Overview

HP EliteBook 755 G5

Left

1. Power connector
2. USB Type-C™
3. Docking connector
4. Ethernet port
5. HDMI port (Cable not included)
6. USB 3.1 Gen 1 port
7. Audio combo jack
8. SIM card slot

Overview

1. Internal microphones
2. Webcam
3. Internal microphones
4. Speaker grill
5. Click button
6. Clickpad

Right

7. Indicator LEDs (Power, Wireless , and Storage usage light)
8. Smartcard Reader (Select models)
9. USB 3.1 Gen 1 charging port
10. Vent
11. Security lock slot (Lock sold separately)
12. Power button

Overview

AT A GLANCE

- Eye-catching ultraslim design, premium precision-crafted machined aluminum (CNC), seamless formed aluminum chassis for clean, crisp, premium look and feel
- AMD Ryzen PRO processor
- Designed to support all HP docking options including HP's traditional Ultraslim mechanical dock and the all-new Thunderbolt™ dock
- Featuring HP Collaboration Keyboard with Clickpad to manage most commonly used conferencing functions with a single keystroke
- Innovative world-facing third mic improves inbound ambient noise cancellation while 360 degree mic pick-up allows everyone to clearly hear and be heard
- Optional ultrabright displays with ambient light sensor
- Enterprise grade security with HP SureStart, HP Privacy Camera, HP Sure View, HP Sure Run, HP Sure Recover, SmartCard Reader and Fingerprint reader
- Choice of displays:
- - 39.6cm (15.6") diagonal FHD IPS anti-glare LED-backlit, 220 cd/m², 67% sRGB
- - 39.6cm (15.6") diagonal FHD IPS anti-glare LED-backlit, 400 cd/m², 100% sRGB
- - 39.6cm (15.6") diagonal FHD IPS anti-glare LED-backlit non-touch, 650 cd/m², 100% sRGB with HP Sure View
- - 39.6cm (15.6") diagonal FHD IPS LED-backlit Corning® Gorilla® Glass 3 touch, 220 cd/m2, 67% sRGB
- Flexible wireless connectivity options
- Preinstalled with Windows 10 versions or FreeDOS 2.0
- Choice of solid state drives up to 512 GB and DDR4 memory up to 32 GB
- Supports fast charging (50% in 30 minutes) with no impact on battery recharge cycles[1]
- Optional HD camera or Infra Red camera with multi-array microphone
- Battery life up to 11 hours and 45 minutes
- Passed MIL-STD testing[2]

1. Recharges your battery up to 50% within 30 minutes when the system is off or in standby mode. Power adapter with a minimum capacity of 65 watts is required. After charging has reached 50% capacity, charging will return to normal. Charging time may vary +/-10% due to System tolerance.
2. MIL STD 810G testing is not intended to demonstrate fitness for Department of Defense contracts requirements or for military use. Test results are not a guarantee of future performance under these test conditions. Damage under the MIL STD test conditions or any accidental damage requires an optional HP Accidental Damage Protection Care Pack.

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

Technical Specifications

PRODUCT NAME

HP EliteBook 755 G5

OPERATING SYSTEM

Preinstalled	Windows 10 Pro 64[1] Windows 10 Pro 64 (National Academic only)[1,2] Windows 10 Home 64[1] Windows 10 Home Single Language 64[1] FreeDOS 2.0

1. 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.windows.com/

2. Some devices for academic use will automatically be updated to Windows 10 Pro Education with the Windows 10 Anniversary Update. Features vary; see https://aka.ms/ProEducation for Windows 10 Pro Education feature information.

PROCESSORS

AMD Ryzen™ 7 PRO 2700U APU with Radeon™ Vega Graphics
(2.2 GHz base frequency, up to 3.8 GHz burst frequency, 6 MB cache, 4 cores)[3,4,5]
AMD Ryzen™ 5 PRO 2500U APU with Radeon™ Vega Graphics
(2 GHz base frequency, up to 3.6 GHz burst frequency, 6 MB cache, 4 cores)[3,4,5]
AMD Ryzen™ 3 PRO 2300U APU with Radeon™ Vega Graphics
(2 GHz base frequency, up to 3.4 GHz burst frequency, 6 MB cache, 4 cores)[3,4,5]

Processor Family
AMD® Ryzen™ APU processor[5]

3. 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. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. AMD's numbering is not a measurement of clock speed.
4. Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.
5. NOTE: In accordance with Microsoft's support policy, HP does not support the Windows 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows 8 or Windows 7 drivers on http://www.support.hp.com.

CHIPSET

Chipset is integrated with processor

GRAPHICS

Integrated
AMD Radeon™ Vega Graphics

Technical Specifications

DISPLAY

Non-Touch
39.6 cm (15.6") diagonal FHD IPS anti-glare LED-backlit, 220 cd/m², 67% sRGB (1920 x 1080)[6,7,8]
39.6 cm (15.6") diagonal FHD IPS anti-glare LED-backlit, 220 cd/m², 67% sRGB with HD camera (1920 x 1080)[6,7,8]
39.6 cm (15.6") diagonal FHD IPS anti-glare LED-backlit, 220 cd/m², 67% sRGB with HD IR webcam (1920 x 1080)[6,7,8]
39.6 cm (15.6") diagonal FHD IPS anti-glare LED-backlit, 220 cd/m², 67% sRGB for WWAN (1920 x 1080)[6,7,8]
39.6 cm (15.6") diagonal FHD IPS anti-glare LED-backlit, 220 cd/m², 67% sRGB with HD camera for WWAN (1920 x 1080)[6,7,8]
39.6 cm (15.6") diagonal FHD IPS anti-glare LED-backlit, 220 cd/m², 67% sRGB with HD IR webcam for WWAN (1920 x 1080)[6,7,8]
39.6 cm (15.6") diagonal FHD IPS anti-glare LED-backlit, 400 cd/m², 100% sRGB with Ambient Light Sensor and HD IR webcam (1920 x 1080)[6,7,8]
39.6 cm (15.6") diagonal FHD IPS anti-glare LED-backlit, 400 cd/m², 100% sRGB with Ambient Light Sensor and HD IR webcam for WWAN (1920 x 1080)[6,7,8]
39.6 cm (15.6") diagonal FHD IPS eDP + PSR anti-glare LED-backlit, HP Sure View Integrated Privacy Screen 650 cd/m², 100% sRGB with HD IR webcam for WWAN (1920 x 1080) [6,7,8,9]

