Overview

HP ProBook 440 G7 Notebook PC

Left

1. **Internal Microphones (2)**
2. **Webcam (Optional)**
3. **Privacy Shutter (Only available with webcam)**
4. **Webcam LED**
5. **Clickpad**
6. **Hard Drive LED**
7. **SD Card Reader**
8. **Thermal Vent**
9. **USB 2.0 Port**
10. **Standard Security Lock Slot (Lock sold separately)**
11. **Power Button**

Overview

Right

1. Power Connector	**5. USB 3.1 Gen 1 Port**
2. USB Type-C™ 3.1 Gen 1 Port	**6. USB 3.1 Gen 1 Port**
3. Ethernet Port (RJ-45)	**7. Headphone/Microphone Combo Jack**
4. HDMI Port (Cable not included)	**8. HP Fingerprint Sensor (select models)**

Overview

At a Glance

- **Preinstall Windows 10 or FreeDOS**
- **Choice of 10th generation Intel® Core™ i7, i5, i3 processors**
- **Display include your choice of 35.56 cm (14.0") diagonal HD, Ultra Wide Viewing Angle FHD, Touch or Non-Touch screen, and Privacy Panel option**
- **Optional Nvidia GeForce MX250 and MX130 with 2 GB GDDR5 dedicated video memory or integrated Intel® UHD Graphics, Premium**
- **Enhanced security features including TPM 2.0, HP Sure Sense, HP Sure Start Gen5, HP BIOSphere, Hardware enforced Firmware Protection, optional Fingerprint Sensor[4] (select models), optional IR camera, and optional Privacy Panel**
- **Passed 19 MIL-STD 810H testing[1]**
- **Weight starting at 3.53 lbs (1.6 kg)[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 and 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 810H 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.**
4. **HP Fingerprint Sensor is an optional feature and requires configuration at purchase.**

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

Technical Specifications

PRODUCT NAME

HP ProBook 440 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.

Technical Specifications

CHIPSET

Integrated with processor

GRAPHICS

Integrated
Intel® UHD Graphics, Premium[8]

Discrete
NVIDIA® GeForce® MX130 (2 GB DDR5 dedicated)[9]
NVIDIA® GeForce® MX250 (2 GB DDR5 dedicated)[9]

Supports
Support HD decode, DX12, HDMI 1.4b up to 4K 30Hz
Support CUDA, Optimus, PhysX, GPU Boost 2.0

8. HD content required to view HD images.
9. Integrated graphics depends on processor. NVIDIA® Optimus™ technology requires an Intel processor, plus an NVIDIA® GeForce® discrete graphics configuration and is available on Windows 10 Pro OS. With NVIDIA® Optimus™ technology, full enablement of all discrete graphics video and display features may not be supported on all systems (e.g. OpenGL applications will run on the integrated GPU or the APU as the case may be).

DISPLAYS

Non-Touch
35.56 cm (14") diagonal HD SVA eDP anti-glare slim, 220 nits, 45% NTSC two WLAN antennas (1366 x 768)[8,11]
35.56 cm (14") diagonal HD SVA eDP anti-glare slim, 220 nits, 45% NTSC for HD camera and two WLAN antennas (1366 x 768)[8,11]
35.56 cm (14") diagonal HD SVA eDP anti-glare slim, 220 nits, 45% NTSC for HD+IR camera and two WLAN antennas (1366 x 768)[8,11]
35.56 cm (14") diagonal HD SVA eDP anti-glare slim, 220 nits, 45% NTSC for HD camera, WWAN and two WLAN antennas (1366 x 768)[8,11]
35.56 cm (14") diagonal FHD IPS eDP anti-glare slim, 250 nits, 45% NTSC and two WLAN antennas (1920 x 1080)[8,11]
35.56 cm (14") diagonal FHD IPS eDP anti-glare slim, 250 nits, 45% NTSC for HP camera and two WLAN antennas (1920 x 1080)[8,11]
35.56 cm (14") diagonal FHD IPS eDP anti-glare slim, 250 nits, 45% NTSC for HP+IR camera and two WLAN antennas (1920 x 1080)[8,11]
35.56 cm (14") diagonal FHD IPS eDP anti-glare slim, 250 nits, 45% NTSC for HP camera, WWAN and two WLAN antennas (1920 x 1080)[8,11]
35.56 cm (14") 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)[8,11,12*]
35.56 cm (14") diagonal FHD IPS eDP + PSR anti-glare flat with HP Sure View Integrated Privacy Screen, 1000 nits, 72% NTSC for HD+IR camera and two WLAN antennas (1920 x 1080) [8,11,12*]

