

Overview

HP EliteBook 840 G6 Notebook PC



Left

- | | |
|--------------------------------|--|
| 1. HD and IR Camera (Optional) | 7. Glass Clickpad |
| 2. IR Camera LEDs (Optional) | 8. Smartcard Reader (Optional) |
| 3. Internal Microphones | 9. USB 3.1 Gen 1 Charging Port |
| 4. Camera Shutter | 10. Vents |
| 5. HD Camera LED | 11. Standard Security Lock Slot (Lock sold separately) |
| 6. Pointstick | 12. Power Button |

1. All units have a SIM card slot and icon but units that do not support WWAN are shipped with a non-removable SIM slot plug

Overview



Right

1. Power Connector
2. USB Type-C™ with Thunderbolt™
3. Docking Connector
4. Ethernet Port
5. HDMI Port (Cable not included)
6. USB 3.1 Gen 1 Port
7. Audio Combo Jack
8. SIM Card Slot1
9. Touch Fingerprint Sensor (Optional)

Overview

AT A GLANCE

- Eye-catching Ultraslim design, premium precision-crafted machined aluminum (CNC) chassis for clean, crisp, premium look and feel
- Choice of 8th Generation Intel® Core™ i5, i7 Processors
- Preinstalled with Windows 10 versions or FreeDOS
- Designed to support all HP docking options including HP's traditional Ultraslim mechanical dock and all-new Thunderbolt dock²
- Featuring HP Collaboration Keyboard with Clickpad to manage most commonly used conferencing functions with a single keystroke
- Innovative world-facing third mic improves inbound ambient noise cancellation while 360 degree mic pick-up allows everyone to clearly hear and be heard
- Optional ultrabright displays with ambient light sensor
- Choice of displays:
 - 35.6 cm (14.0") diagonal FHD IPS Anti-Glare LED-backlit, 250 nits, 45% NTSC
 - 35.6 cm (14.0") diagonal FHD IPS Anti-Glare LED-backlit non-touch 400 nits, 72% NTSC
 - 35.6cm (14.0") diagonal UHD IPS Anti-Glare LED-backlit non-touch, 400 nits, 72% NTSC
 - 35.6cm (14.0") diagonal FHD IPS Anti-Glare LED-backlit non-touch, 1000 nits, 72% NTSC with HP Sure View (Available June 2019)*
 - 35.6cm (14.0") diagonal FHD IPS Anti-Glare On-Cell LED-backlit touch, 250 nits, 45% NTSC
 - 35.6 cm (14.0") diagonal FHD IPS BrightView Glass LED-backlit Corning® Gorilla® Glass 3 touch , 250 nits, 45% NTSC
 - 35.6 cm (14.0") diagonal FHD IPS Anti-Glare On-Cell LED-backlit touch, 1000 nits, 72% NTSC with HP Sure View (Available 3Q 2019)*
- Optional AMD Radeon 550X discrete graphics with 2GB GDDR5 video memory
- Enterprise grade security with HP Sure Sense⁵, HP SureStart Gen5, HP Privacy Camera, HP Sure View Gen3¹, HP Sure Run Gen2, HP Sure Recover Gen2 with Embedded Reimaging², HP Sure Click, SmartCard Reader² and Touch Fingerprint reader²
- Ultimate connectivity with optional CAT16 4G/LTE WWAN, and Thunderbolt™ Docking (Dock sold separately)
- Supports fast charging (50% in 30 minutes) with no impact on battery recharge cycles³
- Flexible wireless connectivity options
- Choice of solid state drives up to 2 TB and DDR4 memory up to 32 GB
- Passed 19 MIL-STD 810G tests⁴
- UMA graphics: Up to 17 hours (Intel® 8th generation CPU and 3-cell 50 WHr battery)
- Discrete graphics: Up to 16 hours and 45 minutes (Intel® 8th generation CPU and 3-cell 50 WHr battery)

1. HP Sure View G3 integrated privacy screen is an optional feature that must be configured at purchase and is designed to function in landscape orientation.

2. Sold separately or as an optional feature.

3. Recharges your battery up to 50% within 30 minutes when the system is off or in standby mode. Power adapter with a minimum capacity of 65 watts is required. After charging has reached 50% capacity, charging will return to normal. Charging time may vary +/-10% due to System tolerance.

4. 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. Accidental damage requires an optional HP Accidental Damage Protection Care Pack.

5. HP Sure Sense requires Windows 10. See product specifications for availability.

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

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

Features

PRODUCT NAME

HP EliteBook 840 G6 Notebook PC

OPERATING SYSTEM

Preinstalled	Windows 10 Pro 64 - HP recommends Windows 10 Pro ¹ Windows 10 Pro 64 (National Academic only) ² Windows 10 Home 64 ¹ Windows 10 Home Single Language 64 ¹ Windows [®] 10 Enterprise 64 (Windows 10 Enterprise available with a Volume Licensing Agreement) ¹ FreeDOS
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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[™] i7-8565U with Intel[®] UHD Graphics 620 (1.8 GHz base frequency, up to 4.6 GHz with Intel[®] Turbo Boost Technology, 8 MB L3 cache, 4 cores)^{3,4,5,6}

Intel[®] Core[™] i7-8665U vPro[™] processor with Intel[®] UHD Graphics 620 (1.9 GHz base frequency, up to 4.8 GHz with Intel[®] Turbo Boost Technology, 8 MB L3 cache, 4 cores)^{3,4,5,6}

Intel[®] Core[™] i5-8265U with Intel[®] UHD Graphics 620 (1.6 GHz base frequency, up to 3.9 GHz with Intel[®] Turbo Boost Technology, 6 MB L3 cache, 4 cores)^{3,4,5,6}

Intel[®] Core[™] i5-8365U vPro[™] processor with Intel[®] UHD Graphics 620 (1.6 GHz base frequency, up to 4.1 GHz with Intel[®] Turbo Boost Technology, 6 MB L3 cache, 4 cores)^{3,4,5,6}

Processor Family

8th Generation Intel[®] Core[™] i7 processor (i7-8665U and i7-8565U)⁶

8th Generation Intel[®] Core[™] i5 processor (i5-8365U and i5-8265U)⁶

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. 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

Integrated with processor

Features

GRAPHICS

Integrated

Intel® UHD Graphics 620⁷

Discrete

AMD Radeon™ 550X (2 GB GDDR5 video memory)^{8,9}

Supports

Support HD decode, DX12, HDMI 1.4b¹⁰

7. HD content required to view HD images.

8. Sold separately or as an optional feature.

9. AMD Dynamic Switchable Graphics technology requires an Intel processor, plus an AMD Radeon™ discrete graphics configuration and is not available on FreeDOS and Linux OS. With AMD Dynamic Switchable Graphics 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).

