Overview

HP ProBook 430 G7 Notebook PC

Left

1. Internal Microphones (2)
2. Webcam
3. Privacy Shutter (Selective model only)
4. Webcam LED
5. Clickpad
6. Hard Drive LED

7. SD Card Reader
8. Thermal Vent
9. USB 3.1 Gen 1 port
10. Standard Security Lock Slot (Lock sold separately)
11. Power Button

Overview

Right

1. Power Connector
2. USB Type-C™ 3.1 Gen 1 Port
3. Ethernet Port (RJ-45)
4. HDMI Port (Cable not included)

5. USB 3.1 Gen 1 Port
6. Headphone/Microphone Combo Jack
7. HP Fingerprint Sensor

Overview

At a Glance

- Preinstall Windows 10 or FreeDOS
- Choice of 10th generation Intel® Core™ i7, i5, i3 processors
- Display include your choice of 33.8 cm (13.3") diagonal HD, Ultra Wide Viewing Angle FHD, Touch or Non-Touch screen, And Privacy Panel option
- Integrated Intel® UHD Graphics, Premium
- Enhanced security features including TPM2.0, HP Sure Sense, HP Sure Start Gen5, HP BIOSphere, Hardware enforced Firmware Protection, optional Fingerprint sensor, optional IR camera, and optional Privacy Panel
- Passed 19 MIL-STD 810 G testing[1]
- Weight starting at 3.28 lbs (1.49 kgs)[3]
- HP Long-Life Rechargeable battery, with HP Fast Charge Technology recharges 50% in 30 minutes[2]
- Supports wireless LAN and wireless WAN options for connectivity on the go
- Up to 512 GB Solid State Drives or 1 TB Hard Drive
- Up to 32 GB total system memory
- 720p HD webcam, IR camera for face authentication with Windows Hello
- Spill-resistant and optional backlit Keyboard, and Clickpad with multi-touch gestures enabled, taps enabled as default

1. MIL STD 810G testing is not intended to demonstrate fitness for U.S. Department of Defense contract 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
2. Recharges the battery up to 50% within 30 minutes when the system is off or in standby mode when used with the power adapter provided with the notebook. After charging has reached 50% capacity, charging speed will return to normal. Charging time may vary +/- 10% due to System tolerance.
3. Does not include power adapter.

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

Technical Specifications

PRODUCT NAME

HP ProBook 430 G7 Notebook PC

OPERATING SYSTEMS

Preinstalled

Windows 10 Pro 64[1]
Windows 10 Pro 64 (National Academic only)[2]
Windows 10 Home 64[1]
Windows 10 Home Single Language 64[1]
Windows 10 Pro (Windows 10 Enterprise available with a Volume Licensing Agreement)[1]
FreeDOS

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

Intel® Core™ i7-10510U processor with Intel® UHD Graphics, Premium (1.8 GHz base frequency, up to 4.9 GHz with Intel® Turbo Boost Technology, 8 MB L3 cache, 4 cores)[3,4 5,6,7]
Intel® Core™ i5-10210U processor with Intel® UHD Graphics, Premium (1.6 GHz base frequency, up to 4.2 GHz with Intel® Turbo Boost Technology, 6 MB L3 cache, 4 cores)[3,4 5,6,7]
Intel® Core™ i3-10110U processor with Intel® UHD Graphics, Premium (2.1 GHz base frequency, up to 4.1 GHz with Intel® Turbo Boost Technology, 4 MB L3 cache, 2 cores)[3,4 5,6,7]

Processors Family
10th Generation Intel® Core™ i7 processor (i7-1050U)[7]
10th Generation Intel® Core™ i5 processor (i5-10210U)[7]
10th Generation Intel® Core™ i3 processor (i3-10110U)[7]

3. Multicore 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. Intel's numbering, branding and/or naming is not a measurement of higher performance.
4. Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.
5. Intel® Turbo Boost performance varies depending on hardware, software and overall system configuration. See http://www.intel.com/technology/turboboost for more information.
6. Max Boost clock frequency performance varies depending on hardware, software and overall system configuration.
7. 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

Technical Specifications

Integrated with processor

GRAPHICS

Integrated
Intel® UHD Graphics, Premium[8]

Supports
Support HD decode, DX12, HDMI 1.4b

8. HD content required to view HD images.

DISPLAYS

Internal

Non-Touch

33.8 cm (13.3") diagonal HD SVA eDP anti-glare Ultraslim, 220 nits, 45% NTSC for two WLAN antennas (1366 x 768)[8,10]

33.8 cm (13.3") diagonal HD SVA eDP anti-glare Ultraslim, 220 nits, 45% NTSC for HD camera and two WLAN antennas (1366 x 768)[8,10]

33.8 cm (13.3") diagonal HD SVA eDP anti-glare Ultraslim, 220 nits, 45% NTSC for HD+IR camera and two WLAN antennas (1366 x 768)[8,10]

33.8 cm (13.3") diagonal HD SVA eDP anti-glare Ultraslim, 220 nits, 45% NTSC for HD camera, WWAN and two WLAN antennas (1366 x 768)[8,10]

33.8 cm (13.3") diagonal FHD IPS eDP anti-glare slim, 250 nits, 45% NTSC for HD camera and two WLAN antennas (1920 x 1080)[8,10]