Touch
35.56 cm (14") diagonal FHD IPS eDP slim touch-on-panel screen, 250 nits, 45% NTSC for HD camera and two WLAN antennas (1920 x 1080)[8,10,11]
35.56 cm (14") diagonal FHD IPS eDP slim touch-on-panel screen, 250 nits, 45% NTSC for HD camera,WWAN and two WLAN antennas (1920 x 1080)[8,10,11]

Technical Specifications

HDMI
Supports resolutions up to 4K 30Hz

Display Size
14" diagonal
35.56 cm (14") diagonal

8. HD content required to view HD images.
10. Sold separately or as an optional feature.
11. Resolutions are dependent upon monitor capability, and resolution and color depth settings.
12. 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**

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[13]
1 TB 5400 rpm SATA[13]
1 TB 7200 rpm SATA[13]

Technical Specifications

Primary M.2 Storage

128 GB M.2 SATA TLC Solid State Drive[13]
256 GB PCIe® NVMe™ M.2 Value Solid State Drive[13]
256 GB Intel® PCIe® NVMe™ QLC M.2 SSD with 16 GB Intel® Optane™ memory H10[13,14,15]
512 GB PCIe® NVMe™ M.2 TLC Solid State Drive[13]
512 GB PCIe® NVMe™ M.2 Value Solid State Drive[13]
512 GB Intel® PCIe® NVMe™ QLC M.2 SSD with 32 GB Intel® Optane™ memory H10[13,14,15]

13. 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.
14. 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.
15. Intel® Optane™ memory H10 only for Intel® PCIe® NVMe™ QLC M.2 SSD.

MEMORY

Maximum Memory

32 GB DDR4-2666 SDRAM[16]

Memory

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

Memory Slots

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

16. 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 802.11a/b/g/n/ac (2x2) WLAN and Bluetooth® 5 Combo[17]
Intel® Dual Band Wireless-AC 9560 802.11a/b/g/n/ac (2x2) WLAN and Bluetooth® 5 Combo, non-vPro™[17]
Intel® Dual Band Wi-Fi 6 AX201 802.11a/b/g/n/ac/ax (2x2) WLAN and Bluetooth® 5 Combo, non-vPro™[17]

WWAN

Intel® XMM™ 7360 LTE-Advanced (Cat9)[18]

Ethernet

Realtek 10/100/1000 GbE NIC[19]

Technical Specifications

17. 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.
18. 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.
19. 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
Integrated Microphone (Mono or Dual Array)
2 Integrated Stereo Speakers

Speaker Power
2W/4ohm Per speaker

Camera
720p HD camera[8]
720p HD Camera+IR Camera[8,10]

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

KEYBOARDS/POINTING DEICES/BUTTONS & FUNCTION KEYS

Keyboard
HP Premium Keyboard, spill resistant with optional backlit function

Pointing Device
Clickpad with multi-touch gesture support

Function Keys
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 Functions
Fn+R - Break
Fn+S - Sys Rq
Fn+C - Scroll Lock

Technical Specifications

SOFTWARE AND SECURITY

BIOS

HP BIOSphere Gen5[20]

HP Drive Lock & Automatic Drive Lock[21]

BIOS Update via Network

Master Boot Record Security

Power On Authentication

Secure Erase[22]

