

Overview

HP ProBook x360 435 G8 Notebook PC



Left

1. Internal Microphones
2. Webcam LED
3. Webcam and IR Camera (Optional)
4. HP Privacy Camera
5. IR Camera LED (Optional)
6. Clickpad
7. World-facing Camera (Optional)
8. World-facing Camera LED (Optional)
9. Vents
10. SuperSpeed USB Type-A 5 Gbps signaling rate charging Port
11. Nano Security Lock Slot (Lock Sold Separately)

Overview



Right

- | | |
|--|---|
| 1. Power Button | 5. HDMI 1.4b Port (Cable not included) |
| 2. Power Connector | 6. Audio Combo Jack |
| 3. SuperSpeed USB Type-C® 10Gbps signaling rate (USB Power Delivery, DisplayPort™ 1.4) | 7. MicroSD Card reader |
| 4. SuperSpeed USB Type-A 5 Gbps signaling rate Port | 8. Touch Fingerprint Sensor (Select models) |

Overview

AT A GLANCE

- Preinstalled with Windows 10 versions or FreeDOS
- A stylish and professional convertible adapts with versatile use modes from traditional laptop to tablet, stand and tent that enables to create, present and collaborate
- Sleek and durable anodized aluminum top cover and keyboard deck
- Choice of AMD Ryzen™ 5000 series mobile processors
- Integrated AMD Radeon™ Graphics
- Display include your choice of 33.8 cm (13.3") diagonal IPS Wide Viewing Angle, FHD, touch screen with Corning® Gorilla® Glass 5
- Commercial-grade security features including HP Sure Start, HP Sure Sense, HP Client Security, HP Sure Click, HP Privacy Camera and optional HP Sure View
- Captures the world around with an optional world facing- camera in the keyboard¹
- Supports wireless LAN options for connectivity on the go including gigabit data rate Wi-Fi® 6¹
- Supports fast charging (50% in 30 minutes) with no impact on battery recharge cycles
- Undergoes MIL-STD 810H tests²

1. Sold separately or as an optional feature.

2. MIL STD 810H testing is not intended to demonstrate fitness for U.S. Department of Defense contract requirements or formilitary 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.

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

Technical Specifications

PRODUCT NAME

HP ProBook x360 435 G8 Notebook PC

OPERATING SYSTEM

Preinstalled

Windows10 Pro 64 – HP recommends Windows 10 Pro¹
Windows10 Pro 64 (National Academic License)²
Windows10 Home 64¹
Windows10 Home Single Language 64¹
Windows 10 Pro (Windows 10 Enterprise available with a Volume Licensing Agreement)¹
Windows10 Enterprise 64 (Web Support)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.

Note: HP tested Windows 10, version 1909 on this platform. For testing information on newer versions of Windows 10, please see <https://support.hp.com/document/c05195282>.

PROCESSORS

AMD Ryzen™ 3 5400U (2.6 GHz base clock, up to 4.0 GHz max boost clock, 8 MB L3 cache, 4 cores)^{3,4,5,6}

AMD Ryzen™ 5 5600U with Radeon™ Graphics (2.3 GHz base clock, up to 4.2 GHz max boost clock, 16 MB L3 cache, 6 cores)^{3,4,5,6}

AMD Ryzen™ 7 5800U with Radeon™ Graphics (1.9 GHz base clock, up to 4.4 GHz max boost clock, 16 MB L3 cache, 8 cores)^{3,4,5,6}

Processor Family

AMD Ryzen™ 3 processor⁶

AMD Ryzen™ 5 processor⁶

AMD Ryzen™ 7 processor⁶

3. Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.

4. 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. AMD's numbering is not a measurement of clock speed.

5. AMD Max Burst frequency performance varies depending on hardware, software and overall system configuration.

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>.

Technical Specifications

CHIPSET

Chipset is integrated with processor.

GRAPHICS

Integrated

AMD Radeon™ Graphics

Supports

Support HD decode, DX12, HDMI1.4b⁷, via HDMI up to 4K 30Hz

7. HDMI cable sold separately.

DISPLAY

Touch

33.8 cm (13.3") diagonal FHD UWVA eDP BrightView WLED-backlit touch screen with Corning® Gorilla® Glass 5, 250 nits, 45% NTSC with HD camera (1920 x 1080) ^{8,9,10}

33.8 cm (13.3") diagonal FHD UWVA eDP BrightView WLED-backlit touch screen with Corning® Gorilla® Glass 5, 250 nits, 45% NTSC with HD + IR camera (1920 x 1080) ^{8,9,10}

33.8 cm (13.3") diagonal FHD UWVA eDP + PSR BrightView WLED-backlit touch screen with Corning® Gorilla® Glass 5, Low Power, 400 nits, 72% NTSC with HD camera (1920 x 1080) ^{8,9,10}