33.8 cm (13.3") diagonal FHD IPS eDP anti-glare slim, 250 nits, 45% NTSC for HD+IR camera and two WLAN antennas (1920 x 1080)[8,10]

33.8 cm (13.3") diagonal FHD IPS eDP anti-glare slim, 250 nits, 45% NTSC for HD camera, WWAN and two WLAN antennas (1920 x 1080)[8,10]

33.8 cm (13.3") diagonal FHD IPS eDP + PSR anti-glare flat with HP Sure View Integrated Privacy Screen, 1000 nits, 72% NTSC for HD camera and two WLAN antennas (1920 x 1080)[8,10,11]*

Touch

33.8 cm (13.3") diagonal HD SVA eDP ultraslim touch screen, 220 nits, 45% NTSC for HD camera and two WLAN antennas (1366 x 768)[8,9,10]

33.8 cm (13.3") diagonal FHD SVA eDP slim touch screen, 250 nits, 45% NTSC for HD camera and two WLAN antennas (1920 x 1080)[8,9,10]

33.8 cm (13.3") diagonal FHD SVA eDP slim touch screen, 250 nits, 45% NTSC for HD camera, WWAN and two WLAN antennas (1920 x 1080)[8,9,10]

HDMI
Supports resolutions up to 4K 30Hz
Display Size
13.3"
33.8 cm (13.3"?)

8. HD content required to view HD images.
9. Sold separately or as an optional feature.
10. Resolutions are dependent upon monitor capability, and resolution and color depth settings.
11. HP Sure View integrated privacy screen is an optional feature that must be configured at purchase and is designed to function in landscape orientation.
*Touch-enabled display and Sure View privacy panel will lower actual brightness

Technical Specifications

Docking station model	Total number of supported displays (incl. the notebook display)	Max. resolutions supported	Dock Connectors	Technical limitations
HP Thunderbolt Dock 120W G2	3	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 USB-C Dock G4	3	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
HP USB-C/A Universal Dock G2	3	Dual 2.5K @ 60Hz	2xDP, 1xHDMI	
HP USB-C Dock G5	3	Dual 2.5K @ 60Hz or 4K @ 60Hz + FHD @ 60Hz	2xDP, 1xHDMI	

STORAGE AND DRIVES

Primary Storage
500 GB 7200 rpm SATA[12]
1 TB 5400 rpm SATA[12]

Primary M.2 Storage
128 GB M.2 SATA TLC Solid State Drive[12]
256 GB PCIe® NVMe™ M.2 Value Solid State Drive[12]
256 GB Intel® PCIe® NVMe™ QLC M.2 SSD with 16 GB Intel® Optane™ memory H10[12,13,14]
512 GB PCIe® NVMe™ M.2 TLC Solid State Drive[12]
512 GB PCIe® NVMe™ M.2 Value Solid State Drive[12]
512 GB Intel® PCIe® NVMe™ QLC M.2 SSD with 32 GB Intel® Optane™ memory H10[12,13,14]

12. 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.
13. Intel® Optane™ memory system acceleration does not replace or increase the DRAM in your system. Requires 8th Gen or higher Intel® Core™ processor, BIOS version with Intel® Optane™ supported, Windows 10 64-bit, and an Intel® Rapid Storage Technology (Intel® RST) driver.
14. Intel® Optane™ memory H10 only for Intel® PCIe® NVMe™ QLC M.2 SSD.

NOTE: PCIe SSD not available for Celeron

MEMORY

Technical Specifications

Maximum Memory
32 GB DDR4-2666 SDRAM[15]

Memory
32 GB DDR4-2666 SDRAM (2 x 16 GB)[15]
16 GB DDR4-2666 SDRAM (1 x 16 GB)[15]
12 GB DDR4- 2666 SDRAM (4 GB and 8 GB) (1 x 8 GB)[15]
8 GB DDR4-2666 SDRAM (1 x 8 GB)[15]
8 GB DDR4-2666 SDRAM (2 x 4 GB)[15]
4 GB DDR4-2666 SDRAM (1 x 4 GB)[15]

Memory Slots
2 SODIMM
Both slots are customer accessible / upgradeable
DDR4 PC4 SODIMMS (Comet Lake runs at 2666)
Supports Dual Channel Memory

15. 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
Realtek 802.11ac (2x2) WLAN and Bluetooth® 5 Combo[16]
Intel® Dual Band Wireless-AC 9560 802.11a/b/g/n/ac (2x2) WLAN and Bluetooth® 5 Combo, non-vPro[TM][16]
Intel® Dual Band Wi-Fi 6 AX201 802.11a/b/g/n/ac (2x2) WLAN and Bluetooth® 5 Combo, non-vPro[TM][16]

WWAN
Intel® XMM[TM] 7360 LTE-Advanced (Cat9)[17]

Ethernet
Realtek 10/100/1000 GbE NIC[18]

16. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 is backwards compatible with prior 802.11 specs. The specifications for Wi-Fi 6 (802.11ax) are draft 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 802.11ax devices. Only available in countries where 802.11ax is supported. Wi-Fi® supporting gigabit speeds is achievable when transferring files between two devices connected to the same router. Requires a wireless router, sold separately, that supports 160 MHz channels.
17. WWAN module is optional, must be configured at the factory 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.
18. 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

Technical Specifications

Audio
2 Integrated stereo speakers
Integrated microphone (Mono or Dual Array)

Speaker Power
2W/4ohm Per speaker

Camera
720p HD Camera[8]
720p HD Camera + IR Camera[8,9]