10. HDMI cable sold separately.

DISPLAY

Non-Touch

35.6 cm (14") diagonal FHD IPS eDP anti-glare WLED-backlit slim, 250 nits, 45% NTSC (1920 x 1080)^{7,8,11}

35.6 cm (14") diagonal FHD IPS eDP anti-glare WLED-backlit slim for HD camera, 250 nits, 45% NTSC (1920 x 1080)^{7,8,11}

35.6 cm (14") diagonal FHD IPS eDP anti-glare WLED-backlit slim for HD+IR camera, 250 nits, 45% NTSC (1920 x 1080)^{7,8,11}

35.6 cm (14") diagonal FHD IPS eDP anti-glare WLED-backlit slim for WWAN, 250 nits, 45% NTSC (1920 x 1080)^{7,8,11}

35.6 cm (14") diagonal FHD IPS eDP anti-glare WLED-backlit slim for HD camera and WWAN, 250 nits, 45% NTSC (1920 x 1080)^{7,8,11}

35.6 cm (14") diagonal FHD IPS eDP anti-glare WLED-backlit slim for HD+IR camera and WWAN, 250 nits, 45% NTSC (1920 x 1080)^{7,8,11}

35.6 cm (14") diagonal FHD IPS eDP + PSR anti-glare WLED-backlit slim with Ambient Light Sensor for HD+IR camera, 400 nits, 72% NTSC (1920 x 1080)^{7,8,11}

35.6 cm (14") diagonal FHD IPS eDP + PSR anti-glare WLED-backlit slim with Ambient Light Sensor for HD+IR camera and WWAN, 400 nits, 72% NTSC (1920 x 1080)^{7,8,11}

35.6 cm (14") diagonal 4K IPS eDP + PSR anti-glare WLED-backlit Ultraslim with Ambient Light Sensor for HD+IR camera and WWAN, 400 nits, 72% NTSC (3840 x 2160)^{7,8,11}

HP Sure View G3 Integrated Privacy Screen 35.6 cm (14") diagonal FHD IPS eDP + PSR anti-glare WLED-backlit flat with Ambient Light Sensor for HD+IR camera and WWAN, 1000 nits, 72% NTSC (1920 x 1080) (Available June 2019)^{7,8,11,12*}

Touch

35.6 cm (14") diagonal FHD IPS eDP anti-glare On-Cell WLED-backlit slim touch screen for HD+IR camera, 250 nits, 45% NTSC (1920 x 1080)^{7,8,11}

35.6 cm (14") diagonal FHD IPS eDP anti-glare On-Cell WLED-backlit slim touch screen for HD+IR camera and WWAN, 250 nits, 45% NTSC (1920 x 1080)^{7,8,11}

35.6 cm (14") diagonal FHD IPS eDP BrightView Glass WLED-backlit slim touch screen with Corning® Gorilla® Glass 3 for HD+IR camera and WWAN, 250 nits, 45% NTSC (1920 x 1080)^{7,8,11}

HP Sure View G3 Integrated Privacy Screen 35.6 cm (14") diagonal FHD IPS eDP + PSR Anti-Glare On-Cell WLED-backlit flat with Ambient Light Sensor for HD+IR camera and WWAN, 1000 nits, 72% NTSC (1920 x 1080) (Available 3Q 2019)^{7,8,11,12*}

Features

HDMI 1.4b

Supports resolution up to 4k @ 60Hz via DisplayPort™ and @ 30Hz via HDMI¹¹

7. HD content required to view HD images.

8. Sold separately or as an optional feature.

11. Resolutions are dependent upon monitor capability, and resolution and color depth settings.

12. HP Sure View G3 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 UltraSlim Docking Station	3	Dual 2.5K @ 60Hz	2xDP, 1xVGA	Dual 2.5k only with both displays intoDP
HP Thunderbolt Dock G2	3	Dual 4K @ 60Hz	2xDP, 1xVGA, 1xTB, 1xUSB-C alt-mode	Dual 4k (4096 x 2160) only with: •1 DP + TB port or •USB-C alt mode + TB port Dual 4k (3840 x 2160) with any of the DP, TB or USB-C alt mode video ports
HP Elite 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

Features

STORAGE AND DRIVES

Primary M.2 Storage

- 128 GB SATA-3 SS TLC¹³
- 256 GB PCIe® NVMe™ Value SS TLC¹³
- 256 GB PCIe® Gen3x4 NVMe™ SS TLC¹³
- 256 GB SATA-3 TLC Opal 2¹³
- 256 GB Intel® PCIe® NVMe™ QLC M.2 SSD with 16 GB Intel® Optane™ memory H10^{13,14,15}
- 512 GB PCIe® Gen3x4 NVMe™ SS TLC¹³
- 512 GB PCIe® Gen3x4 NVMe™ SS TLC Opal 2¹³
- 512 GB SATA-3 SS TLC FIPS-140-2¹³
- 512 GB PCIe® Value¹³
- 512 GB Intel® PCIe® NVMe™ QLC M.2 SSD with 32 GB Intel® Optane™ memory H10^{13,14,15}
- 1 TB PCIe® Gen3 x4 NVMe™ SS TLC¹³
- 2 TB PCIe® Gen3 x4 NVMe™ SS TLC¹³

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 DDR4-2400 SDRAM¹⁶

Memory

- 32 GB DDR4-2400 SDRAM (2 X 16 GB)¹⁶
- 16 GB DDR4-2400 SDRAM (1 X 16 GB)¹⁶
- 16 GB DDR4-2400 SDRAM (2 X 8 GB)¹⁶
- 8 GB DDR4-2400 SDRAM (1 x 8 GB)¹⁶
- 8 GB DDR4-2400 SDRAM (2 x 4 GB)¹⁶
- 4 GB DDR4-2400 SDRAM (1 x 4 GB)¹⁶

Memory Slots

2 SODIMM

Both slots are customer accessible / upgradeable

DDR4 SODIMMS, system runs at 2400

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

Intel® Dual Band Wireless-AC 9560 802.11 a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 5 Combo, vPro™¹⁷

Intel® Dual Band Wireless-AC 9560 802.11 a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 5 Combo, non-vPro™¹⁷

Features

Intel® Wi-Fi 6 AX200 802.11a/b/g/n/ac/ax (2x2) and Bluetooth® 5 Combo, vPro™¹⁸
Intel® Wi-Fi 6 AX200 802.11a/b/g/n/ac/ax (2x2) Bluetooth® 5 Combo, non-vPro™¹⁸

WWAN

Intel® XMM™ 7262 LTE-Advanced Cat 6¹⁹
Intel® XMM™ 7360 LTE-Advanced Cat 9¹⁹
Intel® XMM™ 7560 LTE-Advanced Pro Cat 16²⁰

NFC

Near NPC300 Field Communication module

Miracast

Native Miracast Support²¹

Ethernet

Intel® I219-LM 10/100/1000 GbE, vPro™²²
Intel® I219-V 10/100/1000 GbE, non-vPro™²²

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. 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.
19. WWAN module is an optional feature, requires factory configuration 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.
20. Gigabit class Category 16 4G LTE module is optional and must be configured at the factory. Module designed for up to 1 Gbps download speeds as carriers deploy 5 carrier aggregation and 100Mhz channel bandwidth, requires activation and separately purchased service contract. Backwards compatible to HSPA 3G technologies. Check with service provider for coverage and availability in your area. Connection, upload and download speeds will vary due to network, location, environment, network conditions, and other factors. 4G LTE not available on all products, in all regions.
21. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming.
22. The term "10/100/1000" or "Gigabit" Ethernet indicates compatibility with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

AUDIO/MULTIMEDIA

Audio

Audio by Bang & Olufsen
Integrated 3 Multi Array Microphone
2 Integrated Stereo Speakers

Camera

720p HD camera^{7,8}
720p HD+IR camera^{7,8}

Sensors

Ambient light sensor (Select models only)