Absolute Persistence Module[23]

Pre-boot Authentication

Software

HP Connection Optimizer

HP Image Assistant

HP Hotkey Support

HP JumpStart

HP Support Assistant[24]

HP Noise Cancellation Software

Buy Office (sold separately)

Manageability Features

HP Driver Packs[25]

HP System Software Manager (SSM)

HP BIOS Config Utility (BCU)

HP Client Catalog

HP Manageability Integration Kit Gen3[26]

Client Security Software

HP Client Security Manager Gen5[27]

HP Fingerprint Sensor (select models)[28]

Windows Defender[29]

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[30]

HP Sure Start Gen5[31]

HP Sure Sense[32]

Technical Specifications

20. 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.
21. HP Drive Lock & Automatic Drive Lock is not supported on NVMe drives
22. 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™.
23. 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.
24. HP Support Assistant requires Windows and Internet access.
25. HP Driver Packs not preinstalled, however available for download at http://www.hp.com/go/clientmanagement.
26. HP Manageability Integration Kit can be downloaded from http://www.hp.com/go/clientmanagement.
27. HP Client Security Manager Gen5 requires Windows and is available on the select HP Pro and Elite PCs. See product specifications for details.
28. HP Fingerprint Sensor is an optional feature and requires configuration at purchase.
29. Windows Defender Opt in and internet connection required for updates.
30. 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.
31. HP Sure Start Gen5 is available on select HP PCs with Intel processors. See product specifications for availability.
32. HP Sure Sense requires Windows 10. See product specifications for availability.

POWER

Power Supply

HP Smart 65 W External AC power adapter[33]
HP Smart 65 W EM External AC power adapter[33]
HP Smart 65 W USB Type-C™ adapter[33]
HP Smart 45 W External AC power adapter[33]
HP Smart 45 W USB Type-C™ adapter[33]

Primary Battery
HP Long Life 3-cell, 45 Wh Li-ion[34]

Battery Life
Up to 14 hours and 45 minutes[35]

Power Cord
3-wire plug - 1m[33]
3-wire plug - 1.8m[33]
2-wire plug - 1m[33]
Duckhead power cord- 1m[33]
Duckhead power cord- 1.8m[33]

Battery Weight
0.49 lb
0.22 kg

Technical Specifications

33. Availability may vary by country.
34. Battery is internal and not replaceable by customer. Serviceable by warranty.
35. 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

Product Weight
Starting at 3.53 lbs (Non-touch); Starting at 3.55 lbs (Touch)[36]
Starting at 1.6 kg (Non-touch); Starting at 1.61 kg (Touch)[36]
Does not include power adapter.

Product Dimensions (w x d x h)
12.76 x 9.36 x 0.71 in
32.42 23.77 x 1.8 cm

36. Weight will vary by configuration.

PORTS/SLOTS

1 USB 3.1 Type-C™ Gen 1 (Power delivery, DisplayPort™)
2 USB 3.1 Gen 1
1 USB 2.0 (Powered port)
1 HDMI 1.4b[37]
1 RJ-45
1 AC power
1 Headphone/Microphone Combo Jack
1 Standard Security Lock

Expansion Slots
1 SD
Supports SD, SDHC, SDXC

37. 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.[38]

38. 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

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® 2019 Gold in U.S. Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. EPEAT® status varies by country. Visit http://www.epeat.net for more information.** **•TCO 8.0** **•Korea Eco-label**
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)	**5.63 W**	**5.42 W**	**5.81 W**
Normal Operation (Long idle)	**3.38 W**	**3.44 W**	**3.39 W**
Sleep	**0.83 W**	**0.79 W**	**0.81 W**
Off	**0.37 W**	**0.48 W**	**0.37 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, 50Hz*
Normal Operation (Short idle)	**19 BTU/hr**	**19 BTU/hr**	**20 BTU/hr**
Normal Operation (Long idle)	**12 BTU/hr**	**12 BTU/hr**	**12 BTU/hr**
Sleep	**3 BTU/hr**	**3 BTU/hr**	**3 BTU/hr**
Off	**1 BTU/hr**	**2 BTU/hr**	**1 BTU/hr**
	Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.		