Touch
39.6 cm (15.6") diagonal FHD IPS LED-backlit touch screen with Corning® Gorilla® Glass 3, 220 cd/m², 67% sRGB with HD IR webcam (1920 x 1080)[6,7,8]
39.6 cm (15.6") diagonal FHD IPS LED-backlit touch screen with Corning® Gorilla® Glass 3, 220 cd/m², 67% sRGB with HD IR webcam for WWAN (1920 x 1080)[6,7,8]

HDMI 2.0
Supports resolution up to 4k @ 60Hz

Displays support

Docking station model	Total number of supported displays(incl. the notebook display)	Max.resolutions supported	Dock Connectors	Technical limitations
HP UltraSlim Docking Station	4	Dual 2.5K @ 60Hz	2xDP, 1xVGA	Dual 2.5k only with both displays into DP
HP Thunderbolt Dock G2	4	Dual 4K @ 60Hz	2xDP, 1xVGA, 1xTB, 1xUSB-C alt-mode	Dual 4k only with one display in to DP and + TB port or USB-C alt mode + TB port
HP Elite USB-C Dock G4	4	Dual 2K @ 60Hz Single 4K @ 60Hz (3840 x 1440)	1xHDMI, 2xDP	
HP USB-C Universal Dock	3	Dual 4K @ 60Hz Single 5K @ 60Hz	2xDP	
HP USB-C Travel Dock	2	Single 2K @ 60Hz	1xHDMI, 1xVGA	Single external display Only HDMI or VGA at the time
HP USB-C Mini Dock	2	Single 4K @ 30Hz	1xHDMI, 1xVGA	Single external display Only HDMI or VGA at the time

6. HD content required to view HD images.
7. Sold separately or as an optional feature.
8. Resolutions are dependent upon monitor capability, and resolution and color depth settings.
9. HP Sure View integrated privacy screen is an optional feature that must be configured at purchase.

STORAGE AND DRIVES

Primary M.2 Storage
128 GB SATA-3 SS TLC[10]
256GB PCIe NVMe SS[10]
256 GB PCIe Gen3x4 NVMe SS TLC[10]
256 GB SATA-3 SS TLC Opal 2[10]
360 GB PCIe Gen3x4 NVMe SS TLC (Intel)[10]
512 GB PCIe Gen3x4 NVMe SS TLC[10]
512 GB PCIe Gen3x4 NVMe SS TLC Opal 2[10]
512 GB SATA-3 SS TLC FIPS-140-2[10]

10. For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 10) is reserved for system recovery software.

MEMORY

Maximum Memory
32 GB DDR4-2400 SDRAM[11]

Memory
32 GB DDR4-2400 SDRAM (2 X 16 GB)[11]
16 GB DDR4-2400 SDRAM (1 X 16 GB)[11]
16 GB DDR4-2400 SDRAM (2 X 8 GB)[11]
8 GB DDR4-2400 SDRAM (1 x 8 GB)[11]
8 GB DDR4-2400 SDRAM (2 x 4 GB)[11]
4 GB DDR4-2400 SDRAM (1 x 4 GB)[11]

Memory Slots
2 SODIMM
Both slots are upgradeable
System runs at 2400
Supports Dual Channel Memory.

11. 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

WLAN
Intel® Dual Band Wireless-AC 8265 802.11a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 4.2 Combo, non-vPro™[12]
Realtek RTL8822BE 802.11ac (2x2) Wi-Fi® and Bluetooth® 4.2 Combo, non-vPro™[12]

WWAN
HP lt4132 LTE/HSPA+ 4G Mobile Broadband[13]
Intel® XMM™ 7360 LTE-Advanced[13]

NFC
NXP NPC300 Near Field Communication Module

Miracast
Support for Miracast[14]

Ethernet
Realtek PCIe GbE Family Controller 10/100/1000[15]

12. Wireless access point and Internet service required and sold separately. 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.
13. WWAN module is optional and 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. 4G LTE not available on all products, in all regions.
14. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming
15. 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.

AUDIO/MULTIMEDIA

Audio
Audio by Bang & Olufsen
Integrated 3 Multi Array Microphone
2 Integrated Stereo Speakers (74dB)

Camera
HD camera[16,17]
HD IR webcam[16,17]

16. HD content required to view HD images.
17. Sold separately or as an optional feature.

Technical Specifications

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard
HP Premium Collaboration Keyboard, spill resistant with drain
Backlit keyboard available as an option

Pointing Device
Clickpad with multi-touch gestures enabled, taps enabled as default
Microsoft Precision Touchpad Default Gestures Support

Function Keys
F1 - Display Switching
F2 - Blank or Privacy
F3 - Brightness Down
F4 - Brightness Up
F5 - Audio Mute
F6 - Volume Down
F7 - Volume Up
F8 - Mic Mute
F9 - Blank or Backlit Toggle
F10 - numlk
F11 - Wireless
F12 - Calendar
Share/Present
Call Answer
Call End

Hidden Fuctions
Fn+R = Break
Fn+S = Sys Rq
Fn+C = Scroll Lock

SOFTWARE AND SECURITY

Preinstalled Software

BIOS

HP BIOSphere Gen4[17]

HP DriveLock & Automatic DriveLock

BIOS Update via Network

Master Boot Record Security

Power On Authentication

Secure Erase[18]

Absolute Persistence Module[19]

Pre-boot Authentication

HP Wireless Wakeup

Software

HP Native Miracast Support[16]