Features

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

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard

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

Pointing Device

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

Function Keys

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

Hidden Function Keys

Fn+R - Break
Fn+S - Sys Rq
Fn+C - Scroll Lock
Fn+E = Insert
Fn+W = Pause

SOFTWARE AND SECURITY

Preinstalled Software

BIOS

HP BIOSphere Gen5²³
HP Drive Lock & Automatic Drive Lock²⁴
BIOS Update via Network
Master Boot Record Security
Power On Authentication
Secure Erase²⁵
Absolute Persistence Module²⁶
Pre-boot Authentication

Features

Software

- HP Native Miracast Support²⁷
- HP Connection Optimizer
- HP Image Assistant
- HP Hotkey Support
- HP JumpStart
- HP Support Assistant²⁸
- HP Noise Cancellation Software
- Buy Office (sold separately)

Manageability Features

- HP Driver Packs²⁹
- HP System Software Manager (SSM)
- HP BIOS Config Utility (BCU)
- HP Client Catalog
- HP Manageability Integration Kit Gen3³⁰
- Ivanti Management Suite
- HP Cloud Recovery³¹

Client Security Software

- HP Client Security Manager Gen5³²
- HP Fingerprint Sensor³³
- HP Power On Authentication
- Windows Defender³⁴

Security Management

- Pre-boot Authentication
- TPM 2.0 Embedded Security Chip shipped with Windows 10 (Common Criteria EAL4+ Certified)
- SATA 0,1 port disablement (via BIOS)
- Serial, USB enable/disable (via BIOS)
- Power-on password (via BIOS)
- Setup password (via BIOS)
- Support for chassis padlocks and cable lock devices
- Integrated hood sensor
- HP Sure Click³⁵
- HP Sure Start Gen5³⁶
- HP Sure Run Gen2³⁷
- HP Sure Recover Gen2³⁸
- HP Sure Sense³⁹

Features

TPM

Model: Infineon SLB9670
Version: 7.85
Revision: TPM 2.0
FIPS 140-2 Compliant: Yes

Smartcard Reader

Model number: Alcor AU9560
FIPS 201 Compliant: Yes

IPv6 Certification:

Yes

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

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

Graphics (Intel Video Driver): TBD
WWAN: TBD
WLAN: TBD

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

Yes
UEFI version: 2.6

23. 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
24. HP Drive Lock & Automatic Drive Lock is not supported on NVMe drives
25. 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™.
26. 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.
27. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming.
28. HP Support Assistant requires Windows and Internet access.
29. HP Driver Packs not preinstalled, however available for download at <http://www.hp.com/go/clientmanagement>.
30. HP Manageability Integration Kit can be downloaded from <http://www.hp.com/go/clientmanagement>.
31. HP Cloud Recovery is available for HP Elite and Pro desktops and laptops PCs with Intel® or AMD processors and requires an open, wired network connection. Note: You must back up important files, data, photos, videos, etc. before use to avoid loss of data. Detail please refer to: <https://support.hp.com/us-en/document/c05115630>
32. HP Client Security Manager Gen5 requires Windows and is available on the select HP Pro and Elite PCs. See product specifications for details.
33. HP Fingerprint Sensor sold separately or as an optional feature.
34. Windows Defender Opt in and internet connection required for updates.
35. 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, when Microsoft Office or Adobe Acrobat are installed.
36. HP Sure Start Gen5 is available on select HP PCs with Intel processors. See product specifications for availability.
37. HP Sure Run Gen2: See product specifications for availability.

Features

38. HP Sure Recover Gen2: See product specifications for availability. Requires an open, wired network connection. Not available on platforms with multiple internal storage drives. You must back up important files, data, photos, videos, etc. before using HP Sure Recover to avoid loss of data. HP Sure Recover (Gen1) does not support platforms with Intel® Optane™.
39. HP Sure Sense requires Windows 10. See product specifications for availability.

POWER

Power Supply

- HP Smart 45 W External AC power adapter⁴⁰
- HP Smart 45 W External AC power adapter, 2-prong (Japan only)⁴⁰
- HP Smart 65 W External AC power adapter⁴⁰
- HP Smart 65 W EM External AC power adapter⁴⁰
- 45 W USB Type-C™ adapter⁴⁰
- 65 W USB Type-C™ adapter⁴⁰

Primary Battery

- HP Long Life 3-cell, 50 Wh Li-ion⁴¹
- Support HP Fast Charge (Up to 50% in 30 minutes with 65W AC Adapter)⁴²

Battery Life

- UMA graphics: Up to 17 hours and 15 minutes (Intel® 8th generation CPU and 3-cell 50 WHr battery)⁴³

Power Cord

- 2-wire plug - 1.0 m (Japan only)⁴⁰
- 3-wire plug - 1.0 m⁴⁰
- 3-wire plug - 1.8 m⁴⁰
- Duckhead power cord - 1.0 m⁴⁰
- Duckhead power cord - 1.8 m⁴⁰

40. Availability may vary by country.

41. Battery is internal and not replaceable by customer. Serviceable by warranty.

42. Recharges the battery up to 50% within 30 minutes when the system is off or in standby mode. Power adapter with a minimum capacity of 65 watts is required. After charging has reached 50% capacity, charging will return to normal. Charging time may vary +/-10% due to System tolerance.

43. 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

Non-Touch

- Starting at 3.27 lbs (non-touch); Starting at 3.32 lb (touch)⁴⁴
- Starting at 1.48 kg (non-touch); Starting at 1.51 kg (touch)⁴⁴

Touch

- Starting at 3.32 lbs⁴⁴
- Starting at 1.51 kgs⁴⁴

Dimensions (w x d x h)

Non-touch

- 12.84 x 9.22 x 0.71 in
- 32.6 x 23.43 x 1.79 cm

Features

Touch

12.84 x 9.22 x 0.71 in
32.6 x 23.43 x 1.805 cm

44. Weight will vary by configuration.

PORTS/SLOTS

Ports

1 Thunderbolt™ (USB Type-C™ connector)
2 USB 3.1 Gen 1 (1 charging)
1 docking connector
1 HDMI 1.4¹⁰
1 RJ-45
1 AC power
1 Headphone/microphone combo jack
1 SIM card slot
1 Smartcard reader
Standard Security Lock Slot (Lock sold separately)

10. HDMI cable sold separately.

SERVICE AND SUPPORT

HP Services offers 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. Refer to <http://www.hp.com/support/batterywarranty/> for additional battery information. 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>.⁴⁵

45. 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.

Technical Specifications

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)	Nominal Operating Voltage	19V
	Average Operating Power	Win 10
	Integrated Graphics	6.78W
	Discrete Graphics	13 W
	Max Operating Power	Discrete < 65W UMA < 45W
	Temperature	
	Operating	32° to 95° F (0° to 35° C)
	Non-operating	-4° to 140° F (-20° to 60° C)
Relative Humidity	Operating	10% to 90%, non-condensing
	Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
Shock	Operating	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®	Select models ⁴⁶
	EPEAT® 2019	Yes, Silver in U.S. ⁴⁷
	ICES	Yes
	Australia / 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
	Saudi Arabian Compliance (ICCP)	Yes
SABS	Yes	

46. Configurations of the HP Elitebook 840 G6 that are ENERGY STAR® qualified are identified as HP Elitebook 840 G6 ENERGY STAR on HP websites and on <http://www.energystar.gov>.