8. HD content required to view HD images.
9. Sold separately or as an optional feature.

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard
HP Premium Keyboard, spill resistant with optional backlit function

Pointing Device
Clickpad with multi-touch gesture support

Function Keys
ESC: system information
F1 – Display Switching
F2 – Blank or SureView On/Off
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 – Sleep

Hidden Function Keys
Fn+R – Break
Fn+S – Sys Rq
Fn+C – Scroll Lock

SOFTWARE AND SECURITY

BIOS

HP BIOSphere Gen5[19]

HP Drive Lock & Automatic Drive Lock[20]

BIOS Update via Network

Technical Specifications

Master Boot Record Security

Power On Authentication

Secure Erase[21]

Absolute Persistence Module[22]

Pre-boot Authentication

Software

HP Connection Optimizer

HP Image Assistant

HP Hotkey Support

HP JumpStart

HP Support Assistant[23]

HP Noise Cancellation Software

Buy Office (Sold separately)

Manageability Features

HP Driver Packs[24]

HP System Software Manager (SSM)

HP BIOS Config Utility (BCU)

HP Client Catalog

HP Manageability Integration Kit Gen3[25]

Client Security Software

HP Client Security Manager Gen5[26]

HP Fingerprint Sensor[27]

Windows Defender[28]

Security Management

Pre-boot Authentication

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

USB enable/disable (via BIOS)

Power-on password (via BIOS)

Setup password (via BIOS)

Support for chassis padlocks and cable lock devices

HP Sure Click[29]

HP Sure Start Gen5[30]

19. HP BIOSphere Gen5 is available on select HP Pro and Elite PCs. See product specifications for details. Features may vary depending on the platform and configurations.
20. HP Drive Lock & Automatic Drive Lock is not supported on NVMe drives
21. For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88 "Clear" sanitation method. HP Secure Erase does not support platforms with Intel® Optane™.
22. 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.
23. HP Support Assistant requires Windows and Internet access.
24. HP Driver Packs not preinstalled, however available for download at http://www.hp.com/go/clientmanagement.

Technical Specifications

25. HP Manageability Integration Kit can be downloaded from http://www.hp.com/go/clientmanagement.
26. HP Client Security Manager Gen5 requires Windows and is available on the select HP Pro and Elite PCs. See product specifications for details.
27. HP Fingerprint Sensor sold separately or as an optional feature.
28. Windows Defender Opt in and internet connection required for updates.
29. HP Sure Click is available on select HP platforms and supports Microsoft® Internet Explorer, Google Chrome, and Chromium™. Supported attachments include Microsoft Office (Word, Excel, PowerPoint) and PDF files in read only mode. Check http://h20195.www2.hp.com/v2/GetDocument.aspx?docname=4AA7-0922ENW for all compatible platforms as they become available.
30. HP Sure Start Gen5 is available on select HP PCs with Intel processors. See product specifications for availability.

POWER

HP Smart 65 W External AC power adapter[31]
HP Smart 65 W EM External AC power adapter[31]
HP Smart 65 W USB Type-C™ adapter[31]
HP Smart 45 W External AC power adapter[31]
HP Smart 45 W USB Type-C™ adapter[31]

Primary Battery
HP Long Life 3-cell, 45 Wh Li-ion[32]

Battery Life
Up to 15 hours and 15 minutes[33]

Power Cord
3-wire plug – 1m[31]
3-wire plug – 1.8m[31]
2-wire plug – 1m[31]
Duckhead power cord– 1m[31]
Duckhead power cord– 1.8m[31]

Battery Weight
0.49 lb
0.22 kg

31. Availability may vary by country.
32. Battery is internal and not replaceable by customer. Serviceable by warranty.
33. 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 http://www.bapco.com for additional details.

WEIGHTS & DIMENSIONS

Technical Specifications

Product Weight
Starting at 3.28 lbs (Non-touch); Starting at 3.7 lbs (Touch)[34]
Starting at 1.49 kg (Non-touch); Starting at 1.68 kg (Touch)[34]
Does not include power adapter.

Product Dimensions (w x d x h)
12.15 x 9.09 x 0.71 in
30.85 x 23.1 x 1.8 cm

34. Weight will vary by configuration.

PORTS/SLOTS

Ports
1 USB 3.1 Type-C[TM] Gen 1 (Power delivery, DisplayPort[TM])
1 USB 3.1 Gen 1
1 USB 3.1 Gen 1 (Powered port)
1 HDMI 1.4 b[35]
1 RJ-45
1 AC power
1 Headphone/Microphone Combo Jack
1 Standard Security Lock

Expansion Slots
1 SD
Supports SD, SDHC, SDXC

35. HDMI cable sold separately.

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.[36]

36. 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 http://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.

COMPATIBILITY

HP TB Dock 120W w/Audio	3YE87AA
HP USB-C Mini Dock	1PM64AA
HP E243d Docking Monitor	1TJ76AA

CERTIFICATION AND COMPLIANCE

Technical Specifications

ENERGY STAR® certified
EPEAT® 2019 Gold[37]
Low halogen[38]
TCO NB 5.0 Certification

37. Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. Status varies by country. Visit http://www.epeat.net for more information.
38. External power supplies, power cords, cables and peripherals are not Low Halogen. Service parts obtained after purchase may not be Low Halogen.