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)	**Sound Power (L_{WAd}, bels)**	**Sound Pressure (L_{pAm}, decibels)**
Typically Configured – Idle	**2.5**	**14.2**
Fixed Disk – Random writes	**2.8**	**20.0**
Optical Drive – Sequential reads	**3.5**	**28.7**

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)**

Technical Specifications

	• 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 description: CR2032 (coin cell)** **Battery type: Lithium** **Battery description: 6-cell high capacity Lithium-Ion battery (optional 8 cell available)**		
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 http://www.epeat.net** **•Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.** **•This product contains 12.55% post-consumer recycled plastic (by wt.) according to IEEE 1680.1-2018 standard, criterion 4.2.1.1.** **•This product is 94.3% recycle-able when properly disposed of at end of life.**		
Packaging Materials	*External:*	**PAPER/Corrugated**	**0.230 g**
		Paper/Paper	**0.051 g**
	Internal:	**PLASTIC/EPE (Expanded Polyethylene)**	**0.048 g**
		PLASTIC/Polyethylene low density	**0.009 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**		

Technical Specifications

	• 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 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** **and** **http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf**

Technical Specifications

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)

Nominal Operating Voltage	**19 V**
Average Operating Power	**Win 10**
Integrated graphics	**Yes**
Discrete Graphics	**N17S-G2: 25 W** **N16S-GTR: 19 W**
Max Operating Power	**Discrete < 65 W** **UMA < 45 W**
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[41]**
EPEAT®	**EPEAT® 2019 Gold for US, Canada, UK, Australia, New Zealand, and India[42]** **EPEAT® 2019 Gold for other countries[42]**
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**

Technical Specifications

GOST	**Yes**
Saudi Arabian Compliance (ICCP)	**Yes**
SABS	**Yes**

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

42. Configurations of the HP ProBook 440 G7 is ENERGY STAR® certified are identified as HP ProBook 440 G7 ENERGY STAR on HP websites and on http://www.energystar.gov.

DISPLAYS

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

Panel LCD 14 inch diagonal HD (1366 x 768) Anti-Glare WLED SVA 45% NTSC 220 nits eDP 1.2 w/o PSR slim NB non-touch	*Outline Dimensions (W x H x D)*	**316.2 x 198.04 (max.)**
	Active Area	**309.4 x 173.95**
	Weight	**<280 g max.**
	Diagonal Size	**14.0 (inch)**
	Thickness	**3.0 mm max**
	Interface	**eDP 1.2 (1 lane)**
	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)**
	Format of LCD Pixel Arrangement	**RGB**
	Backlight	**LED**
	Color Gamut Coverage	**45% of NTSC**
	Color Depth	**6 bits + Hi FRC**
	Viewing Angle	**SVA 40/40/15/30**

Panel LCD 14 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 45% NTSC 250 nits eDP slim NB	*Outline Dimensions (W x H x D)*	**316.17 x 197.98 mm (max)**
	Active Area	**309.37 x 174.02 mm (typ.)**
	Weight	**285 g (max)**
	Diagonal Size	**14.0 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**

Technical Specifications

	Brightness	**250 nits**
	Pixel Resolution	**1920 x 1080 (FHD)**
	Format of LCD Pixel Arrangement	**RGB**
	Backlight	**LED**
	Color Gamut Coverage	**45% of NTSC**
	Color Depth	**6 bits**
	Viewing Angle	**UWVA 85/85/85/85**