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

Technical Specifications

ENVIRONMENTAL & INDUSTRY

Eco-Label Certifications & declarations	<p>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:</p> <ul style="list-style-type: none"> • IT ECO declaration • US ENERGY STAR® • EPEAT® Silver registered in the United States. Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. Status varies by country. Visit http://www.epeat.net for more information. 		
System Configuration	<p>The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a Typically Configured Notebook.</p>		
Energy Consumption (in accordance with US ENERGY STAR® test method)	115VAC, 60Hz	230VAC, 50Hz	100VAC, 60Hz
Normal Operation (Short idle)	6.97 W	6.98 W	7.02 W
Normal Operation (Long idle)	4.09 W	3.86 W	4.07 W
Sleep	1.28 W	1 W	1.31 W
Off	0.40 W	0.40 W	0.41 W
	<p>NOTE: Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.</p>		
Heat Dissipation*	115VAC, 60Hz	230VAC, 50Hz	100VAC, 60Hz
Normal Operation (Short idle)	24 BTU/hr	24 BTU/hr	24 BTU/hr
Normal Operation (Long idle)	14 BTU/hr	13 BTU/hr	14 BTU/hr
Sleep	4 BTU/hr	3 BTU/hr	4 BTU/hr
Off	1 BTU/hr	1 BTU/hr	1 BTU/hr
	<p>NOTE: Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.</p>		
Declared Noise Emissions	<p>Sound Power (L_{WAd}, bels)</p>		<p>Sound Pressure (L_{pAm}, decibels)</p>

Technical Specifications

(in accordance with ISO 7779 and ISO 9296)			
Typically Configured – Idle	2.5	13.8	
Fixed Disk – Random writes	2.5	15.3	
Longevity and Upgrading	<p>This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include:</p> <ul style="list-style-type: none"> • 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 <p>Spare parts are available throughout the warranty period and or for up to “5” years after the end of production.</p>		
Batteries	<p>This battery(s) in this product comply with EU Directive 2006/66/EC</p> <p>Batteries used in the product do not contain: Mercury greater the 1ppm by weight Cadmium greater than 20ppm by weight</p> <p>Battery size: CR2032 (coin cell) Battery type: Lithium</p>		
Additional Information	<ul style="list-style-type: none"> • 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 in the U.S. See http://www.epeat.net for registration status by country. Search keyword generator on HP’s 3rd party option store for solar generator accessories at http://www.hp.com/go/options • Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043. • This product contains 0% post-consumer recycled plastic (by wt.) • This product is 95.1% recycle-able when properly disposed of at end of life. 		
Packaging Materials	External:	PAPER/Corrugated	261 g
	Internal:	PLASTIC/Polyethylene Expanded - EPE	68 g
		PLASTIC/Polyethylene low density	14 g
		PLASTIC/Polypropylene - PP	4 g
Material Usage	<p>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):</p> <ul style="list-style-type: none"> • Asbestos • Certain Azo Colorants • Certain Brominated Flame Retardants – may not be used as flame retardants in plastics • Cadmium • Chlorinated Hydrocarbons • Chlorinated Paraffins 		

Technical Specifications

	<ul style="list-style-type: none"> • 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)
<p>Packaging Usage</p>	<p>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):</p> <ul style="list-style-type: none"> • 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)
<p>End-of-life Management and Recycling</p>	<p>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.</p> <p>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</p>

Technical Specifications

	<p>instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.</p> <p>Global Citizenship Report</p> <p>http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html</p> <p>Eco-label certifications</p> <p>http://www8.hp.com/us/en/hp-information/environment/ecolabels.html</p> <p>ISO 14001 certificates:</p> <p>http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf</p> <p>and</p> <p>http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf</p>
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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 FHD (1920 x 1080) Anti-Glare WLED UWVA 45 percent cg 250 nits eDP slim	Outline Dimensions (W x H)	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
	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	

Technical Specifications

Panel LCD 14 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 45 percent cg 250 nits eDP slim BrightView Touch	Outline Dimensions (W x H)	316.112 x 197.98 mm (max)
	Active Area	309.37 x 174.02 mm (typ.)
	Weight	425 g (max)
	Diagonal Size	14.0 inch
	Thickness	3.8 mm (panel side w/ glass) / 4 mm (PCBA side) (max)
	Interface	eDP 1.2
	Surface Treatment	BrightView Glass
	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 45 percent cg 250 nits eDP slim On-cell touch	Outline Dimensions (W x H)	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

Technical Specifications

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 percent cg 400 nits eDP 1.3+PSR slim	Outline Dimensions (W x H)	316.11 x 197.98 mm (max)
	Active Area	309.31 x 173.99 mm
	Weight	<285 g (max)
	Diagonal Size	14.0 inch
	Thickness	3.0 mm (max)
	Interface	eDP 1.3 + PSR (2 lane)
	Surface Treatment	Anti-Glare
	Touch Enabled	No
	Contrast Ratio	600:1 (typ.)
	Refresh Rate	60 Hz
	Brightness	400 nits
	Pixel Resolution	1920 x 1080 (FHD)
	Format of LCD Pixel Arrangement	RGB
	Backlight	LED
	Color Gamut Coverage	72% of NTSC
	Color Depth	6 bits + Hi FRC
	Viewing Angle	UWVA 85/85/85/85

Technical Specifications

Panel LCD 14 inch diagonal UHD (3840 x 2160) Anti-Glare WLED UWVA 72 percent cg 400 nits eDP 1.3 + PSR Ultraslim	Outline Dimensions (W x H)	315.31 x 199.54 mm (max) (w/ PCB)
	Active Area	309.31 x 173.99 mm
	Weight	<240 g (max)
	Diagonal Size	14.0 inch
	Thickness	2.4 mm (max)
	Interface	eDP 1.3 + PSR (4 lane)
	Surface Treatment	Anti-Glare
	Touch Enabled	No
	Contrast Ratio	1200:1 (typ.)
	Refresh Rate	60 Hz
	Brightness	400 nits (typ.)
	Pixel Resolution	3840 x 2160 (UHD)
	Format of LCD Pixel Arrangement	RGB
	Backlight	LED
	Color Gamut Coverage	72% of NTSC
	Color Depth	8 bits
Viewing Angle	UWVA 85/85/85/85	

Panel LCD 14 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 72 percent cg 1000 nits eDP 1.4+PSR2 flat	Outline Dimensions (W x H)	315.31 x 195.498 mm (max)
	Active Area	309.312 x 173.988 mm (typ.)
	Weight	265 g (max)
	Diagonal Size	14.0 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

Technical Specifications

Backlight	LED
Color Gamut Coverage	72% of NTSC
Color Depth	8 bits
Viewing Angle	UWVA 85/85/85/85

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

Panel LCD 14 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 72 percent cg 1000 nits eDP 1.4+PSR flat On-cell touch Privacy	Outline Dimensions (W x H)	315.31 x 197.138 mm (max)
	Active Area	309.312 x 173.988 mm (typ.)
	Weight	270 g (max)
	Diagonal Size	14.0 inch
	Thickness	3.2 mm (max)
	Interface	eDP 1.4 + PSR2 (4 lane)
	Surface Treatment	Anti-Glare On-cell
	Touch Enabled	YES
	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 bits
Viewing Angle	UWVA 85/85/85/85	

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

Technical Specifications

STORAGE¹

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	Around 540 ~ 560 MB/s
	Maximum Sequential Write	Around 380 ~ 530 MB/s
	Logical Blocks	250,069,680
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security; DIPM; TRIM; DEVSLP