HP LAN-Wireless Protection

HP Velocity

HP ePrint + JetAdvantage[20]

HP Hotkey Support - CMIT

HP Recovery Manager

HP Jumpstart

HP Support Assistant[21]

HP Noise Cancellation Software

HP PhoneWise[28]

Buy Office

Manageability Features

HP Driver Packs[22]

HP System Software Manager (SSM)

HP BIOS Config Utility (BCU)

HP Client Catalog

HP Manageability Integration Kit Gen2[23]

Ivanti Management Suite[24]

HP Collaboration Keyboard

Client Security Software

HP Client Security Suite Gen4 including:[25]

HP Security Manager[26] (including Credential Manager, HP Password Manager, HP Spare Key)

Power On Authentication

HP Fingerprint Sensor[30]

HP Device Access Manager

HP Power On Authentication

Microsoft Defender[27]

Technical Specifications

Security Management

HP BIOSphere Gen4[17]

HP DriveLock & Automatic DriveLock

BIOS Update via Network

Secure Erase[18]

Pre-boot Authentication

TPM 2.0 Embedded Security Chip shipped with Windows 10 (Common Criteria EAL4+ Certified)

SATA 0,1 port disablement (viaBIOS)

RAID configurations[31]

Serial, USB enable/disable (viaBIOS)

Power-on password (viaBIOS)

Setup password (viaBIOS)

Support for chassis padlocks and cable lock devices

Integrated hood sensor

HP Sure Click[32]

HP Sure Start Gen4[29]

Security

TPM

Model: SLB9670

Version: 7.85

Revision: TPM 2.0

FIPS 140-2 Compliant: Yes

Smartcard Reader

Model number: Alcor AU9560

FIPS 201 Compliant: Yes

IPv6 Certification:

Yes / No

MD5 Hash: Please follow the instructions below to access MD5 Hash.

Log-on to http://hp.com/support, enter your product name, select software and drivers, select OS, select driver. After selecting the driver, click on “Associated files” and then click on “Download”. When opening the file, under “Purpose” you should see the appropriate “SOFTPAQ MD5:” Field

Graphics (Intel Video Driver): TBD

WWAN: TBD

WLAN: TBD

Is the BIOS on this notebook ISO/IEC 19678:2015 (formerly NIST 800-147) compliant?:

Yes / No

UEFI version:

16. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming
17. HP BIOSphere Gen4 features may vary depending on the PC platform and configurations. Requires Intel® or AMD 8th generation processors.
18. Secure Erase for the methods outlined in the National Institute of Standards and Technology Special Publication 800-88. Supported on Elite platforms with BIOS version F.03 or higher.
19. 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.
20. HP ePrint Drive 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 http://www.hp.com/go/eprintcenter). Print times and connection speeds may vary.
21. HP Support Assistant requires Windows and Internet access.
22. HP Driver Packs not preinstalled, however available for download at http://www.hp.com/go/clientmanagement.
23. HP Manageability Integration Kit can be downloaded from http://www8.hp.com/us/en/ads/clientmanagement/overview.html
24. Ivanti Management Suite subscription required.
25. HP Client Security Suite Gen 4 requires Windows and Intel® or AMD 8th generation processors.
26. HP Password Manager requires Internet Explorer or Chrome or FireFox. Some websites and applications may not be supported. User may need to enable or allow the add-on / extension in the internet browser.
27. Microsoft Defender Opt in and internet connection required for updates.
28. HP PhoneWise Client is only available on select platforms. For supported platforms and HP PhoneWise system requirements see http://www.hp.com/go/HPPhoneWise.
29. HP Sure Start Gen4 is available on HP Elite products equipped with 8th generation Intel® or AMD processors.
30. HP Fingerprint Sensor sold separately or as an optional feature.
31. RAID configuration is optional and does require a second hard drive.
32. HP Sure Click is available on most HP PCs and supports Microsoft® Internet Explorer and Chromium™. Supported attachments include Microsoft Office (Word, Excel, PowerPoint) and PDF files in read only mode, when Microsoft Office or Adobe Acrobat are installed.

Technical Specifications

POWER

Power Supply

HP Smart 45 W External AC power adapter[33]
HP Smart 45 W External AC power adapter, 2-prong (Japan only)[33]
HP Smart 65 W External AC power adapter[33]
HP Smart 65 W EM External AC power adapter[33]
45 W USB Type-C™ adapter[33]
65 W USB Type-C™ adapter[33]

Primary Battery
HP Long Life 3-cell, 50 Wh Li-ion[34,35]

Power Cord
2-wire plug - 1.0m (Japan only)[33]
3-wire plug - 1.0m[33]
3-wire plug - 1.8m[33]
Duckhead power cord - 1.0m[33]
Duckhead power cord - 1.8m[33]

Battery Life
Up to 11 hours and 45 minutes[35]

33. Availability may vary by country.
34. Battery is internal and not replaceable by customer. Serviceable by warranty.
35. Supports HP Fast Charging with 65W AC adapter.
36. Windows 10 MM14 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.

WEIGHTS & DIMENSIONS

Weight
Starting at 4.09 lb (non-touch); Starting at 4.37 lb (touch)[37]
Starting at 1.86 kg (non-touch); Starting at 1.98 kg (touch)[37]

Dimensions (w x d x h)
14.6 x 9.91 x 0.72 in
37.08 x 25.17 x 1.83 cm

37. Weight will vary by configuration.

Technical Specifications

PORTS/SLOTS

Ports

1 USB Type-C™ (Alt Mode)
2 USB 3.1 Gen 1 (1 charging)
1 HDMI 2.0[38]
1 RJ-45 / Ethernet
1 docking connector
1 headphone/microphone combo
1 AC power
1 SIM card slot[39]
1 Smartcard reader[39]

[38] HDMI cable sold separately.
[39] Sold separately or as an optional feature.