33.8 cm (13.3") diagonal FHD UWVA eDP + PSR BrightView WLED-backlit touch screen with Corning® Gorilla® Glass 5, Low Power, 400 nits, 72% NTSC with HD + IR camera (1920 x 1080) ^{8,9,10}

HP Sure View Integrated Privacy Screen 33.8 cm (13.3") diagonal FHD UWVA eDP + PSR BrightView WLED-backlit touch screen with Corning® Gorilla® Glass 5, 1000 nits, 72% NTSC with HD camera (1920 x 1080) ^{8,9,10,11}

HP Sure View Integrated Privacy Screen 33.8 cm (13.3") diagonal FHD UWVA eDP + PSR BrightView WLED-backlit touch screen with Corning® Gorilla® Glass 5, 1000 nits, 72% NTSC with HD + IR camera (1920 x 1080) ^{8,9,10,11}

8. FHD/HD content required to view FHD/HD images.

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

10. Actual brightness will be lower with touchscreen or Sure View.

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

Technical Specifications

STORAGE AND DRIVES

Primary M.2 Storage

- 128 GB PCIe® Gen3x4 NVMe™ TLC Solid State Drive ¹²
- 256 GB PCIe® NVMe™ Value Solid State Drive ¹²
- 512 GB PCIe® NVMe™ Value Solid State Drive ¹²
- 512 GB PCIe® Gen3x4 NVMe™ TLC Solid State Drive ¹²
- 1 TB PCIe® Gen3x4 NVMe™ TLC Solid State Drive ¹²

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

MEMORY

Maximum Memory

32 GB DDR4-3200 SDRAM ¹³

Memory

- 32 GB DDR4 -3200 SDRAM (2 x 16GB) ¹³
- 16 GB DDR4-3200 SDRAM (1 x 16 GB) ¹³
- 16 GB DDR4-3200 SDRAM (2 x 8 GB) ¹³
- 8 GB DDR4-3200 SDRAM (1 x 8 GB) ¹³
- 8 GB DDR4-3200 SDRAM (2 x 4 GB) ¹³
- 4 GB DDR4-3200 SDRAM (1 x 4 GB) ¹³

Memory Slots

2 SODIMM

Both slots are customer accessible / upgradeable by IT or self-maintainers only.

DDR4 PC4 SODIMMS, system runs at 3200

Supports Dual Channel Memory

13. 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 RTL8822CE 802.11ac (2x2) and Bluetooth® 5 Combo ¹⁴

Intel® Dual Band Wireless-AC 9260 802.11a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 5 Combo, non-vPro® ¹⁴

Intel® AX200 Wi-Fi 6 (2x2) and Bluetooth® 5 Combo, non-vPro® ¹⁵

Miracast

Native Miracast Support ¹⁶

14. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 5 (802.11 ac) is backwards compatible with prior 802.11 specs.

Technical Specifications

15. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 (802.11ax) is backwards compatible with prior 802.11 specs. The specifications for Wi-Fi 6 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 802.11ax WLAN devices. Only available in countries where 802.11ax is supported.

16. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming.

AUDIO/MULTIMEDIA

Audio

Integrated microphone (Dual Array)

2 Integrated stereo speakers

Speaker Power

2W/4ohm Per speaker

Camera

User-facing 720p HD camera ^{17,18}

User-facing 720p HD + IR camera ^{17,18}

World-facing 5MP auto-focus secondary camera ¹⁸

Sensors

Combo Chip (Accelerometer + Gyro)

Magnetometer

Hall Sensor

17. FHD/HD content required to view FHD/HD images.

18. Sold separately or as an optional feature.

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard

HP Premium Keyboard, spill resistant with DuraKeys and optional backlit ¹⁹

Pointing Device

Clickpad with multi-touch gesture support

Function Keys

F1 - Display Switching

F2 - Blank or Privacy (with LED)

F3 - Brightness Down

F4 - Brightness Up

F5 - Audio Mute

F6 - Volume Down

F7 - Volume Up

F8 - Mic Mute

F9 - Blank or Keyboard Backlit Toggle

F10 - Insert

F11 - Airplane Mode

Technical Specifications

F12 - HP Programmable Key
Power Button

Hidden Function Keys

Fn+R - Break
Fn+S - Sys Rq
Fn+C - Scroll Lock

19. [Backlit keyboard is an optional feature.](#)

SOFTWARE AND SECURITY

Preinstalled Software

BIOS

HP BIOSphere Gen6²⁰
BIOS Update via Network
HP Secure Erase²¹
Absolute Persistence Module²²
HP Wake on WLAN

Software

HP Connection Optimizer²³
HP Hotkey Support
HP Support Assistant²⁴
HP Noise Cancellation Software
Buy Office (Sold separately)
Microsoft Defender²⁵

Manageability Features

HP Driver Packs (download)²⁶
HP Client Catalog (download)
HP Manageability Integration Kit Gen4(download)²⁷
HP Image Assistant (download)

Security Management

TPM 2.0 Embedded Security Chip shipped with Windows 10 (Common Criteria EAL4+ Certified) (FIPS 140-2 Level 2 Certified)
USB enable/disable (via BIOS)
Setup password (via BIOS)
Support for chassis padlocks and cable lock devices
HP Sure Click²⁸

Technical Specifications

HP Sure Sense²⁹

HP Sure Start Gen6³⁰

HP Sure View Gen3³¹

HP Sure Admin³²

HP Pro Security Edition (Select models)³³

HP Fingerprint Sensor (Select models)³⁴

20. HP BIOSphere Gen6 is available on select HP Pro and Elite PCs. Features may vary depending on the platform and configurations.