SSD 1 TB 2280 PCIe-3x4 NVMe Three Layer Cell single-sided	Form Factor	M.2 2280
	Capacity	1 TB
	NAND Type	TLC
	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	Around 3200 ~ 3480 MB/s
	Maximum Sequential Write	Around 2400 ~ 3037 MB/s
	Logical Blocks	2,000,409,264
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security; TRIM; L1.2

SSD 256 GB 2280 M2 PCIe-3x4 SS NVMe TLC	Form Factor	M.2 2280
	Capacity	256 GB
	NAND Type	TLC
	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	Around 2900 ~ 3167 MB/s
	Maximum Sequential Write	Around 1300 ~ 1663 MB/s
	Logical Blocks	500,118,192
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]

Technical Specifications

	Features	ATA Security; TRIM; L1.2
SSD 256 GB 2280 M2 SATA-3 Self Encrypted OPAL2 Three Layer Cell	Form Factor	M.2 2280
	Capacity	256 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	Around 530 ~ 560 MB/s
	Maximum Sequential Write	Around 500 ~ 530 MB/s
	Logical Blocks	500,118,192
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security; TCG OPAL 2.0; DIPM; TRIM; DEVSLP
SSD 256 GB 2280 PCIe NVMe Value	Form Factor	M.2 2280
	Capacity	256 GB
	NAND Type	TLC
	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	Around 1500 ~ 1700 MB/s
	Maximum Sequential Write	Around 780 ~ 1300 MB/s
	Logical Blocks	500,118,192
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security; TRIM; L1.2
2 TB 2280 PCIe-3x4 NVMe Three Layer Cell single-sided	Form Factor	M.2 2280
	Capacity	2 TB
	NAND Type	TLC
	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	Around 2900 ~ 3000 MB/s
	Maximum Sequential Write	Around to 2100 MB/s

Technical Specifications

Logical Blocks	3,907,029,168
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
Features	ATA Security; TRIM; L1.2

SSD 512 GB 2280 M2 PCIe-3x4 SS NVMe TLC	Form Factor	M.2 2280
	Capacity	512 GB
	NAND Type	TLC
	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	Around 2700 ~ 3400 MB/s
	Maximum Sequential Write	Around 1390 ~ 2956 MB/s
	Logical Blocks	1,000,215,215
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security; TRIM; L1.2

SSD 512 GB 2280 M2 SATA-3 Three Layer Cell Federal Information Processing Standard	Form Factor	M.2 2280
	Capacity	512 GB
	NAND Type	TLC
	Height	2.6 mm Max
	Width	0.87 in (22 mm)
	Weight	0.02 lb (10 g)
	Interface	ACS-3, SATA 3.2
	Maximum Sequential Read	Around 530 MB/s
	Maximum Sequential Write	Around 400 MB/s
	Logical Blocks	1,000,215,216
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security; TCG Opal 2.0; FIPS; DIPM; TRIM; DEVSLP

SSD 512 GB 2280 PCIe NVMe Value	Form Factor	M.2 2280
	Capacity	512 GB
	NAND Type	TLC/QLC
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Weight	0.02 lb (10 g)
	Interface	PCIe NVMe Gen3X4

Technical Specifications

Maximum Sequential Read	Around 1500 ~ 1700 MB/s
Maximum Sequential Write	Around 860 ~ 1500 MB/s
Logical Blocks	1,000,215,215
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
Features	ATA Security; TRIM; L1.2

SSD 512 GB 2280 PCIe-3x4 NVMe Self Encrypted OPAL2 Three Layer Cell	Form Factor	M.2 2280
	Capacity	512 GB
	NAND Type	TLC
	Height	2.6 mm Max
	Width	0.87 in (22 mm)
	Weight	0.02 lb (10 g)
	Interface	PCIe NVMe Gen3X4
	Maximum Sequential Read	Around 2900 ~ 3400 MB/s
	Maximum Sequential Write	Around 1000 ~ 2500 MB/s
	Logical Blocks	1,000,215,216
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	ATA Security; TCG Opal 2.0; FIPS; DIPM; TRIM; DEVSLP

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

NETWORKING/COMMUNICATIONS

Intel® 9560 802.11a/b/g/n/ac (2 x 2) WiFi® and Bluetooth® 5.0 Combo vPro¹	Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac
	Interoperability	Wi-Fi® certified
	Frequency Band	•802.11b/g/n 2.402 – 2.482 GHz •802.11a/n 4.9 – 4.95 GHz (Japan) 5.15 – 5.25 GHz 5.25 – 5.35 GHz 5.47 – 5.725 GHz 5.825 – 5.850 GHz

Technical Specifications

Data Rates	<ul style="list-style-type: none"> •802.11b: 1, 2, 5.5, 11 Mbps •802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps •802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps •802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) •802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, 80MHz & 160MHz)
Modulation	<p>Direct Sequence Spread Spectrum</p> <p>BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM</p>
Security³	<ul style="list-style-type: none"> •IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only •AES-CCMP: 128 bit in hardware •802.1x authentication •WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. •WPA2 certification •IEEE 802.11i •Cisco Certified Extensions, all versions through CCX4 and CCX Lite •WAPI
Network Architecture Models	<p>Ad-hoc (Peer to Peer)</p> <p>Infrastructure (Access Point Required)</p>
Roaming	IEEE 802.11 compliant roaming between access points
Output Power²	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> •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	<p>ACPI and PCI Express compliant power management</p> <p>802.11 compliant power saving mode</p>
Receiver Sensitivity⁴	<p>802.11b, 1Mbps: -93.5dBm maximum</p> <p>802.11b, 11Mbps: -84dBm maximum</p> <p>802.11a/g, 6Mbps: -86dBm maximum</p> <p>802.11a/g, 54Mbps: -72dBm maximum</p> <p>802.11n, MCS07: -67dBm maximum</p> <p>802.11n, MCS15: -64dBm maximum</p> <p>802.11ac, MCS0: -84dBm maximum</p> <p>802.11ac, MCS9: -59dBm maximum</p>
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure

Technical Specifications

	Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications	
Form Factor	PCI-Express M.2 MiniCard	
Dimensions	Type 2230: 2.3 x 22.0 x 30.0 mm	
Weight	Type 2230: 2.8 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 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

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)

Security & Manageability Intel® vPro™ support with appropriate Intel® chipset components

1. Wireless access point and Internet service is required. Availability of public wireless access point is limited. The specifications for the 802.11ac WLAN are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ac WLAN devices
2. The FCC has declared as of September 1, 2014 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.
3. Check latest software/driver release for updates on supported security features.
4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

Technical Specifications

<p>Intel® 9560 802.11a/b/g/n/ac (2 x 2) WiFi® and Bluetooth® 5.0 Combo non-vPro¹</p>	<p>Wireless LAN Standards</p>	<p>IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac</p>
	<p>Interoperability</p>	<p>Wi-Fi® certified</p>
	<p>Frequency Band</p>	<ul style="list-style-type: none"> •802.11b/g/n 2.402 – 2.482 GHz •802.11a/n 4.9 – 4.95 GHz (Japan) 5.15 – 5.25 GHz 5.25 – 5.35 GHz 5.47 – 5.725 GHz 5.825 – 5.850 GHz
	<p>Data Rates</p>	<ul style="list-style-type: none"> •802.11b: 1, 2, 5.5, 11 Mbps •802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps •802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps •802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) •802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, 80MHz & 160MHz)
	<p>Modulation</p>	<p>Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM</p>
	<p>Security³</p>	<ul style="list-style-type: none"> •IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only •AES-CCMP: 128 bit in hardware •802.1x authentication •WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. •WPA2 certification •IEEE 802.11i •Cisco Certified Extensions, all versions through CCX4 and CCX Lite •WAPI
	<p>Network Architecture Models</p>	<p>Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)</p>
	<p>Roaming</p>	<p>IEEE 802.11 compliant roaming between access points</p>
	<p>Output Power²</p>	<ul style="list-style-type: none"> • 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
	<p>Power Consumption</p>	<ul style="list-style-type: none"> •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

Technical Specifications

Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode	
Receiver Sensitivity⁴	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	
Dimensions	Type 2230: 2.3 x 22.0 x 30.0 mm	
Weight	Type 2230: 2.8 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 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.