ENVIRONMENTAL & INDUSTRY

Environmental Data	**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. Search keyword *generator* on HP's 3rd party option store for solar energy accessory at http://www.hp.com/go/options		
	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)	8.59 W	8.05 W	8.59 W
	Normal Operation (Long idle)	6.49 W	6.1 W	5.06 W
	Sleep	0.8 W	0.83 W	0.8 W
	Off	0.43 W	0.44 W	0.43 W
		Note: Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency		

(EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.

Heat Dissipation*	**115VAC, 60Hz**	**230VAC, 50Hz**	**100VAC, 60Hz**
Normal Operation (Short idle)	29	27	29
Normal Operation (Long idle)	22	20	17
Sleep	2	2	3
Off	1	1	1

*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 (L_{WAd}, bels)	Sound Pressure (L_{pAm}, decibels)
Typically Configured – Idle	2.5	15
Fixed Disk – Random writes	3.7	30

Longevity and Upgrading

This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include:

Spare parts are available throughout the warranty period and or for up to "5" years after the end of production.

Batteries

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

Batteries used in the product do not contain:
Mercury greater the1ppm by weight
Cadmium greater than 20ppm by weight

Battery size: CR2032 (coin cell)
Battery type: Lithium

	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 94.4% recycle-able when properly disposed of at end of life.		
	Packaging Materials	**External:**	PAPER/Corrugated	345 g
		Internal:	PLASTIC/EPE (Expanded Polyethylene)	76 g
			PLASTIC/Polypropylene - PP	4 g
			PLASTIC/Polyethylene low density	15 g
		The plastic packaging material contains at least 50% recycled content.		
		The corrugated paper packaging materials contains at least 75% 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 (PBBEs) • Polybrominated Biphenyl Oxides (PBBOs) • Polychlorinated Biphenyl (PCB) • Polychlorinated Terphenyls (PCT) • Polyvinyl Chloride (PVC) – except for wires and cables, has been voluntarily removed from most applications. • Radioactive Substances • Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)		

Technical Specifications

	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.
	HP, Inc. 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://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c04755842 http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf

Technical Specifications

SERVICE AND SUPPORT

HP Services offers 3-year and 1-year limited warranties and 90 day software 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[40]

[40] HP Care Packs are sold separately. 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. HP services are governed by the applicable HP terms and conditions of service provided or indicated to Customer at the time of purchase. Customer may have additional statutory rights according to applicable local laws, and such rights are not in any way affected by the HP terms and conditions of service or the HP Limited Warranty provided with your HP Product.

Technical Specifications

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)	**Nominal Operating Voltage**	19V
	Average Operating Power	Win 10
	Integrated Graphics	15W
	Max Operating Power	UMA < 45W
Temperature	**Operating**	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)
	Non-operating	-4° to 140° F (-20° to 60° C)
Relative Humidity	**Operating**	10% to 90%, non-condensing
	Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
Shock	**Operating**	Half sine wave shock: 40G, 2ms duration
	Non-operating	Half sine wave shock: 240G, 2ms duration
Random Vibration	**Operating**	Nominal 1.043 grms
	Non-operating	Nominal 3.5 grms
Altitude (unpressurized)	**Operating**	-50 to 10,000 ft (-15.24 to 3,048 m)
	Non-operating	-50 to 40,000 ft (-15.24 to 12,192 m)
Planned Industry Standard Certifications	**UL**	Yes
	CSA	Yes
	FCC Compliance	Yes
	ENERGY STAR®	Yes
	EPEAT®	Yes
	Australia / NZ A-Tick Compliance	Yes
	CCC	Yes
	Japan VCCI Compliance	Yes
	KC	Yes
	BSMI	Yes
	CE Marking Compliance	Yes
	GOST	Yes
	Saudi Arabian Compliance (ICCP)	TRSE owned
	UKRSERTCOMPUTER	

Technical Specifications

DISPLAYS*

Panel LCD 15.6 inch FHD (1920x1080) Anti-Glare WLED UWVA 45% cg 220nits eDP slim NB	**Outline Dimensions (W x H)**	350.96 x 216.75 (max.)
	Active Area	344.16 x 193.59 (typ.)
	Weight	370g max.
	Diagonal Size	15.6"
	Thickness	3.2mm max.
	Interface	eDP 1.2
	Surface Treatment	AG
	Touch Enabled	No
	Contrast Ratio	600:1 (typ) - AG
	Refresh Rate	60Hz
	Brightness	220 nits typical (Panel Only)
	Pixel Resolution	1920 x 1080 (FHD)
	Format	RGB
	Backlight	LED
	Color Gamut Coverage	45%
	Color Depth	6 bits + Hi FRC
	Viewing Angle	UWVA 85/85/85/85

Panel LCD 15.6 inch FHD (1920x1080) WLED UWVA 45% cg 220nits eDP slim NB Touch	**Outline Dimensions (W x H)**	350.96 x 216.75 (max.)
	Active Area	344.16 x 193.59 (typ.)
	Weight	568g max.
	Diagonal Size	15.6"
	Thickness	3.4mm max.
	Interface	eDP 1.2
	Surface Treatment	BV
	Touch Enabled	Yes
	Contrast Ratio	600:1 (typ)
	Refresh Rate	60Hz
	Brightness	220 nits typical (Panel Only)
	Pixel Resolution	1920 x 1080 (FHD)
	Format	RGB
	Backlight	LED
	Color Gamut Coverage	45%
	Color Depth	6 bits + Hi FRC
	Viewing Angle	UWVA 85/85/85/85

Technical Specifications

Panel LCD 15.6 inch FHD (1920x1080) Anti-Glare WLED UWVA 72% cg 400nits eDP 1.3 + PSR slim NB	**Outline Dimensions (W x H)**	350.96 x 216.75 (max.)
	Active Area	344.16 x 193.59 (typ.)
	Weight	370g max.
	Diagonal Size	15.6"
	Thickness	3.2mm max.
	Interface	eDP 1.3 + PSR (2 lane)
	Surface Treatment	AG
	Touch Enabled	No
	Contrast Ratio	600:1 (typical)
	Refresh Rate	60Hz
	Brightness	400 nits typical (Panel Only)
	Pixel Resolution	1920 x 1080 (FHD)
	Format	RGB
	Backlight	LED
	Color Gamut Coverage	72%
	Color Depth	6 bits + Hi FRC
	Viewing Angle	UWVA 85/85/85/85