21. HP Secure Erase for the methods outlined in the National Institute of Standards and Technology Special Publication 800-88 "Clear" sanitation method. HP Secure Erase does not support platforms with Intel® Optane™.

22. Absolute firmware module is shipped turned off and can only be activated with the purchase a license subscription and full activation of the software agent. License subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. Certain conditions apply. For full details visit:

<https://www.absolute.com/about/legal/agreements/absolute/>

23. HP Connection Optimizer requires Windows 10.

24. HP Support Assistant requires Windows and Internet access.

25. Windows Defender Opt in and internet connection required for updates.

26. HP Driver Packs not preinstalled, however available for download at <http://www.hp.com/go/clientmanagement>.

27. HP Manageability Integration Kit can be downloaded from <http://www8.hp.com/us/en/ads/clientmanagement/overview.html>.

28. HP Sure Click requires Windows 10 Pro or Enterprise. See https://bit.ly/2PrLT6A_SureClick for complete details.

29. HP Sure Sense is available on select HP PCs and is not available with Windows 10 Home.

30. HP Sure Start Gen6 is available on select HP PCs and requires Windows 10.

31. HP Sure View Gen3 integrated privacy screen is an optional feature that must be configured at purchase and is designed to function in landscape orientation.

32. HP Sure Admin requires Windows 10, HP BIOS, HP Manageability Integration Kit from <http://www.hp.com/go/clientmanagement> and HP Sure Admin Local Access Authenticator smartphone app from the Android or Apple store.

33. HP Pro Security Edition is available preloaded on select HP PCs and includes HP Sure Click Pro and HP Sure Sense Pro. 3-year license required. The HP Pro Security Edition software is licensed under the license terms of the HP End User License Agreement (EULA) that can be found at:

https://h30670.www3.hp.com/ecommerce/common/disclaimer.do#EN_US as modified by the following:

"7. Term.

Unless otherwise terminated earlier pursuant to the terms contained in this EULA, the license for the HP Pro Security Edition (HP Sure Sense Pro and HP Sure Click Pro) is effective upon activation and will continue for thirty-six (36) months thereafter ("Initial Term"). At the end of the Initial Term you may either (a) purchase a renewal license for the HP Pro Security Edition from HP.com, HP Sales or an HP Channel Partner, or (b) continue using the standard versions of HP Sure Click and HP Sure Sense at no additional cost with no future software updates or HP Support."

HP Pro Security Edition is optimized for the SMB environment and ships pre-configured - manageability is optional. The HP Pro Security Edition supports a limited tool set that can be used by the HP Manageability Integration Kit which can be downloaded from <http://www.hp.com/go/clientmanagement>.

Technical Specifications

34. HP Fingerprint sensor is an optional feature that must be configured at purchase.

Technical Specifications

POWER

Power Supply

HP Smart 65 W External AC power adapter ³⁵

HP Smart 65 W EM External AC power adapter ³⁵

HP Smart 65 W USB Type-C adapter ³⁵

HP Smart 45 W External AC power adapter ³⁵

HP Smart 45 W USB Type-C adapter ³⁵

Power Cord

3-wire plug - 1m ³⁵

2-wire plug - 1m ³⁵

Primary Battery

HP Long Life 3-cell, 45 Wh Li-ion polymer ^{36,37}

Support HP Fast Charge (Up to 50% in 30 minutes with 65W AC Adapter)³⁸

Battery life

Up to 17 hours ³⁹

35. Availability may vary by country.

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

37. Actual battery Watt-hours (Wh) will vary from design capacity. Battery capacity will naturally decrease with shelf life, time, usage, environment, temperature, system configuration, loaded apps, features, power management settings and other factors.

38. Supports HP Fast Charge with 65W AC Adapter. 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.

39. Windows 10 MM18 battery life will vary depending on various factors including product model, configuration, loaded applications, features, use, wireless functionality, and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See www.bapco.com for additional details.