Technical Specifications

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.
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® Wi-Fi® 6 AX200 + BT5 vPro¹	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
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Technical Specifications

	IEEE 802.11i IEEE 802.11k IEEE 802.11r IEEE 802.11v
Interoperability	Wi-Fi® certified
Frequency Band	<ul style="list-style-type: none"> •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	<ul style="list-style-type: none"> •802.11b: 1, 2, 5.5, 11 Mbps •802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps •802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps •802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) •802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, ,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
Security³	<ul style="list-style-type: none"> •IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only •AES-CCMP: 128 bit in hardware •802.1x authentication •WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. •WPA2 certification •IEEE 802.11i •Cisco Certified Extensions, all versions through CCX4 and CCX Lite •WAPI
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output Power²	<ul style="list-style-type: none"> • 802.11b: +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	<ul style="list-style-type: none"> •Transmit mode 2.0 W •Receive mode 1.6 W •Idle mode (PSP) 180 mW (WLAN Associated)

Technical Specifications

	<ul style="list-style-type: none"> • Idle mode 50 mW (WLAN unassociated) • Connected Standby 10mW • Radio disabled 8 mW
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity³	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: 2.8g 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)

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 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

Technical Specifications

	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)
Security & Manageability	Intel® vPro™ support with appropriate Intel® chipset components

1. Wireless access point and Internet service is required. Availability of public wireless access point is limited. The specifications for the 802.11ac WLAN are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ac WLAN devices
2. The FCC has declared as of September 1, 2014 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.
3. Check latest software/driver release for updates on supported security features.
4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

Technical Specifications

Intel Wi-Fi® 6 AX200 + BT5 non-vPro¹	Wireless LAN Standards	<ul style="list-style-type: none"> 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	<ul style="list-style-type: none"> •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	<ul style="list-style-type: none"> •802.11b: 1, 2, 5.5, 11 Mbps •802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps •802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps •802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) •802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, ,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
	Security³	<ul style="list-style-type: none"> •IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only •AES-CCMP: 128 bit in hardware •802.1x authentication •WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. •WPA2 certification •IEEE 802.11i •Cisco Certified Extensions, all versions through CCX4 and CCX Lite •WAPI
	Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
	Roaming	IEEE 802.11 compliant roaming between access points
	Output Power²	<ul style="list-style-type: none"> • 802.11b: +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

Technical Specifications

	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • Transmit mode 2.0 W • Receive mode 1.6 W • Idle mode (PSP) 180 mW (WLAN Associated) • Idle mode 50 mW (WLAN unassociated) • Connected Standby 10mW • Radio disabled 8 mW
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity³	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: 2.8g 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)

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

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 Certifications	Microsoft Windows ACPI, and USB Bus Support 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 802.11 ac 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 802.11 ac 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.

Technical Specifications

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® XMM™ 7360 LTE-Advanced CAT9⁵	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; 900 mA (average) HSPA+: 1,100 mA; 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

5. Mobile Broadband is an optional feature. Connection requires wireless data service contract, network support, and is not available in all areas. Contact service provider to determine the coverage area and availability. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products or in all countries.

Technical Specifications

Intel® XMM 7262 LTE-Advanced Cat 6⁶	Technology/Operating bands	FDD LTE: 2100 (Band 1), 1800 (Band 3), 850 (Band 5), 2600 (Band 7), 900 (Band 8), 800 (Band 20), 700 (Band 28), HSPA+: 2100 (Band 1), 850 (Band 5), 900 (Band 8)
	Wireless protocol standards	3GPP Release 11 LTE Specification CAT.6, DL 40MHz BW throughput up to 300Mbps; UL 20MHz throughput up to 50Mbps WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification
	GPS	Standalone, A-GPS (MS-A, MS-B and XTRA)
	GPS bands	1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz
	Maximum data rates	LTE: 300 Mbps (Download), 50 Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) UMT: 384 kbps (Download), 384 kbps (Upload)
	Maximum output power	LTE: 23 dBm HSPA+: 23.5 dBm
	Maximum power consumption	LTE: 1,200 mA; 900 mA (average) HSPA+: 1,100 mA; 800 mA (average)
	Form Factor	M.2, 3042-S3 Key B
	Weight	6 g
	Dimensions (Length x Width x Thickness)	42 x 30 x 2.3 mm

6. Mobile Broadband is an optional feature. Connection requires wireless data service contract, network support, and is not available in all areas. Contact service provider to determine the coverage area and availability. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products or in all countries.

Intel® XMM™ 7560 LTE-Advanced Pro CAT16	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), 700 (Band 12 lower), 700 (Band 13 upper), 700 (Band 14 upper), 700 (Band 17 lower), 850 (Band 18 lower), 850 (Band 19 upper), 800 (Band 20), 1900 (Band 25), 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), 3500 (Band 42), 5200 (Band 46 RX only) HSPA+: 2100 (Band 1), 1900 (Band 2), 1700/2100 (Band 4), 850 (Band 5), 900 (Band 8) MH
	Wireless protocol standards	3GPP Release 12 LTE Specification DL-CAT.16, DL 100MHz BW throughput up to 978Mbps; UL-CAT.13 40MHz throughput up to 150Mbps WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification
	GPS	Standalone, A-GPS (MS-B and LTO)
	GPS bands	GPS 1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz, Beidou 1561.098 ± 2.046 MHz

Technical Specifications

Maximum data rates	LTE: 978 Mbps (Download), 150 Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21Mbps (Download), 5.76 Mbps (Upload)
Maximum output power	LTE: 23 dBm in all bands except B41 LTE B41 HPUE: 26dBm HSPA+: 23.5 dBm
Maximum power consumption	LTE: 1,200 mA; 900 mA (average) HSPA+: 1,100 mA; 800 mA (average)
Form Factor	M.2, 3042-S3 Key B
Weight	6 g
Dimensions (Length x Width x Thickness)	42 x 30 x 2.3 mm

Near Field Communications Controller

Dimensions (L x W x H)	Module 17 mm by 10 mm by 2.0 mm
Chipset	NPC300
System interface	I2C
NFC RF standards	ISO/IEC 14443 A ISO/IEC 14443 B ISO/IEC 15693 ISO/IEC 18092 ECMA-340 NFCIP-1 Target and Initiator ECMA-320 NFCIP-2
NFC Forum Support Reader (PCD-VCD) Mode(1)	Tag Type 1, Type 2, Type3 and Type 4, NFCIP-1 and NFCIP-2 ISO/IEC 14443 A ISO/IEC 14443 B ISO/IEC 15693 MIFARE 1K MIFARE 4K MIFARE DESFire FeliCa Jewel and Topaz cards
Card Emulation (PICC-VICC) Mode(1)	ISO/IEC 14443 A ISO/IEC 14443 B and B' MIFARE FeliCa
Frequency	13.56 MHz
NFC Modes Supported	Reader/Writer, Peer-to-Peer
Raw RF Data Rates	106, 212, 424, 848 kbps
Operating temperature	-25 C to 80°C
Storage temperature	-20°C to 125°C