Technical Specifications

Panel LCD 15.6 inch FHD (1920x1080) Anti-Glare WLED UWVA 72% cg 650nits eDP 1.4+PSR ultraslim NB Privacy	**Outline Dimensions (W x H)**	350.96 x 216.75 mm (max.)
	Active Area	344.46 x 193.89 mm (max.)
	Weight	320g max.
	Diagonal Size	15.6"
	Thickness	2.80 mm max.
	Interface	eDP 1.4
	Surface Treatment	AG
	Touch Enabled	No
	Contrast Ratio	Sharing mode, 600:1 (typ.) Privacy mode, 150:1 (typ.)
	Refresh Rate	120Hz
	Brightness	Sharing mode, 650 nits (typ.) Privacy mode, 320 nits (typ.)
	Pixel Resolution	1920 x 1080 (FHD)
	Format	RGB strip
	Backlight	LED
	Color Gamut Coverage	Sharing mode, 72% Privacy mode, 60%
	Color Depth	8 bits
	Viewing Angle	Sharing mode, CR >10, L/R/U/D, 85/85/85/85 (typ.) Privacy mode CR>2, L/R/U/D, 50/50/85/85 (typ.)

***NOTE:** All specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower.

STORAGE[1]

SSD 128 GB 2280 M2 SATA-3 TLC	**Drive Weight**	0.02 lb (10 g)
	Capacity	128 GB
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	ATA-8, SATA 3.0
	Maximum Sequential Read	Up To 520 MB/s
	Maximum Sequential Write	Up To 450 MB/s
	Logical Blocks	250,069,680
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	DIPM; TRIM; DEVSLP

Technical Specifications

SSD 256 GB 2280 M2 PCIe-3x4 SS NVMe TLC	**Drive Weight**	0.02 lb (10 g)
	Capacity	256 GB
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen3X4
	Maximum Sequential Read	Up To 2600 MB/s
	Maximum Sequential Write	Up To 900 MB/s
	Logical Blocks	500,118,192
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	TRIM; L1.2

SSD 256 GB 2280 M2 SATA-3 Self Encrypted OPAL2 TLC	**Drive Weight**	0.02 lb (10 g)
	Capacity	256 GB
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	ATA-8, SATA 3.0
	Maximum Sequential Read	Up To 530 MB/s
	Maximum Sequential Write	Up To 515 MB/s
	Logical Blocks	500,118,192
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	DIPM; TRIM; DEVSLP

Technical Specifications

256 GB 2280 PCIe NVMe Value Solid State Drive	**Drive Weight**	0.02 lb (10 g)
	Capacity	256 GB
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen3X4
	Maximum Sequential Read	Up To 1700 MB/s
	Maximum Sequential Write	Up To 600 MB/s
	Logical Blocks	500,118,192
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	TRIM; L1.2

SSD 360 GB 2280 PCIe-3x4 NVMe TLC	**Drive Weight**	0.02 lb (10 g)
	Capacity	360 GB
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen3X4
	Maximum Sequential Read	Up To 1700 MB/s
	Maximum Sequential Write	Up To 600 MB/s
	Logical Blocks	703,282,608
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	TRIM; L1.2

SSD 512 GB 2280 M2 PCIe-3x4 SS NVMe TLC	**Drive Weight**	0.02 lb (10 g)
	Capacity	512 GB
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen3X4
	Maximum Sequential Read	Up To 2600 MB/s
	Maximum Sequential Write	Up To 1400 MB/s
	Logical Blocks	1,000,215,216
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	TRIM; L1.2

Technical Specifications

SSD 512 GB 2280 M2 SATA-3 TLC FIPS	**Drive Weight**	0.02 lb (10 g)
	Capacity	512 GB
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	ACS-3, SATA 3.2
	Maximum Sequential Read	Up To 530 MB/s
	Maximum Sequential Write	Up To 400 MB/s
	Logical Blocks	1,000,215,216
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	DIPM; TRIM; DEVSLP

SSD 512 GB 2280 PCIe-3x4 NVMe Self Encrypted OPAL2 TLC	**Drive Weight**	0.02 lb (10 g)
	Capacity	512 GB
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen3X4
	Maximum Sequential Read	Up To 2900 MB/s
	Maximum Sequential Write	Up To 1400 MB/s
	Logical Blocks	1,000,215,215
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	TRIM; L1.2

1. For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 10) is reserved for system recovery software.

NETWORKING/COMMUNICATIONS

Realtek 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo[1]	**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 • 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
	Data Rates	• 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
	Security[3]	• IEEE and Wi-Fi® 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 Power[2]	• 802.11b : +14dBm minimum • 802.11g : +12dBm minimum • 802.11a : +12dBm minimum • 802.11n HT20(2.4GHz) : +12dBm minimum • 802.11n HT40(2.4GHz) : +12dBm minimum • 802.11n HT20(5GHz) : +10dBm minimum • 802.11n HT40(5GHz) : +10dBm minimum • 802.11ac VHT80(5GHz) : +10dBm minimum
	Power Consumption	• Transmit mode 2.0 W • Receive mode 1.6 W