FACETS

Maximum Resolution	1920 x 1080
Screen Size, imperial	13.3 (diagonal)
Weight, Metric	1.49
Weight, Imperial	3.28

ENVIRONMENTAL & INDUSTRY

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. Based on US EPEAT registration according to IEEE 1680.1-2018 EPEAT. Status varies by country. See http://www.epeat.net for more information.
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, 50Hz**
Normal Operation (Short idle)	4.28 W	4.30 W	4.23 W
Normal Operation (Long idle)	2.89 W	2.41 W	3.02 W
Sleep	0.55 W	0.58 W	0.55 W
Off	0.29 W	0.31 W	0.28 W

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**

Technical Specifications

Normal Operation (Short idle)	15 BTU/hr	15 BTU/hr	15 BTU/hr
Normal Operation (Long idle)	10 BTU/hr	8 BTU/hr	10 BTU/hr
Sleep	2 BTU/hr	2 BTU/hr	2 BTU/hr
Off	1 BTU/hr	1 BTU/hr	1 BTU/hr

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

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)	Sound Power (L_{WAd}, bels)	Sound Pressure (L_{pAm}, decibels)
Typically Configured – Idle	2.5	14
Fixed Disk – Random writes	3.6	27

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: ● 3 USB ports ● 1 PC card slot (type I/II) ● 1 ExpressCard/54 slot ● 1 IEEE 1394 Port ● 2 SODIMM memory slots ● Optional expansion base docking station ● 1 multi-bay II storage port ● Interchangeable HDD 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 1680.1 (EPEAT) standard at the <Silver> level, see www.epeat.net ● Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043. ● This product contains 10.1% post-consumer recycled plastic (by wt.) ● This product is 96.7% recycle-able when properly disposed of at end of life.

Packaging Materials	**External:**	PAPER/Corrugated	230 g
		PAPER/Paper	51 g

Technical Specifications

	Internal:		
		PLASTIC/Polyethylene Expanded - EPE	62 g
		PLASTIC/Polyethylene low density - LDPE	9 g

Material Usage

This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf):

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

Packaging Usage

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

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

End-of-life Management and Recycling

HP Inc. 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

For more information about HP's commitment to the environment:

Technical Specifications

Environmental Information	Global Citizenship Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html Eco-label certifications http://www8.hp.com/us/en/hp-information/environment/ecolabels.html ISO 14001 certificates: http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/ PC_GBU_Product_Design_ISO_14K_Certificate.pdf and http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)

Nominal Operating Voltage	19V
Average Operating Power	Win 10
Integrated graphics	Yes
Max Operating Power	UMA < 45W

Temperature

Operating	32° to 95° F (0° to 35° C) (Not writing optical)
Non-operating	41° to 95° F (5° to 35° C) (Writing optical)

Relative Humidity

Operating	10% to 90%, non-condensing
Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature

Shock

Operating	40 G, 2 ms, half-sine
Non-operating	200 G, 2 ms, half-sine

Random Vibration

Operating	0.75 grms
Non-operating	1.50 grms

Altitude (unpressurized)

Operating	–50 to 10,000 ft (–15.24 to 3,048 m)
Non-operating	–50 to 40,000 ft (–15.24 to 12,192 m)

Planned Industry Standard Certifications

UL	Yes
CSA	Yes
FCC Compliance	Yes
ENERGY STAR®	Selected models[39]
EPEAT®	EPEAT® 2019 Gold in U.S.[40]
ICES	Yes
Australia	Yes
NZ A-Tick Compliance	Yes
CCC	Yes
Japan VCCI Compliance	Yes
KC	Yes
BSMI	Yes
CE Marking Compliance	Yes
BNCI or BELUS	Yes
CIT	Yes
GOST	Yes

Technical Specifications

Saudi Arabian Compliance (ICCP)	Yes
SABS	Yes
UKRSERTCOMPUTER	Yes

39. Configurations of the HP ProBook 430 G7 that are ENERGY STAR® certified[2] are identified as HP ProBook 430 G7 ENERGY STAR on HP websites and on http://www.energystar.gov.

40. Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. Status varies by country. Visit http://www.epeat.net for more information.

DISPLAYS

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

Panel LCD 13.3 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 45% NTSC 250 nits eDP 1.2 w/o PSR slim NWBZ

Outline Dimensions (W x H x D)	300.56 x 187.77 mm (max) (w/ PCB & w/o bracket)
Active Area	293.76 x 165.24 mm (typ.)
Weight	260 g (max)
Diagonal Size	13.3 inch
Thickness	3.0 mm (max)
Interface	eDP 1.2 (2 lane)
Surface Treatment	Anti-Glare
Touch Enabled	No
Contrast Ratio	600:1 (typ.)
Refresh Rate	60 Hz
Brightness	250 nits (typ.)
Pixel Resolution	1920 x 1080 (FHD)
Backlight	LED
Format of LCD Pixel Arrangement	RGB
Color Gamut Coverage	45% of NTSC
Color Depth	6 bits
Viewing Angle	UWVA 85/85/85/85

