4B81AA
	HP Ultra Mobile Wireless Mouse	H6F25AA#xxx
Input/Output – Keyboards	HP USB Essential Keyboard and Mouse	H6L29AA
	HP 2.4 GHz Keyboard and Mouse	G1K29AA#xxx
Input/Output – Adapters	HP Slim BT Keyboard	H4Q44AA#xxx
	HP DP to HDMI 1.4 Adapter	F3W43AA
	HP DisplayPort to DVI Adapter	F7W96AA
	HP Wireless Display Adapter	J1V25AA#xxx
	HP Dual Output USB Graphics Adaptor	C5U89AA
Power	HP 65W Slim AC Adapter	H6Y82AA#xxx
	HP 90W Slim AC Adapter	H6Y83AA#xxx
	HP 90W Slim Combo AC Adapter w/ USB	H6Y84AA#xxx
	HP 45W Smart AC Adapter	H6Y88AA#xxx
	HP 65W Smart AC Adapter	H6Y89AA#xxx
	HP 90W Smart AC Adapter	H6Y90AA#xxx
Batteries	HP SB03XL Notebook Battery	E7U25AA
	HP UltraSlim Keyed Cable Lock	H4D73AA
Security	HP Docking Station Cable Lock	AU656AA#XXX
	HP 12.5 NB Privacy Filter	J6E64AA
Storage - External Storage	HP USB External DVDRW Drive	F2B56AA
	HP EliteDisplay S231d 23-in IPS LED BLU Notebook Docking Monitor	F0W81AA
	HP EliteDisplay S240ml 23.8-in IPS LED Backlit MHL Monitor	F4M47AA
	HP EliteDisplay E241i 24-in IPS LED Backlit Monitor	F0W81AA



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