	• Idle mode (PSP) 180 mW (WLAN Associated) • Idle mode 50 mW (WLAN unassociated) • Connected Standby 10mW • Radio disabled 8 mW	
Power Management	ACPI compliant power management 802.11 compliant power saving mode	
Receiver Sensitivity[4]	802.11b, 1Mbps : -93.5dBm maximum 802.11b, 11Mbps : -84dBm maximum 802.11a/g, 6Mbps : -86dBm maximum 802.11a/g, 54Mbps : -72dBm maximum 802.11n, MCS07 : -67dBm maximum 802.11n, MCS15 : -64dBm maximum 802.11ac, MCS0 : -84dBm maximum 802.11ac, MCS9 : -59dBm 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 Half-MiniCard	
Dimensions	Type 2230 : 2.3 x 22.0 x 30.0 mm	
Weight	Type 2230 : 2.8g	
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	

HP Integrated Module with Bluetooth 4.0/4.1/4.2 Wireless Technology

Bluetooth Specification	4.0/4.1/4.2 Compliant
Frequency Band	2402 to 2480 MHz
Number of Available Channels	Legacy : 0~79 (1 MHz/CH) BLE : 0~39 (2 MHz/CH)
Data Rates and Throughput	Legacy : 3 Mbps data rate; throughput up to 2.17 Mbps BLE : 1 Mbps data rate; throughput up to 0.2 Mbps Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)

Technical Specifications

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.
Power Consumption	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW
Electrical Interface	USB 2.0 compliant
Bluetooth Software Supported	Microsoft Windows Bluetooth Software
Power Management	Microsoft Windows ACPI, and USB Bus Support
Certifications	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
Power Management Certifications	ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark
Bluetooth Profiles Supported	BT4.1-ESR 5/6/7 Compliance LE Link Layer Ping LE Dual Mode LE Link Layer LE Low Duty Cycle Directed Advertising LE L2CAP Connection Oriented Channels Train Nudging & Interlaced Scan BT4.2 ESR08 Compliance LE Secure Connection- Basic/Full LE Privacy 1.2 –Link Layer Privacy LE Privacy 1.2 –Extended Scanner Filter Policies LE Data Packet Length Extension FAX Profile (FAX) Basic Imaging Profile (BIP)2 Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP)

1. Wireless access point and Internet service is required. Availability of public wireless access point is 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
2. The FCC has declared as of September 1, 2014 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.
3. Check latest software/driver release for updates on supported security features.
4. 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).

Technical Specifications

HP lt4132 LTE/HSPA+ 4G Mobile Broadband[5]	**Technology/Operating bands**	LTE: 2100 (Band 1), 1900 (Band 2), 1800 (Band 3) MHz, 850 (Band 5), 2600 (Band 7), 900 (Band 8) MHz, 800 (Band 20), 700 (Band 28) 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 10 LTE Specification CAT.4, 20MHz BW WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification E-GPRS: Class B, Multi-slot class 12, coding schemes CS1 - CS4 and MSC1 - MSC9
	GPS	Standalone, A-GPS (MS-B and LTO)
	GPS bands	1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz
	Maximum data rates	LTE: 150 Mbps (Download), 50 Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21Mbps (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 dBm E-GPRS 900/850: 27 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: 2,600 mA (peak); 500 mA (average)
	Form Factor	M.2, 3042-S3 Key B
	Weight	6 g
	Dimensions (Length x Width x Thickness)	42 x 30 x 2.3 mm

5. 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.

Technical Specifications

Intel® XMM™ 7360 LTE-Advanced[6]	**Technology/Operating bands**	FDD LTE: 2100 (Band 1), 1900 (Band 2), 1800 (Band 3), 1700/2100 (Band 4), 850 (Band 5), 2600 (Band 7), 900 (Band 8), 1400 (Band 11), 700 (Band 12 lower), 700 (Band 13 upper), 700 (Band 17 lower), 850 (Band 18 lower), 850 (Band 19 upper), 800 (Band 20), 1400 (Band 21), 850 (Band 26), 700 (Band 28), 700 (Band 29 RX only), 2300 (Band 30), 2100 (Band 66). TDD LTE: 2600 (Band 38), 1900 (Band 39), 2400 (Band 40), 2500 (Band 41). HSPA+: 2100 (Band 1), 1900 (Band 2), 1700/2100 (Band 4), 850 (Band 5), 900 (Band 8) MHz
	Wireless protocol standards	3GPP Release 11 LTE Specification CAT.9, DL 60MHz BW throughput up to 450Mbps; UL 20MHz throughput up to 50Mbps WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification
	GPS	Standalone, A-GPS (MS-A, MS-B and XTRA)
	GPS bands	1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz, Beidou 1561.098 MHz
	Maximum data rates	LTE: 450 Mbps (Download), 50 Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21Mbps (Download), 5.76 Mbps (Upload)
	Maximum output power	LTE: 23 dBm HSPA+: 23.5 dBm
	Maximum power consumption	LTE: 1,200 mA (peak); 900 mA (average) HSPA+: 1,100 mA (peak); 800 mA (average)
	Form Factor	M.2, 3042-S3 Key B
	Weight	5.8 g
	Dimensions (Length x Width x Thickness)	42 x 30 x 2.3 mm

6. 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 countrie

Intel Windstorm Peak 2 8265 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo[7] Non-vPro	**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 • 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
Data Rates	• 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
Security[9]	• IEEE and Wi-Fi® 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 Power[8]	• 802.11b : +14dBm minimum • 802.11g : +12dBm minimum • 802.11a : +12dBm minimum • 802.11n HT20(2.4GHz) : +12dBm minimum • 802.11n HT40(2.4GHz) : +12dBm minimum • 802.11n HT20(5GHz) : +10dBm minimum • 802.11n HT40(5GHz) : +10dBm minimum • 802.11ac VHT80(5GHz) : +10dBm minimum
Power Consumption	• Transmit mode 2.0 W • Receive mode 1.6 W • Idle mode (PSP) 180 mW (WLAN Associated) • Idle mode 50 mW (WLAN unassociated) • Connected Standby 10mW • Radio disabled 8 mW
Power Management	ACPI compliant power management 802.11 compliant power saving mode
Receiver Sensitivity[10]	802.11b, 1Mbps : -93.5dBm maximum 802.11b, 11Mbps : -84dBm maximum 802.11a/g, 6Mbps : -86dBm maximum 802.11a/g, 54Mbps : -72dBm maximum 802.11n, MCS07 : -67dBm maximum 802.11n, MCS15 : -64dBm maximum 802.11ac, MCS0 : -84dBm maximum 802.11ac, MCS9 : -59dBm maximum