Technical Specifications

Panel LCD 13.3 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 45% NTSC 250 nits eDP 1.2 w/o PSR slim NWBZ		
	Outline Dimensions (W x H x D)	300.56 x 187.77 mm (max) (w/ PCB & w/o bracket)
	Active Area	293.76 x 165.24 mm (typ.)
	Weight	260 g (max)
	Diagonal Size	13.3 inch
	Thickness	3.0 mm (max)
	Interface	eDP 1.2 (2 lane)
	Surface Treatment	Anti-Glare
	Touch Enabled	Yes
	Contrast Ratio	600:1 (typ.)
	Refresh Rate	60 Hz
	Brightness	250 nits (typ.)
	Pixel Resolution	1920 x 1080 (FHD)
	Backlight	LED
	Format of LCD Pixel Arrangement	RGB
	Color Gamut Coverage	45% of NTSC
	Color Depth	6 bits
	Viewing Angle	UWVA 85/85/85/85

Panel LCD 13.3 inch diagonal HD (1366 x 768) Anti-Glare WLED SVA 45% NTSC 220 nits eDP slim NB non-touch		
	Outline Dimensions (W x H x D)	300.56 x 187.77 max. (w/ PCB & w/o bracket)
	Active Area	293.83 x 165.20 typ.
	Weight	<260 max.
	Diagonal Size	13.3 (inch)
	Thickness	3.0 mm max.
	Interface	eDP 1.2 (2 lanes)
	Surface Treatment	Anti-glare
	Touch Enabled	No
	Contrast Ratio	300:1 (typ)
	Refresh Rate	60 Hz
	Brightness	220 nits typical (Panel Only)
	Pixel Resolution	1366 x 768 (HD)
	Backlight	LED
	Format of LCD Pixel Arrangement	RGB
	Color Gamut Coverage	45% of NTSC
	Color Depth	6 bits (Hi FRC @ system GFX output 8bits)
	Viewing Angle	SVA 45/45/15/30

Technical Specifications

Panel LCD 13.3 inch diagonal HD (1366 x 768) Anti-Glare WLED SVA 45% NTSC 220 nits eDP slim NB non-touch		
	Outline Dimensions (W x H x D)	300.56 x 187.77 max. (w/ PCB & w/o bracket)
	Active Area	293.83 x 165.20 typ.
	Weight	<260 max.
	Diagonal Size	13.3 (inch)
	Thickness	3.0 mm max.
	Interface	eDP 1.2 (2 lanes)
	Surface Treatment	Anti-glare
	Touch Enabled	Yes
	Contrast Ratio	300:1 (typ)
	Refresh Rate	60 Hz
	Brightness	220 nits typical (Panel Only)
	Pixel Resolution	1366 x 768 (HD)
	Backlight	LED
	Format of LCD Pixel Arrangement	RGB
	Color Gamut Coverage	45% of NTSC
	Color Depth	6 bits (Hi FRC @ system GFX output 8bits)
	Viewing Angle	SVA 45/45/15/30

Panel LCD 13.3 inch FHD (1920 x 1080) Anti-Glare WLED UWVA 72% NTSC 1000 nits eDP 1.4+PSR2 flat Privacy NWBZ		
	Outline Dimensions (W x H x D)	299.06 x 186.54 mm (max)
	Active Area	293.76 x 165.24 mm (typ.)
	Weight	255 g (max)
	Diagonal Size	13.3 inch
	Thickness	3.0 mm (max)
	Interface	eDP 1.4 + PSR2 (4 lane)
	Surface Treatment	Anti-Glare
	Touch Enabled	No
	Contrast Ratio	2000:1 (typ.)
	Refresh Rate	60 Hz
	Brightness*	1000 nits
	Pixel Resolution	1920 x 1080 (FHD)
	Backlight	LED
	Format of LCD Pixel Arrangement	RGB
	Color Gamut Coverage	72% of NTSC
	Color Depth	8 bit
	Viewing Angle	UWVA 85/85/85/85

*Touch-enabled display and Sure View privacy panel will lower actual brightness

STORAGE AND DRIVES

Technical Specifications

500 GB 7200 rpm SATA Hard Drive		
Drive Weight	0.20 lbs (92 g) ~ 0.21 lbs (95 g)	
Rotation speed	7200 rpm	
Cache Buffer	Up to 32 MB	
Height	0.28 in (7 mm)	
Width	2.75 in (69.85 mm)	
Interface	ATA–8, SATA 3.0	
Transfer Rate	600 MB/s	
Seek Time	Single Track 2 ~ 1.5 ms; Average 11 ~ 13 ms; Maximum 18 ~ 22 ms	
Logical Blocks	976,773,168	
Operating Temperature	32° to 140° F (0° to 60° C) [top cover temp]	
Security Features	ATA Security	
Features	S.M.A.R.T., NCQ, Ultra DMA	

1 TB 5400 rpm SATA Hard Drive		
Drive Weight	0.21 lbs (94 g)	
Rotation speed	5400 rpm	
Cache Buffer	Up to 32 MB	
Height	0.28 in (7.2 mm)	
Width	2.75 in (69.85 mm)	
Interface	ATA–8, SATA 3.0	
Transfer Rate	600 MB/s	
Seek Time	Single Track 2 ms Average 12 ~ 13 ms Maximum 18 ~ 22 ms	
Logical Blocks	1,953,525,168	
Operating Temperature	32° to 140° F (0° to 60° C) [top cover temp]	
Security Features	ATA Security	
Features	S.M.A.R.T., NCQ, Ultra DMA	

SSD 128 GB 2280 M2 SATA–3 TLC		
Form Factor	M.2 2280	
Capacity	128 GB	
NAND Type	TLC	
Height	0.09 in (2.3 mm)	
Width	0.87 in (22 mm)	
Weight	0.02 lb (10 g)	
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