WEIGHTS & DIMENSIONS

Weight

Starting at 3.19 lb (1.45 kg)⁴⁰

Dimensions (w x d x h)

12.15 x 8.78 x 0.71 in

30.85 x 22.295 x 1.795 cm

40. Weight will vary by configuration.

Technical Specifications

PORTS/SLOTS

Ports

- 1 SuperSpeed USB Type-C® 10Gbps signaling rate (USB Power Delivery, DisplayPort™ 1.4)
- 2 SuperSpeed USB Type-A 5 Gbps signaling rate (1 charging port)
- 1 HDMI 1.4b⁴¹
- 1 Headphone/microphone combo jack
- 1 AC power

Expansion Slots

- 1 microSD
- Supports SD, SDHC, SDXC

41. HDMI cable sold separately.

SERVICE AND SUPPORT

1-year and 3-year limited warranties and 90 day software limited warranty options depending on country. Batteries have a default one year limited warranty except for HP Long Life batteries which will follow the one or three year warranty of 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>.⁴²

42. HP Care Packs are sold separately. Service levels and response times for HP Care Packs may vary depending on your geographic location. Service starts on date of hardware purchase. Restrictions and limitations apply. For details, visit www.hp.com/go/cpc. HP services are governed by the applicable HP terms and conditions of service provided or indicated to Customer at the time of purchase. Customer may have additional statutory rights according to applicable local laws, and such rights are not in any way affected by the HP terms and conditions of service or the HP Limited Warranty provided with your HP Product.

Technical Specifications

SYSTEM UNIT

| | | |
|--|----------------------------------|--|
| Stand-Alone Power Requirements (AC Power) | Nominal Operating Voltage | 19 V |
| | Average Operating Power | 5.71 w |
| | Integrated Graphics | AMD |
| | Max Operating Power | UMA < 45W |
| Temperature | Operating | 41° to 95° F (5° 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 10,000 ft (-15.24 to 3,048 m) |
| Planned Industry Standard Certifications | UL | Yes |
| | CSA | Yes |
| | FCC Compliance | Yes |
| | ENERGY STAR® | Yes, Select models ⁴³ |
| | EPEAT® | Yes, Gold in U.S. ⁴⁴ |
| | 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 |
| | EAC | Yes |
| Saudi Arabian Compliance (ICCP) | Yes | |
| SABS | Yes | |
| UKRSERTCOMPUTER | Yes | |

43. Configurations of the HP ProBook x360 435 G7 G8 that are ENERGY STAR® qualified are identified as HP ProBook x360 435 G8 ENERGY STAR on HP websites and on <http://www.energystar.gov>.

Technical Specifications

44. Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. EPEAT® status varies by country. Visit www.epeat.net for more information.

DISPLAYS

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

1. Actual brightness will be lower with touchscreen or Sure View.

| | | |
|---|--|---|
| Panel LCD 13.3 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 45% NTSC 250 nits eDP 1.2 w/o PSR slim | Outline Dimensions (W x H x D) | 300.56 x 187.77 mm (max) (w/ PCB & w/o bracket) |
| | Active Area | 293.76 x 165.24 mm (typ.) |
| | Weight | 260 g (max) |
| | Diagonal Size | 13.3 inch |
| | Thickness | 3.0 mm (max) |
| | Interface | eDP 1.2 (2 lane) |
| | Surface Treatment | BrightView Glass |
| | Touch Enabled | Yes |
| | Contrast Ratio | 600:1 (typ.) |
| | Refresh Rate | 60 Hz |
| | Brightness¹ | 250nits (typ.) |
| | Pixel Resolution | 1920 x 1080 (FHD) |
| | Format of LCD Pixel Arrangement | RGB |
| | Backlight | LED |
| Color Gamut Coverage | 45% NTSC | |
| Color Depth | 6 bits | |
| Viewing Angle | UWVA 85/85/85/85 | |

Technical Specifications

| | | |
|---|--|---------------------------|
| Panel LCD 13.3 inch diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 72% NTSC 400 nits eDP 1.4+PSR2 ultraslim | Outline Dimensions (W x H x D) | 299.06 x 185.54 mm (max) |
| | Active Area | 293.76 x 165.24 mm (typ.) |
| | Weight | 170 g (max) |
| | Diagonal Size | 13 inch |
| | Thickness | 2.0 mm (max) |
| | Interface | eDP 1.4 + PSR2 (2 lane) |
| | Surface Treatment | BrightView Glass |
| | Touch Enabled | Yes |
| | Contrast Ratio | 1200:1 (typ.) |
| | Refresh Rate | 60 Hz |
| | Brightness¹ | 400 nits |
| | Pixel Resolution | 1920 x 1080 (FHD) |
| | Format of LCD Pixel Arrangement | RGB |
| | Backlight | LED |
| | Color Gamut Coverage | 72% NTSC |
| | Color Depth | 8 bits |
| Viewing Angle | UWVA 85/85/85/85 | |