Technical Specifications

Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications	
Form Factor	PCI-Express Half-MiniCard	
Dimensions	Type 2230 : 2.3 x 22.0 x 30.0 mm	
Weight	Type 2230 : 2.8g	
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	

HP Integrated Module with Bluetooth 4.0/4.1/4.2 Wireless Technology

Bluetooth Specification	4.0/4.1/4.2 Compliant
Frequency Band	2402 to 2480 MHz
Number of Available Channels	Legacy : 0~79 (1 MHz/CH) BLE : 0~39 (2 MHz/CH)
Data Rates and Throughput	Legacy : 3 Mbps data rate; throughput up to 2.17 Mbps BLE : 1 Mbps data rate; throughput up to 0.2 Mbps Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)
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.
Power Consumption	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW
Electrical Interface	USB 2.0 compliant
Bluetooth Software Supported	Microsoft Windows Bluetooth Software
Power Management	Microsoft Windows ACPI, and USB Bus Support
Certifications	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
Power Management Certifications	ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark

Technical Specifications

Bluetooth Profiles Supported	BT4.1-ESR 5/6/7 Compliance LE Link Layer Ping LE Dual Mode LE Link Layer LE Low Duty Cycle Directed Advertising LE L2CAP Connection Oriented Channels Train Nudging & Interlaced Scan BT4.2 ESR08 Compliance LE Secure Connection- Basic/Full LE Privacy 1.2 –Link Layer Privacy LE Privacy 1.2 –Extended Scanner Filter Policies LE Data Packet Length Extension FAX Profile (FAX) Basic Imaging Profile (BIP)2 Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP)

7. Wireless access point and Internet service is required. Availability of public wireless access point is 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
8. The FCC has declared as of September 1, 2014 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.
9. Check latest software/driver release for updates on supported security features.
10. 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).

POWER

AC Adapter 65 Watt nPFC USB type C	**Dimensions**	74x74x28.5mm	
	Weight	unit: 245g +/- 10g	
	Input	**Input Efficiency**	81.5% min at 115 Vac/ 230Vac @ 5V/3A 86.7% min at 115 Vac/ 230Vac @ 9V/3A 88% min at 115 Vac/ 230Vac @ 10V/5A 88% min at 115 Vac/ 230Vac @ 12V/5A 89% min at 115 Vac/ 230Vac @ 15V/4.33A 89% min at 115 Vac/ 230Vac @ 20V/3.25A
		Input frequency range	47 ~ 63 Hz
		Input AC current	1.7 A at 90 VAC and maximum load
	Output	**Output power**	65W
		DC output	5V/9V/10V/12V/15V/20V
		Hold-up time	5ms at 115 Vac input
		Output current limit	<8.0A
	Connector	Duck head / duck head power cord, without Smart ID DC connector	
	Environmental Design	**Operating temperature**	32°F to 95°F (0° to 35°C)
		Non-operating (storage) temperature	-4°F to 185°F (-20°to 85°C)
		Altitude	0 to 16,400 ft (0 to 5000m)
		Humidity	5% to 95%
		Storage Humidity	5% 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 100,000 hours at 25°C ambient condition.	

AC Adapter 45 Watt nPFC USB type C™	**Dimensions**	62.0x62.0x28.5mm	
	Weight	unit: 220g +/- 10g	
	Input	**Input Efficiency**	Average Efficiency of 25%, 50%, 75%, 100% load condition with 115Vac/230Vac Spec:5V : 81.5%9V : 86.7%10V : 87.5%12V : 87.8%15V : 87.8%20V : 87.8%
		Input frequency range	47 ~ 63Hz
		Input AC current	Max. 1.4 A at 90 Vac
	Output	**Output power**	5V/15W 9V/27W 10V/37.5W 12V/45W 15V/45W 20V/45W
		DC output	5V / 9V / 10V /12V / 15V / 20V
		Hold-up time	5ms at 115 Vac input
		Output current limit	<5.0A
	Connector	USB Type-C™	
	Environmental Design	**Operating temperature**	32°F to 95°F (0°to 35°C)
		Non-operating (storage) temperature	-4°F to 185°F (-20° to 85°C)
		Altitude	0 to 16,400 ft (0 to 5000m)
		Humidity	20% to 95%
		Storage Humidity	10% to 95%
	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.	

HP 45W Smart AC adapter	**Dimensions**	3.74 x 1.57 x 1.04 in (9.5 x 4.0 x 2.65 cm)	
	Weight	0.386 lb (175g) max	
	Input	**Input Efficiency**	87.74% at 115Vac and 88.4% at 230Vac
		Input frequency range	47 ~ 63Hz
		Input AC current	1.4 A at 90 Vac
	Output	**Output power**	45W
		DC output	19.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<8.0A
	Connector	4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords	
	Environmental Design	**Operating temperature**	32° to 95° F (0° to 35° C)
		Non-operating (storage) temperature	-4° to 185° F (-20° to 85° C)
		Altitude	0 to 16,400 ft (0 to 5000m)
		Humidity	20% to 95%
		Storage Humidity	10% to 95%
	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.	
HP 65W Smart AC adapter	**Dimensions**	107.0x47.0x30.0mm	
	Weight	unit: 250g +/- 10g	
	Input	**Input Efficiency**	88.0 % at 115 Vac and 89.0 % at 230Vac
		Input frequency range	47 ~ 63 Hz
		Input AC current	Max. 1.7 A at 90 Vac
	Output	**Output power**	65W
		DC output	19.5V
		Hold-up time	5ms at 115 Vac input
		Output current limit	<11.0A
	Connector	4.5mm Barrel Type	
	Environmental Design	**Operating temperature**	32°F to 95°F (0°to 35°C)
		Non-operating (storage) temperature	-4°F to 185°F (-20° to 85°C)
		Altitude	0 to 16,400 ft (0 to 5000m)
		Humidity	20% to 95%
		Storage Humidity	10% to 95%
	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.	