256 GB 2280 PCIe NVMe Value Solid State Drive		
	Form Factor	M.2 2280
	Capacity	256 GB
	NAND Type	TLC
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen3
	Maximum Sequential Read	Up To 1700 MB/s
	Maximum Sequential Write	Up to 1300 MB/s
	Logical Blocks	500,118,192
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	TRIM; L1.2

512 GB 2280 M2 PCIe NVMe TLC Solid State Drive		
	Form Factor	M.2 2280
	Capacity	512 GB
	NAND Type	TLC
	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

512 GB 2280 PCIe NVMe Value Solid State Drive		
	Form Factor	M.2 2280
	Capacity	512 GB
	NAND Type	Value
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen3X4
	Maximum Sequential Read	Up To 1500 ~ 1700 MB/s
	Logical Blocks	1,000,215,216
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security, TRIM; L1.2

NETWORKING/COMMUNICATIONS

Realtek RTL8822CE 802.11ac (2 x 2) Wi-Fi® and Bluetooth® 5	**Wireless LAN Standards**	IEEE 802.11a
		IEEE 802.11b
		IEEE 802.11g
		IEEE 802.11n
		IEEE 802.11ac
		IEEE 802.11d
		IEEE 802.11e
		IEEE 802.11h

Technical Specifications

	IEEE 802.11i
	IEEE 802.11k
	IEEE 802.11r
	IEEE 802.11v
Interoperability	Wi-Fi® certified
Frequency Band	802.11b/g/n
	2.402 – 2.482 GHz
	802.11a/n/ac
	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 & 80MHz)

Modulation
Direct Sequence Spread Spectrum
BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM

Security[3]
- 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
- 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: +18.5dBm minimum
- 802.11g: +17.5dBm minimum
- 802.11a: +18.5dBm minimum
- 802.11n HT20(2.4GHz): +15.5dBm minimum
- 802.11n HT40(2.4GHz): +14.5dBm minimum
- 802.11n HT20(5GHz): +15.5dBm minimum
- 802.11n HT40(5GHz): +14.5dBm minimum
- 802.11ac VHT80(5GHz): +11.5dBm minimum
- 802.11ac VHT160(5GHz): +11.5dBm 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/Modern 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

Technical Specifications

		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 M.2 MiniCard with CNVi Interface
Dimensions		1. Type 2230: 2.3 x 22.0 x 30.0 mm 2. Type 1216: 1.67 x 12.0 x 16.0 mm
Weight		1. Type 2230: 2.8 g 2. Type 126: 1.3 g
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 4.0/4.1/4.2/5.0 Wireless Technology

Bluetooth Specification	4.0/4.1/4.2/5.0 Compliant
Frequency Band	2402 to 2480 MHz
Number of Available Channels	Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH)
Signaling Data Rate	Legacy: 3 Mbps signaling data rate[1] 2.17 Mbps BLE: 1 Mbps signaling data rate[1] 0.2 Mbps 1. Actual throughput may vary.
	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
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

Technical Specifications

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).

Intel® 9560 802.11a/b/g/n/ac (2 x 2) Wi-Fi® and Bluetooth® 5.0 Combo[1] non–vPro	**Wireless LAN Standards**	IEEE 802.11a
		IEEE 802.11b
		IEEE 802.11g
		IEEE 802.11n
		IEEE 802.11ac
		IEEE 802.11d
		IEEE 802.11e
		IEEE 802.11h
		IEEE 802.11i
		IEEE 802.11k
		IEEE 802.11r
		IEEE 802.11v
	Interoperability	Wi-Fi® certified
	Frequency Band	• 802.11b/g/n 2.402 – 2.482 GHz
		• 802.11a/n/ac 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, 80MHz & 160MHz)

Technical Specifications

Modulation	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM
Security[3]	• 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 • 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: +18.5dBm minimum • 802.11g: +17.5dBm minimum • 802.11a: +18.5dBm minimum • 802.11n HT20(2.4GHz): +15.5dBm minimum • 802.11n HT40(2.4GHz): +14.5dBm minimum • 802.11n HT20(5GHz): +15.5dBm minimum • 802.11n HT40(5GHz): +14.5dBm minimum • 802.11ac VHT80(5GHz): +11.5dBm minimum • 802.11ac VHT160(5GHz): +11.5dBm 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/Modern 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 M.2 MiniCard with CNVi Interface
Dimensions	1. Type 2230: 2.3 x 22.0 x 30.0 mm 2. Type 1216: 1.67 x 12.0 x 16.0 mm
Weight	1. Type 2230: 2.8 g 2. Type 126: 1.3 g
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)

Technical Specifications

Altitude	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
LED Activity	LED Amber – Radio OFF	
	LED Off – Radio ON	

HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0 Wireless Technology

Bluetooth Specification	4.0/4.1/4.2/5.0 Compliant
Frequency Band	2402 to 2480 MHz
Number of Available Channels	Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH)
Signaling Data Rate	Legacy: 3 Mbps signaling data rate[1] 2.17 Mbps BLE: 1 Mbps signaling data rate[1] 0.2 Mbps 1. Actual throughput may vary. 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
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.