Technical Specifications

| | | |
|--|--|---------------------------|
| Panel LCD 13.3 inch diagonal FHD (1920 x 1080) BrightView WLED UWVA 72% NTSC 1000 nits eDP 1.4+PSR2 flat Privacy NWBZ | Outline Dimensions (W x H x D) | 298.76 x 186.04 mm (typ.) |
| | Active Area | 293.76 x 165.24 mm (typ.) |
| | Weight | 255 g (max) |
| | Diagonal Size | 13.3 inch |
| | Thickness | 3.0 mm (max) |
| | Interface | eDP 1.4 + PSR2 |
| | Surface Treatment | BrightView Glass |
| | Touch Enabled | Yes |
| | Contrast Ratio | 2000:1 (typ.) |
| | Refresh Rate | 60 Hz |
| | Brightness¹ | 1000 nits |
| | Pixel Resolution | 1920 x 1080(FHD) |
| | Format of LCD Pixel Arrangement | RGB |
| | Backlight | LED |
| | Color Gamut Coverage | 72% NTSC |
| Color Depth | 8 bit | |
| Viewing Angle | UWVA 85/85/85/85 | |

Technical Specifications

STORAGE

Note: 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.

| | | |
|---|---------------------------------|--|
| 128 GB 2280 M2 PCIe NVMe TLC Solid State Drive | 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 | PCIe NVMe |
| | Maximum Sequential Read | 1300~2047MB/s |
| | Maximum Sequential Write | 800~1200MB/s |
| | Logical Blocks | 250,069,680 |
| | Operating Temperature | 32° to 158°F (0° to 70°C) [ambient temp] |
| | Features | ATA Security; 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) |
| | Weight | 0.02 lb (10 g) |
| | Interface | PCIe NVMe |
| | Maximum Sequential Read | Around 1500 ~ 1700 MB/s |
| | Maximum Sequential Write | Around 780 ~ 1300 MB/s |
| | Logical Blocks | 500118192 |
| | Operating Temperature | 32° to 158°F (0° to 70°C) [ambient temp] |
| | Features | ATA Security; TRIM; L1.2 |

Technical Specifications

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 | 1000215215 |
| Operating Temperature | 32° to 158°F (0° to 70°C) [ambient temp] |
| Features | ATA Security; TRIM; L1.2 |

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 |
| Maximum Sequential Read | Around 1500 ~ 1700 MB/s |
| Maximum Sequential Write | Around 860 ~ 1500 MB/s |
| Logical Blocks | 1000215215 |
| Operating Temperature | 32° to 158°F (0° to 70°C) [ambient temp] |
| Features | ATA Security; TRIM; L1.2 |

Technical Specifications

| | | |
|---|---------------------------------|--|
| SSD 1TB 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 | 3100 ~ 3500 MB/s |
| | Maximum Sequential Write | 2770 ~ 3037 MB/s |
| | Logical Blocks | 2000409264 |
| | Operating Temperature | 32° to 158°F (0° to 70°C) [ambient temp] |
| | Features | ATA Security; TRIM; L1.2 |

Technical Specifications

NETWORKING/COMMUNICATIONS

| | | |
|---|------------------------------------|--|
| Realtek RTL8822CE 802.11ac 2x2 Wi-Fi® and Bluetooth® 5.0¹ | 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 802.11d 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 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 | <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) |
| | Modulation | Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM |
| | Security³ | <ul style="list-style-type: none"> •IEEE 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 •WPA3 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 |

Technical Specifications

| | |
|---|--|
| 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/Modern Standby: 10mW • Radio disabled: 8 mW |
| Power Management | ACPI and PCI Express compliant power management 802.11 compliant power saving mode |
| 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 | <p>High efficiency antenna with spatial diversity, mounted in the display enclosure</p> <p>Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications</p> |
| Form Factor | PCI-Express M.2 MiniCard with CNVi Interface |
| Dimensions | <p>1. Type 2230: 2.3 x 22.0 x 30.0 mm</p> <p>2. Type 1216: 1.67 x 12.0 x 16.0 mm</p> |
| Weight | <p>1. Type 2230: 2.8 g</p> <p>2. Type 126: 1.3 g</p> |
| Operating Voltage | 3.3 v +/- 9% |
| Temperature | <p>Operating 14° to 158° F (-10° to 70° C)</p> <p>Non-operating -40° to 176° F (-40° to 80° C)</p> |
| Humidity | <p>Operating 10% to 90% (non-condensing)</p> <p>Non-operating 5% to 95% (non-condensing)</p> |

Technical Specifications

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

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

| | |
|--|--|
| Bluetooth Specification | 4.0/4.1/4.2/5.0 Compliant |
| Frequency Band | 2402 to 2480 MHz |
| Number of Available Channels | Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH) |
| Signaling Data Rate | Legacy: 3 Mbps signaling data rate ¹ 2.17 Mbps BLE: 1 Mbps signaling data rate ¹ 0.2 Mbps 1. Actual throughput may vary. Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5) |
| Transmit Power | The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR. |
| Power Consumption | Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW |
| Bluetooth Software Supported | Microsoft Windows Bluetooth Software |
| Power Management | Microsoft Windows ACPI, and USB Bus Support |
| Certifications | FCC (47 CFR) Part 15C, Section 15.247 & 15.249 |
| Power Management Certifications | ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark |
| Bluetooth Profiles Supported | BT4.1-ESR 5/6/7 Compliance LE Link Layer Ping LE Dual Mode LE Link Layer LE Low Duty Cycle Directed Advertising LE L2CAP Connection Oriented Channels Train Nudging & Interlaced Scan BT4.2 ESR08 Compliance LE Secure Connection- Basic/Full LE Privacy 1.2 –Link Layer Privacy LE Privacy 1.2 –Extended Scanner Filter Policies |