Technical Specifications

HP 65W EM Smart AC adapter	**Dimensions**	102x55x30mm	
	Weight	270g +/- 10g	
	Input	**Input Efficiency**	87% min at 115V/230V
		Input frequency range	47 to 63 Hz
		Input AC current	1.7 A at 90 VAC and maximum load
	Output	**DC output**	65W(19.5V/3.33A)
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<11A, Over voltage protection- 29V max automatic shutdown
	Connector	4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords	
	Environmental Design	**Operating temperature**	0° to 35° C
		Non-operating (storage) temperature	-20° to 85° C
		Altitude	0 to 5,000 m
		Humidity	0% to 95%
		Storage Humidity	0% to 95%
	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.	

Battery TT 3 Cell WHr 56 Long Life -PL	**Dimensions** (H x W x L)	L 281.7mm x W 79.65mm x H 7.15mm	
	Weight	193 +/- 10g	
	Cells/Type	3cell Lithium-Ion Polymer cell / P604883A1	
	Energy	**Voltage**	11.55V/
		Amp-hour capacity	4.113Ah/ 4.330Ah
		Watt-hour capacity	50 Wh
	Temperature	**Operating (Charging)**	0˚ to 50˚ C
		Operating (Discharging)	-10˚ to 60˚ C
	Fuel Gauge LED	N/A	
	Warranty	3 years	
	Optional Travel Battery Available	No	

COUNTRY OF ORIGIN

China

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

Type	Description	Part #
Cases	HP Slim Top Load	F3W16AA
	HP Slim Backpack	F3W15AA
	HP 15.6 Business Top Load	2SC66AA
Docking	HP UltraSlim Docking Station	D9Y32AA
	HP USB-C Universal Dock	1MK33AA
	HP USB-C Dock G4	3FF69AA
	HP Thunderbolt Dock G2	2UK37AA
	HP USB-C Mini Dock	1PM64AA
Input/Output	HP Slim Wireless Keyboard and Mouse	T6L04AA
	HP Slim USB Keyboard and Mouse	T6T83AA
	HP Wireless (Link-5) Keyboard	T6U20AA
	HP Comfort Grip Wireless Mouse	H2L63AA
	HP Ultra Mobile Wireless Mouse	H6F25AA
	HP Wireless Premium Mouse	1JR31AA
	HP USB Premium Mouse	1JR32AA
	HP Elite Presenter Mouse	2CE30AA
	HP USB Travel Mouse	G1K28AA
	HP Stereo 3.5mm Headset	T1A66AA
	HP Stereo USB Headset	T1A67AA
	HP USB-C to USB-A Hub	Z6A00AA
	HP USB-C to DP	N9K78AA
	HP USB-C to VGA	N9K76AA
	HP HDMI to DVI	F5A28AA
	HP HDMI to VGA	H4F02AA
Power	HP 65W Slim AC Adapter	H6Y82AA
	HP 90W Slim AC Adapter	H6Y83AA
	HP 45W USB-C Power Adapter	1HE07AA
	HP 65W USB-C Power Adapter	1HE08AA
	HP USB-C Notebook Power Bank	2NA10AA
Memory	HP 4GB 2400MHz DDR4 Memory	Z4Y84AA
	HP 8GB 2400MHz DDR4 Memory	Z4Y85AA
	HP 16GB 2400MHz DDR4 Memory	Z4Y86AA
Storage	HP USB External DVDRW Drive	F2B56AA
	HP 128GB TLC M.2 SATA-3 SSD	2JB95AA
	HP 256GB M2 PCIe NVME SSD TLC (2280)	1FU87AA
	HP 512GB M2 PCIe NVME SSD TLC 2280)	1FU88AA

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

Security	HP Docking Station Cable Lock	AU656AA
	HP Keyed Cable Lock	T0Y14AA
	HP Keyed Cable Lock 10mm	T1A62AA
	HP Dual Head Keyed Cable Lock	T1A64AA
UCC	HP USB Collaboration Keyboard	Z9N38AA
	HP Wireless Collaboration Keyboard	Z9N39AA
	HP UC Speaker Phone	K7V16AA
	HP UC Wireless Mono Headset	W3K08AA
	HP UC Wireless Duo Headset	W3K09AA
Displays	HP EliteDisplay E243 23.8-inch Monitor	1FH47AA
	HP EliteDisplay E243i 23.8-inch Monitor	1FH49AA
	HP EliteDisplay E273 27-inch Monitor	1FH50AA
	HP EliteDisplay E273m 27-inch Monitor	1FH51AA

Summary of Changes

Date of change:	Version History:		Description of change:
February 28, 2018	V1 to V2	Update	256 GB 2280 PCIe NVMe Value Solid State Drive features specs added
			Panel LCD 14 inch FHD (1920x1080) Anti-Glare WLED UWVA 72% cg 700nits eDP 1.3+PSR ultraslim Privacy added to DISPLAYS section
April 27, 2018	V2 to V3	Update	Environmental
May 7, 2018	V3 to V4	Update	Display support matrix moved to Display Support section
May 8, 2018	V4 to V5	Added	Environmental tab
May 16, 2018	V5 to V6	Update	Battery life
May 17, 2018	V6 to V7	Update	Processors
May 18, 2018	V7 to V8	Update	Images changed
June 4, 2018	V8 to V9	Update	Display section
July 4, 2018	V9 to V10	Update	At a glance, Memory, Display
July 23, 2018	V10 to V11	Update	Battery life
August 8, 2018	V11 to V12	Update	Battery life, Storage and HP Sure Click
August 29, 2018	V12 to V13	Update	Networking section