Technical Specifications

Intel® Wi-Fi 6 AX201 and Bluetooth® 5 (802.11ax 2 x 2, non-vPro, supporting gigabit file transfer speeds) non-vPro	**Wireless LAN Standards**	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac IEEE 802.11ax IEEE 802.11d IEEE 802.11e IEEE 802.11h IEEE 802.11i IEEE 802.11k IEEE 802.11r IEEE 802.11v
	Interoperability	Wi-Fi® certified
	Frequency Band	• 802.11b/g/n/ax 2.402 – 2.482 GHz • 802.11a/n/ac/ax 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, 80MHz & 160MHz) • 802.11ax: MCS0 ~ MCS11, (1SS and 2SS) (20MHz, 40MHz, 80MHz & 160MHz)
	Modulation	Direct Sequence Spread Spectrum OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM
	Security[3]	• 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 • 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: +18.5dBm minimum • 802.11g: +17.5dBm minimum

Technical Specifications

- 802.11a: +18.5dBm minimum
- 802.11n HT20(2.4GHz): +15.5dBm minimum
- 802.11n HT40(2.4GHz): +14.5dBm minimum
- 802.11n HT20(5GHz): +15.5dBm minimum
- 802.11n HT40(5GHz): +14.5dBm minimum
- 802.11ac VHT80(5GHz): +11.5dBm minimum
- 802.11ac VHT160(5GHz): +11.5dBm minimum
- 802.11ax HT40(2.4GHz): +10dBm minimum
- 802.11ax VHT160(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/Modern 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
- 802.11ax, MCS11(HT40): -59dBm maximum
- 802.11ax, MCS11(VHT160): -58.5dBm 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 with CNVi Interface

Dimensions
1. Type 2230: 2.3 x 22.0 x 30.0 mm
2. Type 1216: 1.67 x 12.0 x 16.0 mm

Weight
1. Type 2230: 2.8 g
2. Type 126: 1.3 g

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 Off – Radio ON

HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0/5.1 Wireless Technology

Bluetooth Specification
4.0/4.1/4.2/5.0/5.1 Compliant

Frequency Band
2402 to 2480 MHz

QuickSpecs

Technical Specifications

Number of Available Channels	Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH)
Signaling Data Rate	Legacy: 3 Mbps signaling data rate[1] 2.17 Mbps BLE: 1 Mbps signaling data rate[1] 0.2 Mbps 1. Actual throughput may vary.
	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 + 9.5 dBm for BR and EDR.
Power Consumption	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW
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 required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 is backwards compatible with prior 802.11 specs. The specifications for Wi-Fi 6 (802.11ax) are draft 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 802.11ax devices. Only available in countries where 802.11ax is supported. Wi-Fi® supporting gigabit speeds is achievable when transferring files between two devices connected to the same router. Requires a wireless router, sold separately, that supports 160 MHz channels.
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

Intel® XMM™ 7360 LTE-Advanced CAT9[1]	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), 1700/2100 (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)
	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

1. WWAN module is optional, must be configured at the factory 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.

POWER

HP 45 W Smart AC Adapter	Dimensions (H x W x D)	3.74 x 1.57 x 1.04 in (9.5 x 4.0 x 2.65 cm)	
	Weight	0.386 lb (175g) max Not including power cord. Power cord varies by country.	
	Input	90 to 265 VAC	
		Input Efficiency	87.74% at 115 V and 88.4% at 230 V
		Input frequency range	47 to 63 Hz
		Input AC current	1.4 A at 90 V
	Output	Output power	45W
		DC output	19.5V
		Hold-up time	5 msec at 115 V input
		Output current limit	<8.0A
	Connector	4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords	
	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 5,000 m)
		Humidity	20% to 95%
		Storage Humidity	10% to 95%

Technical Specifications

	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.	

HP 65 W Smart AC Adapter	**Dimensions**	90 x 51 x 28.5 mm	
	Weight	220 g +/- 10 g Not including power cord. Power cord varies by country.	
		Input Efficiency	88.0 % at 115 V and 89.0 % at 230 V
		Input frequency range	47 to 63 Hz
		Input AC current	1.7 A at 90 VAC
	Output	**Output power**	65 W
		DC output	19.5 V
		Hold-up time	5 ms at 115 VAC input
		Output current limit	<11.0 A
	Connector	4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords	
	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%
	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.	

HP 65 W EM Smart AC adapter	**Dimensions**	102 x 55 x 30 mm	
	Weight	270 g +/- 10 g Not including power cord. Power cord varies by country.	
		Input Efficiency	87% min at 115 V/230 V
		Input frequency range	47 to 63 Hz
		Input AC current	1.7 A at 90 V and maximum load
		DC output	65 W (19.5 V/3.33 A)
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<11A, Over voltage protection– 29 V max automatic shutdown
	Connector	4.5 mm Barrel Type, 3 pin/grounded, mates with interchangeable cords	
	Environmental Design	**Operating temperature**	0° to 35° C
		Non–operating (storage) temperature	–4°F to 185°F (–20° to 85°C)
		Altitude	0 to 5,000 m
		Humidity	0% to 95%
		Storage Humidity	0% to 95%

Technical Specifications

	EMI and Safety Certifications	CE Mark - 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.
AC Adapter 65 Watt nPFC USB type C	**Dimensions**	74 x 74 x 28.5 mm
	Weight	245 g +/- 10 g Not including power cord. Power cord varies by country.
	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 power	65 W
	DC output	5V/9V/10V/12V/15V/20V
	Hold-up time	5ms at 115 Vac input
	Output current limit	<8.0A
	Connector	Type C
	Environmental Design	**Operating temperature** — 32°Fto 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 200,000 hours at 25°C ambient condition.