Technical Specifications

	Humidity	10-90% operating 5-95% non-operating
	Supply Operating voltage	2.7 to 5.5 Volts
	I/O Voltage	1.8V or 3.3V
Power Consumption (Booster enable, VBAT= 3.3V, VCC_BOOST = 5V)	Polling	710.93 mW
	Detected Test Tag Type 1	152.09 mW
	Detected Test Tag Type 2	341.26 mW
	Detected Test Tag Type 3	383.76 mW
	Detected Test Tag Type 4	312.26 mW
	Antenna	Antenna connector, 0.3mm pitch, 7 connector FPC. Antenna matching is external to module.
Intel® i219LM 10/100/1000 Integrated NIC	Connector	RJ-45
	System Interface	PCI (Intel proprietary) + SMBus
	Data rates supported	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
	IEEE Compliance	IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE (Energy Efficient Ethernet)
	Performance	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload and Giant send offload Receiving Side Scaling Jumbo Frame 9K
	Power consumption	Cable Disconnection: 25mW 100Mbps Full Run: 450mW 1000bp Full Run: 1000mW WoL Enable(S3/S4/S5): 50mW WoL Disable(S3/S4/S5): 25mW
	Power Management	ACPI compliant – multiple power modes Situation-sensitive features reduce power consumption Advanced link down power saving for reducing link down power consumption
	Management Interface	Auto MDI/MDIX Crossover cable detection
	IT Manageability	Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only)

Technical Specifications

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

Security & Manageability Intel® vPro™ support with appropriate Intel® chipset components

**Intel® i219v
 10/100/1000 Integrated
 NIC**

Connector RJ-45

System Interface PCI (Intel proprietary) + SMBus

Data rates supported 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

IEEE Compliance IEEE 802.1p QoS (Quality of Service) Support
 IEEE 802.1q VLAN support
 IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable)
 IEEE 802.3az EEE (Energy Efficient Ethernet)

Performance TCP/IP/UDP Checksum Offload (configurable)
 Protocol Offload (ARP & NS)
 Large send offload and Giant send offload
 Receiving Side Scaling
 Jumbo Frame 9K

Power consumption Cable Disconnection: 25mW
 100Mbps Full Run: 450mW
 1000bp Full Run: 1000mW
 WoL Enable(S3/S4/S5): 50mW
 WoL Disable(S3/S4/S5): 25mW

Power Management ACPI compliant – multiple power modes
 Situation-sensitive features reduce power consumption
 Advanced link down power saving for reducing link down power consumption

Management Interface Auto MDI/MDIX Crossover cable detection

IT 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

Technical Specifications

POWER

AC Adapter 45 Watt nPFC Wall Mount USB type C Straight 1.8m C6NS	Dimensions	62.0 x 62.0 x 28.5mm	
	Weight	unit: 220g +/- 10g	
Output	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 ~ 63 Hz
		Input AC current	Max. 1.4 A at 90 Vac
Environmental Design	Output power	Average Efficiency of 25%, 50%, 75%, 100% load condition with 115Vac/230Vac Spec	
	DC output	5V: 81.5%	
	Hold-up time	9V: 86.7%	
	Output current limit	10V: 87.5%	
	Connector	Non-Standard C6	
	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.		

Technical Specifications

AC Adapter 45 Watt Smart nPFC Standard Barrel 4.5mm Right Angle 1.8m	Dimensions	95.0 x 40.0 x 26.5 mm
	Weight	unit: 200 g +/- 10 g
	Input	Input Efficiency 87.74 % at 115 Vac and 88.4 % at 230Vac Input frequency range 47 ~ 63 Hz Input AC current Max. 1.4 A at 90 Vac
	Output	Output power 45 W DC output 19.5 V Hold-up time 5ms at 115 Vac input Output current limit <8.0A
	Connector	C6
	Environmental Design	Operating temperature 32°F to 95°F (0° to 35°C) Non-operating (storage) temperature -4°F to 185°F (-20° to 85°C) Altitude 0 to 16,400 ft (0 to 5000m) Humidity 20% to 95% Storage Humidity 10% to 95%
	Safety Certifications	CE Mark - full compliance with LVD and EMC directives Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. MTBF - over 200,000 hours at 25°C ambient condition.

AC Adapter 45 Watt Smart nPFC Standard Barrel 4.5mm Right Angle 1.8m 2 prong	Dimensions	95.0 x 40.0 x 26.5 mm
	Weight	unit: 200 g +/- 10 g
	Input	Input Efficiency 87.74 % at 115 Vac and 88.4 % at 230Vac Input frequency range 47 ~ 63 Hz Input AC current Max. 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	C8
	Environmental Design	Operating temperature 32° to 95° F (0° to 35° C) Non-operating (storage) temperature -4° to 185° F (-20° to 85° C) Altitude 0 to 16,400 ft (0 to 5000m) Humidity 20% to 95% Storage Humidity 10% to 95%
	Safety Certifications	CE Mark - full compliance with LVD and EMC directives Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. MTBF - over 200,000 hours at 25°C ambient condition.

AC Adapter 65 Watt nPFC USB type C Straight 1.8 m C6NS	Dimensions	74 x 74 x 28.5 mm
	Weight	unit: 245 g +/- 10 g
	Input	Input Efficiency 81.5% min at 115 Vac/ 230Vac @ 5V/3A

Technical Specifications

		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
Output	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	Non-Standard C6	
Environmental Design	Operating temperature	32°F to 95°F (0°to 35°C)
	Non-operating (storage) temperature	-4°F to 185°F (-20° to 85°C)
	Altitude	0 to 16,400 ft (0 to 5000m)
	Humidity	5% to 95%
	Storage Humidity	5% to 95%
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.	
AC Adapter 65 Watt Smart nPFC EM Barrel 4.5 mm New EM	Dimensions	102 x 55 x 30 mm
	Weight	unit: 250 g +/- 10 g
Input	Input Efficiency	88.0 % at 115 Vac and 89.0 % at 230Vac
	Input frequency range	47 ~ 63 Hz
	Input AC current	Max. 1.7 A at 90 Vac
	Output power	65 W
	DC output	19.5 V
	Hold-up time	5ms at 115 Vac input
Output current limit	<11.0 A	
Connector	C6	
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	20% to 95%
	Storage Humidity	10% to 95%
Safety Certifications	CE Mark - full compliance with LVD and EMC directives Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. MTBF - over 200,000 hours at 25°C ambient condition.	