Technical Specifications

LE Data Packet Length Extension

FAX Profile (FAX)

Basic Imaging Profile (BIP)2

Headset Profile (HSP)

Hands Free Profile (HFP)

Advanced Audio Distribution Profile (A2DP)

1. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 5 (802.11 ac) is backwards compatible with prior 802.11 specs.
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® Wi-Fi 6 AX200 and Bluetooth® 5.0 (802.11 ax 2 x 2, supporting gigabit data rate) non-vPro^{1,5}</p> | <p>Wireless LAN Standards</p> <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 |
| <p>Interoperability</p> | <p>Wi-Fi certified</p> |
| <p>Frequency Band</p> | <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 |
| <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) • 802.11ax: MCS0 ~ MCS11, (1SS and 2SS) (20MHz, 40MHz, 80MHz & 160MHz) |
| <p>Modulation</p> | <p>Direct Sequence Spread Spectrum OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM</p> |
| <p>Security³</p> | <ul style="list-style-type: none"> •IEEE 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 |
| <p>Network Architecture Models</p> | <p>Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)</p> |

Technical Specifications

| | |
|---|--|
| 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)• 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 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 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 | 3.3 v +/- 9% |

Technical Specifications

| | | |
|---------------------|---|--------------------------------|
| Temperature | Operating | 14° to 158° F (–10° to 70° C) |
| | Non-operating | –40° to 176° F (–40° to 80° C) |
| Humidity | Operating | 10% to 90% (non-condensing) |
| | Non-operating | 5% to 95% (non-condensing) |
| Altitude | Operating | 0 to 10,000 ft (3,048 m) |
| | Non-operating | 0 to 50,000 ft (15,240 m) |
| LED Activity | LED Amber – Radio OFF LED OFF – Radio ON | |

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

| | |
|--|--|
| Bluetooth Specification | 4.0/4.1/4.2/5.0/5.1 Compliant |
| Frequency Band | 2402 to 2480 MHz |
| Number of Available Channels | Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH) |
| Signaling Data Rate | Legacy: 3 Mbps signaling data rate ¹ 2.17 Mbps BLE: 1 Mbps signaling data rate ¹ 0.2 Mbps 1. Actual throughput may vary. |
| | Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5) |
| Transmit Power | The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 9.5 dBm for BR and EDR. |
| Power Consumption | Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW |
| Bluetooth Software Supported | Microsoft Windows Bluetooth Software |
| Power Management | Microsoft Windows ACPI, and USB Bus Support |
| Certifications | FCC (47 CFR) Part 15C, Section 15.247 & 15.249 |
| Power Management Certifications | ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark |
| Bluetooth Profiles Supported | BT4.1-ESR 5/6/7 Compliance LE Link Layer Ping LE Dual Mode |

Technical Specifications

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

1. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 is backwards compatible with prior 802.11 specs. The specifications for Wi-Fi 6 (802.11ax) are draft and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ax devices. Only available in countries where 802.11ax is supported.
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).
5. Wi-Fi 5 or 6 is designed to support gigabit data rate when transferring files between two devices connected to the same router. Requires a wireless router, sold separately, that supports 80MHz and higher channels.

Technical Specifications

Intel® 9260

**802.11a/b/g/n/ac (2 x 2) Wireless LAN Standards
Wi-Fi® and Bluetooth® 5
Combo¹ (Non-vPro)**

- 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

Security³

- IEEE 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
- WPA3 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

Technical Specifications

| | |
|---|--|
| 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/Modern Standby: 10mW • Radio disabled: 8 mW |
| Power Management | ACPI and PCI Express compliant power management 802.11 compliant power saving mode |
| 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 | <p>High efficiency antenna with spatial diversity, mounted in the display enclosure</p> <p>Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications</p> |
| Form Factor | PCI-Express M.2 MiniCard |
| Dimensions | <p>1. Type 2230: 2.3 x 22.0 x 30.0 mm</p> <p>2. Type 1216: 1.67 x 12.0 x 16.0 mm</p> |
| Weight | <p>1. Type 2230: 2.8 g</p> <p>2. Type 126: 1.3 g</p> |
| Operating Voltage | 3.3 v +/- 9% |
| Temperature | <p>Operating 14° to 158° F (-10° to 70° C)</p> <p>Non-operating -40° to 176° F (-40° to 80° C)</p> |
| Humidity | <p>Operating 10% to 90% (non-condensing)</p> <p>Non-operating 5% to 95% (non-condensing)</p> |