Panel LCD 14 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 45% NTSC 250 nits eDP slim Touch on Panel NWBZ	*Outline Dimensions (W x H x D)*	**316.112 x 197.98 mm (max)**
	Active Area	**309.37 x 174.02 mm (typ.)**
	Weight	**290 g (max)**
	Diagonal Size	**14.0 inch**
	Thickness	**3.0 mm (panel side) / 3.2 mm (PCBA Side) (max)**
	Interface	**eDP 1.2**
	Surface Treatment	**Anti-Glare On-cell**
	Touch Enabled	**Yes**
	Contrast Ratio	**600:1 (typ.)**
	Refresh Rate	**60 Hz**
	Brightness	**250 nits**
	Pixel Resolution	**1920 x 1080 (FHD)**
	Format of LCD Pixel Arrangement	**RGB**
	Backlight	**LED**
	Color Gamut Coverage	**45% of NTSC**
	Color Depth	**6 bits**
	Viewing Angle	**UWVA 85/85/85/85**

Panel LCD 14 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 72% NTSC 1000 nits eDP 1.4+PSR2 flat Privacy	*Outline Dimensions (W x H x D)*	**315.31 x 195.498 mm (max)**
	Active Area	**309.312 x 173.988 mm (typ.)**
	Weight	**265 g (max)**
	Diagonal Size	**14 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)**

	Format of LCD Pixel Arrangement	**RGB**
	Backlight	**LED**
	Color Gamut Coverage	**72% of NTSC**
	Color Depth	**8 bit**

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

STORAGE AND DRIVES

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 Track2 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**

1 TB 7200 rpm SATA Hard Drive	*Drive Weight*	**0.20 lbs (90 g)**
	Rotation speed	**7200 rpm**
	Cache Buffer	**128 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: 1.5 ms** **Average: 13 ms** **Maximum: 32 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**

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**

Technical Specifications

	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)**
	Weight	**0.02 lb (10 g)**
	Interface	**PCIe NVMe Gen3X4**
	Maximum Sequential Read	**Up To 1500 ~ 1700 MB/s**
	Maximum Sequential Write	**Up To 860 ~ 1500MB/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**

Technical Specifications

NETWORKING/COMMUNICATIONS

Realtek RTL8822CE 802.11a/b/g/n/ac 2 x 2 Wi-Fi® and Bluetooth® 5.0	*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)**
	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 and PCI Express compliant power management** **802.11 compliant power saving mode**
Receiver Sensitivity[3]	**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)**
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**

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0 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] **BLE: 1 Mbps signaling data rate**[1]

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**
	Link Topology	
	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)**

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)
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 and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity[3]	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: 2.8g** **2. Type 126: 1.3g**	
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**	

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0 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]** **BLE: 1 Mbps signaling data rate[1]** **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**
Electrical Interface	**USB 2.0 compliant**
Bluetooth Software Supported	**Microsoft Windows Bluetooth Software**
Link Topology	
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 IEC950UL, CSA, and CE Mark**
Bluetooth Profiles Supported	**BT4.1-ESR 5/6/7 Compliance** **LE Link Layer Ping** **LE Dual Mode** **LE Link Layer**

Technical Specifications

		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)**

Intel® Wi-Fi 6 AX201 and Bluetooth 5.0 (802.11 a/b/g/n/ac/ax (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** **• 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 10 mW** **Radio disabled 8 mW**
Power Management	**ACPI and PCI Express compliant power management** **802.11 compliant power saving mode**
Receiver Sensitivity[3]	**•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**
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)**

Technical Specifications

LED Activity	**LED Amber – Radio OFF** **LED Off – Radio ON**

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

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

Bluetooth Specification	**4.0/4.1/4.2/5.0/5.1 Compliant**
Frequency Band	**2402 to 2480 MHz**
Number of Available Channels	**Legacy: 0~79 (1 MHz/CH)** **BLE: 0~39 (2 MHz/CH)**
Signaling Data Rate	**Legacy: 3 Mbps data signaling rate up to 2.17 Mbps** **BLE: 1 Mbps data signaling rate up to 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**
Electrical Interface	**USB 2.0 compliant**
Bluetooth Software Supported	**Microsoft Windows Bluetooth Software**
Link Topology	
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)**

Technical Specifications

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).