Technical Specifications

AC Adapter 65 Watt Smart nPFC Standard Barrel 4.5 mm Right Angle 1.8 m	Dimensions	90.0 x 51 x 28.5 mm	
	Weight	unit: 230 g +/- 10 g	
	Input	Input Efficiency 88.0 % at 115 Vac and 89.0 % at 230Vac	
		Input frequency range 47 ~ 63 Hz	
		Input AC current Max. 1.7 A at 90 Vac	
	Output	Output power 65 W	
		DC output 19.5 V	
		Hold-up time 5ms at 115 Vac input	
		Output current limit <11.0 A	
	Connector	C6	
	Environmental Design	4.5mm Barrel Type	
		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 20% to 95%	
	Storage Humidity 10% to 95%		
Safety Certifications	CE Mark - full compliance with LVD and EMC directives Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. MTBF - over 200,000 hours at 25°C ambient condition.		
Battery SS 3 Cell 50 WHr Long Life -PL	Dimensions	L 278.7 mm x W 76.3 mm x H 7.1 mm	
	Weight	193 +/- 10 g	
	Cells/Type	3cell Lithium-Ion Polymer cell / P604883A1	
	Energy	Voltage 11.55V	
		Amp-hour capacity 4.113Ah/ 4.330Ah	
		Watt-hour capacity 50Wh	
	Temperature	Operating (Charging) 0° to 50° C	
		Operating (Discharging) -10° to 60° C	
	Warranty	based on system offering	
	Optional Travel Battery Available	No	

Technical Specifications

COUNTRY OF ORIGIN

China

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

Type	Description	Part #
Cases	HP Essential Top Load Case (up to 15.6")	H2W17AA#xxx
	HP Slim Ultrabook Top Load	F3W15AA#xxx
	HP Basic/Essential Backpack	H1D24AA#xxx
	HP Exec Midnight 15.6" Backpack	1KM16AA#xxx
Docking	HP UltraSlim Docking Station	D9Y32AA#xxx
	HP UltraSlim Docking Station TAA US	E5C22AV#ABA
	HP Thunderbolt Dock 120W G2	2UK37AA
	HP Thunderbolt Dock 120W G2 TAA	2UK37AA
	HP Thunderbolt Dock 230W G2	2UK38AA
	HP TB Dock Audio Module	3AQ21AA
	HP TB Dock 120W G2 cable	3XB94AA
	HP TB Dock G2 combo cable	3XB96AA
	HP USB-C Universal Dock	1MK33AA#xxx
	HP Elite 90W Thunderbolt 3 Dock	1DT93AA#xxx
	HP USB-C Dock G4	3FF69AA#xxx
	HP USB-C Mini Dock	1PM64AA#xxx
	HP USB-C Travel Dock	T0K29AA#xxx
	HP USB Travel Dock	T0K30AA#xxx
	HP USB-C Universal Dock w/4.5mm Adapter	2UF95AA
	HP USB-C Universal Dock w/4.5mm Adapter - non-flash version	3DV65AA
	HP USB-C Dock G5	5TW10AA#xxx
	HP USB-C/A Universal Dock G2	5TW13AA#xxx
	HP Adjustable Dual Display Stand	AW664AA#xxx
	HP Display and Notebook Stand II	E8G00AA#xxx
HP TB Dock G2 w/ Combo Cable	3TR87AA	
HP TB Dock 120W G2 w/ Audio	3YE87AA	
Input/Output	HP Slim Wireless Keyboard and Mouse	T6L04AA#xxx
	HP Slim USB Keyboard and Mouse	T6T83AA#xxx
	HP Wireless (Link-5) Keyboard	T6U20AA#xxx
	HP USB Essential Keyboard and Mouse	H6L29AA#xxx
	HP Conferencing Keyboard	K8P74AA#xxx
	HP USB Collaboration Keyboard	Z9N38AA#xxx
	HP Wireless Collaboration Keyboard	Z9N39AA#xxx
	HP Comfort Grip Wireless Mouse	H2L63AA#xxx
	HP X4000b Bluetooth Mouse	H3T50AA#xxx
	HP 3-Button USB Laser Mouse	H4B81AA#xxx
	HP USB Travel Mouse	G1K28AA#xxx
	HP Ultra Mobile Wireless Mouse	H6F25AA#xxx
	HP Slim Bluetooth Mouse to AMO	F3J92AA#xxx
	HP Wireless Premium Mouse	1JR31AA#xxx

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

	HP USB Premium Mouse	1JR32AA#xxx
	HP Essential USB Mouse	2TX37AA#xxx
	HP Elite Presenter Mouse	2CE30AA#xxx
	HP USB-C to USB 3.0 Adapter	N2Z63AAA#xxx
	HP USB-C to USB-A Hub	Z6A00AA#xxx
	HP USB-C to DP	N9K78AA#xxx
	HP USB-C to VGA	N9K76AA#xxx
	HP HDMI to DVI	F5A28AA#xxx
	HP HDMI to VGA	H4F02AA#xxx
	HP USB-C to HDMI 2.0 Adapter	1WC36AA#xxx
Power	HP 65W Slim AC Adapter	H6Y82AA#xxx
	HP 90W Slim AC Adapter	H6Y83AA#xxx
	HP 90W Slim Combo AC Adapter w/ USB	H6Y84AA#xxx
	HP 45W Smart AC Adapter	H6Y88AA#xxx
	HP 65W Smart AC Adapter	H6Y89AA#xxx
	HP 90W Smart AC Adapter	H6Y90AA#xxx
	HP 45W 2-prong 4.5 mm DC jack AC Adapter	L6F60AA#ABJ
	HP 45W USB-C Power Adapter	1HE07AA#xxx
	HP 65W USB-C Power Adapter	1HE08AA#xxx
	65W USB-C Slim Power Adapter	3PN48AA
	HP Notebook Power Bank	N9F71AA#xxx
	HP USB-C Notebook Power Bank	1TZ86AA#xxx
	HP 45W USB-C Power Adapter	1HE07AA#xxx
	HP 65W USB-C Power Adapter	1HE08AA#xxx
Storage	HP USB External DVDRW Drive	F2B56AA#xxx
	HP 256GB M2 PCIe NVME SSD TLC 2280	1FU87AA#xxx
	HP 512GB M2 PCIe NVME SSD TLC 2280	1FU88AA#xxx
Security	HP Docking Station Cable Lock	AU656AA#xxx
	HP Essential Combination Lock	TOY16AA#xxx
	HP Combination Lock	TOY15AA#xxx
	HP Keyed Cable lock	TOY14AA#xxx
	HP Keyed Cable Lock 10mm	T1A62AA#xxx
	HP Dual Head Keyed Cable Lock	T1A64AA#xxx

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

UCC	HP Stereo 3.5mm Headset	T1A66AA#xxx
	HP Stereo USB Headset	T1A67AA#xxx
	HP UC Wireless Mono Headset	W3K08AA#xxx
	HP UC Wireless Duo Headset	W3K09AA#xxx
Displays	HP EliteDisplay E243d 23.8-inch Docking Monitor	1TJ76AA
	HP EliteDisplay E243 23.8-inch Monitor	1FH47AA
	HP EliteDisplay E273q 27-inch Monitor	1FH52AA

Summary of Changes

Change Log

Date of change:	Version History:		Description of change:
May 23, 2019	V1 to V2	Added	Environmental Section
May 30, 2019	V2 to V3	Updated	Lock Slot
June 3, 2019	V3 to V4	Added	Environmental Section
June 10, 2019	V4 to V5	Added	HP Cloud Recovery
July 2, 2019	V5 to V6	Updated	Color Gamut
August 21, 2019	V6 to V7	Updated	Storage and Drives Section
September 9, 2019	V7 to v8	Added	Intel® Optane™ and disclaimer for 1000 nit Sure View panel

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