Technical Specifications

| | | |
|-----------------|----------------------|---------------------------|
| Altitude | Operating | 0 to 10,000 ft (3,048 m) |
| | Non-operating | 0 to 50,000 ft (15,240 m) |

| | |
|---------------------|-----------------------|
| LED Activity | LED Amber – Radio OFF |
| | LED OFF – Radio ON |

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

| | |
|--|---|
| Bluetooth Specification | 4.0/4.1/4.2/5.0 Compliant |
| Frequency Band | 2402 to 2480 MHz |
| Number of Available Channels | Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH) |
| Signaling Data Rate | Legacy: 3 Mbps signaling data rate ¹ 2.17 Mbps BLE: 1 Mbps signaling data rate ¹ 0.2 Mbps 1. Actual throughput may vary. |
| | Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5) |
| Transmit Power | The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR. |
| Power Consumption | Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW |
| Bluetooth Software Supported | Microsoft Windows Bluetooth Software |
| Power Management | Microsoft Windows ACPI, and USB Bus Support |
| Certifications | FCC (47 CFR) Part 15C, Section 15.247 & 15.249 |
| Power Management Certifications | ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark |
| Bluetooth Profiles Supported | BT4.1-ESR 5/6/7 Compliance LE Link Layer Ping LE Dual Mode LE Link Layer LE Low Duty Cycle Directed Advertising LE L2CAP Connection Oriented Channels Train Nudging & Interlaced Scan BT4.2 ESR08 Compliance LE Secure Connection- Basic/Full |

Technical Specifications

LE Privacy 1.2 –Link Layer Privacy
LE Privacy 1.2 –Extended Scanner Filter Policies
LE Data Packet Length Extension
FAX Profile (FAX)
Basic Imaging Profile (BIP)2
Headset Profile (HSP)
Hands Free Profile (HFP)
Advanced Audio Distribution Profile (A2DP)

1. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 5 (802.11 ac) is backwards compatible with prior 802.11 specs.
 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

POWER

| | | |
|---|--------------------------------------|---|
| HP 45 W USB type C Straight 1.8 m AC Adapter | Dimensions | 94.0 mm x 40.0 mm x 26.5 mm |
| | Weight | 192.5 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% 12V: 87.41% 15V: 87.8% |
| | | Input frequency range 47 ~ 63 Hz |
| | | Input AC current Max. 1.4 A at 90 VAC |
| | Output | Output power 5V/15W 9V/27W 12V/36W 15V/45W |
| | | DC output 5V / 9V / 12V / 15V |
| | | Hold-up time 5ms at 115 Vac input |
| | | Output current limit < 5.0A |
| | Connector | USB Type-C™ |
| | 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% |
| | 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 45 W Smart AC adapter | Dimensions | 3.74 x 1.57 x 1.04 in (9.5 x 4.0 x 2.65 cm) |
| | Weight | 0.386 lb (175g) max (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 ~ 63 Hz |
| | | Input AC current 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 | 4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords |

Technical Specifications

| | | |
|--------------------------------------|--|-------------------------------|
| 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% |
| EMI and Safety Certifications | <p>CE Mark - full compliance with LVD and EMC directives</p> <p>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.</p> <p>MTBF - over 200,000 hours at 25°C ambient condition.</p> | |

| | | | |
|--|--|--|--------------------------------------|
| AC Adapter 45 Watt Smart nPFC Standard Barrel 4.5 mm Right Angle 1.8 m 2prong | Dimensions | 95.0 x 40.0 x 26.5 mm | |
| | Weight | 200 g +/- 10 g (Not including power cord. Power cord varies by country) | |
| | Input | Input Efficiency | 87.74% at 115Vac and 88.4% at 230Vac |
| | | Input frequency range | 47 ~ 63 Hz |
| | | Input AC current | 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° 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% | |
| EMI and Safety Certifications | <p>CE Mark - full compliance with LVD and EMC directives</p> <p>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.</p> <p>MTBF - over 200,000 hours at 25°C ambient condition.</p> | | |

Technical Specifications

| | | | |
|---|---|---|----------------------------------|
| AC Adapter 65 Watt nPFC Standard USB Type-C Straight 1.8 m | Dimensions | 90.0 x 51 x 28.5 mm | |
| | Weight | 250 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 @ 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 | 1.6 A at 90 VAC and maximum load |
| | | Output power | 65 W |
| | | DC output | 5V/9V/12V/15V/20V |
| | | Hold-up time | 5ms at 115 Vac input |
| | Connector | Output current limit | <8.0A MAXIMUM |
| | Environmental Design | USB Type-C™ | |
| | | 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% |
| EMI and Safety Certifications | Storage Humidity | 10% to 95% | |
| | CE Mark - full compliance with LVD and EMC directives Worldwide safety standards -IEC60950, EN60950, UL60950, UL62368, 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 | 250 g +/- 10 g (Not including power cord. Power cord varies by country) | |
| | Input | Input Efficiency 88.0 % at 115 Vac and 89.0 % at 230Vac | |
| | Output | Input frequency range | 47 ~ 63 Hz |
| | | Input AC current | 1.7 A at 90 Vac |
| | | Output power | 65 W |
| | | DC output | 19.5 V |
| | | Hold-up time | 5ms at 115 Vac input |
| | Connector | Output current limit | <11.0 A |
| | Environmental Design | C6 | |
| | | 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% | |