Technical Specifications

AC Adapter 45 Watt nPFC USB type C	Dimensions	62.0 x 62.0 x 28.5 mm	
	Weight	220 g +/- 10 g	
		Not including power cord. Power cord varies by country.	
	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 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	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%	
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 WHr 45 Long Life – Polymer HP Fast Charge Technology[1]	Dimensions	6.0. x 184.7 x 88.9 mm
	Weight	0.22 kg (0.48 lb)
	Cells/Type	3cell Lithium-Ion
	Voltage	11.55 V
	Amp-hour capacity	3.900 Ah
	Watt-hour capacity	45 Wh
	Operating (Charging)	32° to 113° F (0° to 45° C)
	Operating (Discharging)	14° to 122° F (–10° to 60° C)
	Optional Travel Battery Available	No

1. Recharges the battery up to 50% within 30 minutes when the system is off or in standby mode when used with the power adapter provided with the notebook. After charging has reached 50% capacity, charging speed will return to normal. Charging time may vary +/- 10% due to System tolerance.

FINGERPRINT READER

Technical Specifications

Model	Synaptics Validity VFS7604 touch sensor
Mobile Voltage Operation	3.0V to 3.6V
Operating Temperature	0~60°C
Current Consumption Image	100mA Max
Low Latency Wait for Finger	260 uA
ESD Resistance	IEC 61000-4-2 4B (+/-15KV)
Detection Matrix	363 dpi / 7.4 x 6 mm sensor area
FRR (False Reject Rate) / FAR (False Acceptance Rate)	FRR <1% @ 1:50K FAR

Country of Origin

China

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

Type	Description	Part Number
Cases	HP Essential Top Load Case	H2W17AA
	HP Essential Backpack (up to 15.6")	H1D24AA
	HP Essential Messenger Case (up to 17.3")	H1D25AA
Docking	HP USB-C Mini Dock	1PM64AA
	HP USB-C Universal Dock	1MK33AA
	HP USB-C Dock G4	3FF69AA
	HP Thunderbolt Dock 120W G2	2UK37AA
	HP TB Dock G2 w/ Combo Cable	3TR87AA
	HP TB Dock 120W G2 w/Audio	3YE87AA
	HP TB Dock 120W G2 Cable	3XB94AA
	HP TB Dock G2 Combo Cable	3XB96AA
	HP TB Dock G2 Audio Module	3AQ21AA
	HP USB-C/A Universal Dock G2	5TW13AA
	HP USB-C Dock G5	5TW10AA
	HP E223d Docking Monitor	5VT82A8/5VT82AA
	HP E243d Docking Monitor	1TJ76AA
	HP E273d Docking Monitor	5WN63A8
		5WN63AA
	HP EliteDisplay E244d Monitor	6PA50A8/6PA50AA
	HP EliteDisplay E274d Monitor	6PA56A8/6PA56AA
Input/Output	HP USB Essential Keyboard and Mouse	H6L29AA
	HP Ultra Mobile Wireless Mouse	H6F25AA
	HP Comfort Grip Wireless Mouse	H2L63AA
	HP 3-Button USB Laser Mouse	H4B81AA
	HP USB Travel Mouse	G1K28AA
	HP HDMI to DVI Adapter	F5A28AA
	HP Elite USB-C Hub	4WX89AA
	HP USB-C Travel Hub	Z9G82AA
Memory	4GB 2666MHz DDR4	4VN05AA
	8GB 2666MHz DDR4	4VN06AA
	16GB 2666MHz DDR4	4VN07AA
Power	HP 45W Smart AC Adapter 4.5mm	H6Y88AA
	45W Smart Power Adapter 2 prong -4.5mm (Japan only)	L6F60AA
	65W Smart Power Adapter (w/ 4.5mm to 7.5mm DC dongle)	H6Y89AA
	HP 65W Slim AC Adapter	H6Y82AA
	HP 65W USB-C Slim Power Adapter	3PN48AA
	HP 65W USB-C Power Adapter	1HE08AA
	HP 45W USB-C Power Adapter	1HE07AA
	HP Power Bank	N9F71AA#xxx
	HP USB-C Power Bank	2NA10AA#xxx
Storage	HP External USB Optical Drive	F2B56AA
	HP 128 GB M.2 SATA-3	2JB95AA
	1TB 7200rpm 9.5mm SATA HDD	L3M56AA
	HP 500GB 7200rpm HDD	F3B97AA

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

	HP 256GB TLC PCI-e 3x4 NVMe SSD (2280)	1FU87AA
	HP 512GB TLC PCI-e 3x4 NVMe SSD (2280)	1FU88AA
Security	HP Combination Lock	T0Y15AA
	HP Essential Keyed Cable lock 12.3mm	T0Y14AA
	HP Keyed Cable Lock 10mm	T1A62AA
UCC	HP Conferencing Keyboard	K8P74AA
	HP UC Speaker Phone	4VW02AA
	HP Wired Headset	K7V17AA

Summary of Changes

Date of change:	Version History:		Description of change:
October 30, 2019	V1 to V2	Updated	Battery Life
November 5, 2019	V2 to V3	Updated	UHD Graphics and added Environmental tab