Realtek RTK8111HSH 10/100/1000 Integrated NIC	*Connector*	**RJ-45**
	System Interface	**PCIe + SMBus**
	Ethernet Features	**10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14)** **100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30)** **1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023 clauses 40)** **Auto-Negotiation (Automatic Speed Selection)** **Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s**
	Power Management	**ACPI compliant – multiple power modes** **Situation-sensitive features reduce power consumption** **Advanced link down power saving for reducing link down power consumption**
	Performance Features	**TCP/IP/UDP Checksum Offload (configurable)** **Protocol Offload (ARP & NS)** **Large send offload and Giant send offload** **Receiving Side Scaling** **Jumbo Frame 9K**
	Manageability	**Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only)** **PXE 2.1 Remote Boot** **Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)** **Comprehensive diagnostic and configuration software suite** **Virtual Cable Doctor for Ethernet cable status**
	Management Interface	**Auto MDI/MDIX Crossover cable detection**

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),**

Technical Specifications

	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 45W 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 (175 g) max** **Not including power cord. Power cord varies by country.**	
	Input	**90 to 265 VAC**	
		Input Efficiency	**87.74% at 115Vac and 88.4% at 230Vac**
		Input frequency range	**47 to 63 Hz**
		Input AC current	**1.4 A at 90 VAC**
	Output	*Output power*	**45 W**
		DC output	**19.5 V**
		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° 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%**

Technical Specifications

		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 65W 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	*Input Efficiency*	**88% min at 115 VAC and 89% min at 230 VAC**
		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 msec at 115 VAC input**
		Output current limit	**<11.0A**
	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 5000m)**
		Humidity	**20% to 95%**
		Storage Humidity	**10% to 95%**
	EMI and Safety Certifications	**Eg:*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 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	*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**
		DC output	**65 W(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*	**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 5,000 m**
		Humidity	**0% to 95%**
		Storage Humidity	**0% to 95%**
	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. * MTBF - over 200,000 hours at 25°C ambient condition.**	
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	*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 to 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˚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 5000 m)**
		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	*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 to 63 Hz**
		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*	**3.900 Ah**
	Weight	**45 Wh**
	Connector	**Type C**
	Energy	**32° to 113° F (0° to 45° C)**
	Voltage	**14° to 122° F (-10° to 60° C)**

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.**

Technical Specifications

FINGERPRINT READER

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**

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 (Mockingjay 3.0)	**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	**4G B 2666MHz DDR4**	**4VN05AA**
	8 GB 2666MHz DDR4	**4VN06AA**
	16 GB 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**

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

	HP 65W USB-C Power Adapter	**1HE08AA**
	HP 45W USB-C Power Adapter	**1HE07AA**
	HP Power Bank	**N9F71AA**
	HP USB-C Power Bank	**2NA10AA**
Storage	**HP External USB Optical Drive**	**F2B56AA**
	HP 128 GB M.2 SATA-3	**2JB95AA**
	1TB 7200rpm 9.5mm SATA HDD	**L3M56AA**
	HP 500 GB 7200rpm HDD	**F3B97AA**
	HP 256 GB TLC PCI-e 3x4 NVMe SSD (2280)	**1FU87AA**
	HP 512 GB 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**	**Added**	**Environmental Section and updated Battery Life**
November 4, 2019	**V2 to V3**	**Updated**	**UHD Graphics**
February 12, 2020	**V3 to V4**	**Added**	**HP Sure Sense**
February 27, 2020	**V4 to V5**	**Updated**	**Copyright and footnote for fingerprint sensor.**
March 2, 2020	**V5 to V6**	**Updated**	**Call out numbers, Webcam and Privacy Shutter**
April 14, 2020	**V6 to V7**	**Updated**	**EPEAT**
April 22, 2020	**V7 to V8**	**Updated**	**Networking / Communications section**
May 26, 2020	**V8 to V9**	**Updated**	**Military Standards Information /Ethernet network**

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