Technical Specifications

| | |
|--------------------------------------|--|
| EMI and Safety Certifications | CE Mark - full compliance with LVD and EMC directives Worldwide safety standards - IEC60950, EN60950, UL60950, UL62368, 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 Standard Barrel 4.5 mm Right Angle 1.8 m | Dimensions | 90.0 x 51 x 28.5 mm | |
| | Weight | 230 g +/- 10 g (Not including power cord. Power cord varies by country) | |
| | Input | Input Efficiency | 88.0 % at 115 Vac and 89.0 % at 230Vac |
| | | Input frequency range | 47 ~ 63 Hz |
| | | Input AC current | 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 | 4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords | |
| | Environmental Design | Operating temperature | 32° to 95° F (0° to 35° C) |
| | | Non-operating (storage) temperature | -4° to 185° F (-20° to 85° C) |
| | | Altitude | 0 to 16,400 ft (0 to 5000m) |
| Humidity | | 20% to 95% | |
| | Storage Humidity | 10% to 95% | |
| 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. | | |

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|--|--|--------------------------------|--------------------------------------|
| Battery SX 3 Cell 45 Wh Long Life -PL Fast Charge | Dimensions (H x W x L) | 184.62 x 85.25 x 6.15 mm | |
| | Weight | 0.195 kg Max | |
| | Cells/Type | 3cell Lithium-Ion Polymer cell | |
| | Energy | Voltage | 13.2V / 11.55V (13.2V / 11.4V) |
| | | Amp-hour capacity | 3.9 Ah / 3.75 Ah (3.95 Ah / 3.79 Ah) |
| | | Watt-hour capacity | 45 Wh |
| | | Operating (Charging) | 32° to 113° F (0° to 45° C) |
| | Temperature | Operating (Discharging) | 14° to 122° F (-10° to 60° C) |
| | Optional Travel Battery Available | No | |
| | Warranty | Based on system offering | |

Technical Specifications

ENVIRONMENTAL DATA

Sustainable Impact Specifications

- Ocean-Bound Plastic in speaker enclosure¹
- 35% post-consumer recycled plastic ²
- Low halogen³
- Outside Box and corrugated cushions are 100% sustainably sourced and recyclable⁴

Footnotes

1. Percentage of ocean-bound plastic contained in each component varies by product
2. Recycled plastic content percentage is based on the definition set in the IEEE 1680.1-2018 standard.
3. External power supplies, WWAN modules, power cords, cables and peripherals excluded.
4. 100% outer box packaging and corrugated cushions made from sustainably sourced certified and recycled fibers.

COUNTRY OF ORIGIN

China

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

| Type | Description | Part # |
|---------------------|-------------------------------------|---------|
| Cases | HP Essential Top Load Case | H2W17AA |
| | HP Essential Backpack (up to 15.6") | H1D24AA |
| Docking | HP USB-C Mini Dock | 1PM64AA |
| | 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 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 |
| Input/Output | HP Comfort Grip Wireless Mouse | H2L63AA |
| | HP 3-Button USB Laser Mouse | H4B81AA |
| | HP USB Travel Mouse | G1K28AA |
| | HP USB-C to RJ45 Adapter | V7W66AA |
| | HP Ultra Mobile Wireless Mouse | H6F25AA |
| | HP USB Fingerprint Mouse | 4TS44AA |
| | HP USB-C to DP | N9K78AA |
| | HP USB-C to USB-A Hub | Z6A00AA |
| | HP Elite USB-C Multi Port Hub | 4WX89AA |
| | HP Pro Pen | 8JU62AA |
| Power | HP 45W Smart AC Adapter 4.5mm | H6Y88AA |
| | HP 65W Smart AC Adapter 4.5mm | H6Y89AA |
| | HP 45W LC USB-C Power Adapter | 1MZ01AA |
| | HP 65W LC USB-C Power Adapter | TBD |
| | USB-C NB Power Bank | 1TZ86AA |
| | HP Essential Power Bank | 3TB55AA |
| Storage | HP External USB Optical Drive | F2B56AA |
| Security | HP Sure Key Cable Lock | 6UW42AA |
| | HP Nano Keyed Cable Lock | 1AJ39AA |

Summary of Changes

| Date of change: | Version History: | Updated | Description of change: |
|------------------------|-------------------------|----------------|--|
| February 10, 2021 | V1 to V2 | | Processor specs and Environmental Data |
| | | | |
| | | | |

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