

Overview

HP EliteOne 1000 G2 All-in-One Business PC



Front

- | | |
|------------------------------------|------------------------|
| 1. Webcam (optional) | 4. Collaboration keys |
| 2. On-screen display (OSD) buttons | 5. Power button |
| 3. Volume slider | 6. Speakers (optional) |

Overview

HP EliteOne 1000 G2 All-in-One Business PC

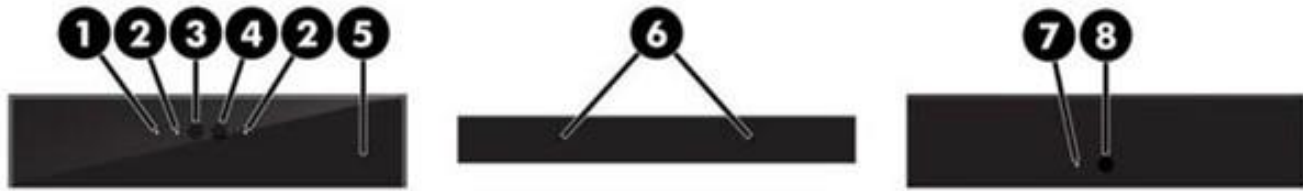


Collaboration keys

- | | |
|------------------------|---------------------------|
| 1. Volume slider | 5. Microphone mute button |
| 2. Speaker mute button | 6. Call button |
| 3. Hang up button | 7. Power button |
| 4. Webcam mute button | |

Overview

Infrared (IR) and Dual-facing Full High Definition (FHD) webcam (optional)



- | | |
|--------------------------------------|---------------------------------|
| 1. Webcam light | 5. Rear webcam adjustment wheel |
| 2. IR light | 6. Digital microphones |
| 3. Full High Definition (FHD) webcam | 7. Webcam light |
| 4. IR webcam | 8. FHD webcam |

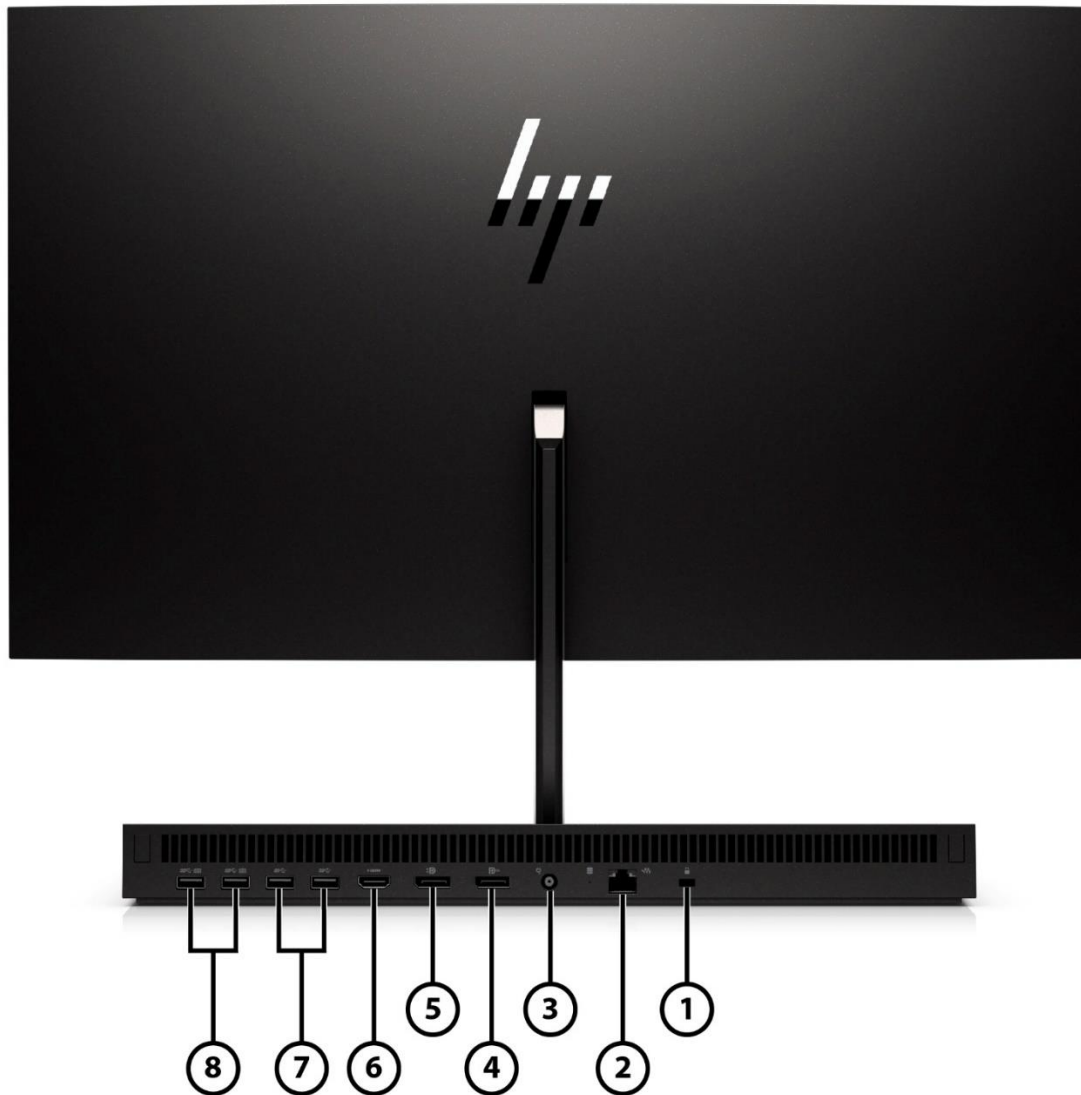
Full High Definition (FHD) webcam (optional)



- | | |
|-----------------|------------------------|
| 1. Webcam light | 3. Digital microphones |
| 2. FHD webcam | |

Overview

HP EliteOne G2 All-in-One Business PC (rear)



Side

- | | |
|-------------------------|--------------------------------------|
| 1. Security lock slot | 6. DisplayPort™ 1.2 out |
| 2. RJ-45 (network) jack | 7. HDMI 2.0a out connector |
| 3. Power connector | 8. USB 3.1 Gen2 ports |
| 4. DisplayPort™ 1.2 in | 9. USB 3.1 Gen2 ports (wake capable) |

Not Shown

Slots

- (1) internal M.2 2230 connector for optional wireless NIC
- (1) internal M.2 SSD storage (2230 or 2280 connector)

Bays

- (1) 2.5" internal storage drive bay

Overview

HP EliteOne 1000 G2 All-in-One Business PC (side)



Collaboration keys

- | | |
|--|---|
| 1. USB 3.1 Gen1 Type-A (charging) port | 5. Universal Audio Jack with CTIA headset support |
| 2. USB 3.1 Gen2 Type-C™ Thunderbolt port (DP Alt mode and 15W) | 6. Fingerprint sensor (optional) |

Overview

HP EliteOne 1000 Display

Additional optional displays include: HP EliteOne 1000 23.8-in FHD Display, HP EliteOne 1000 23.8-in FHD Touch Display, HP EliteOne 1000 27-in 4K UHD Display, and HP EliteOne 1000 34-in WQHD Curved Display⁵

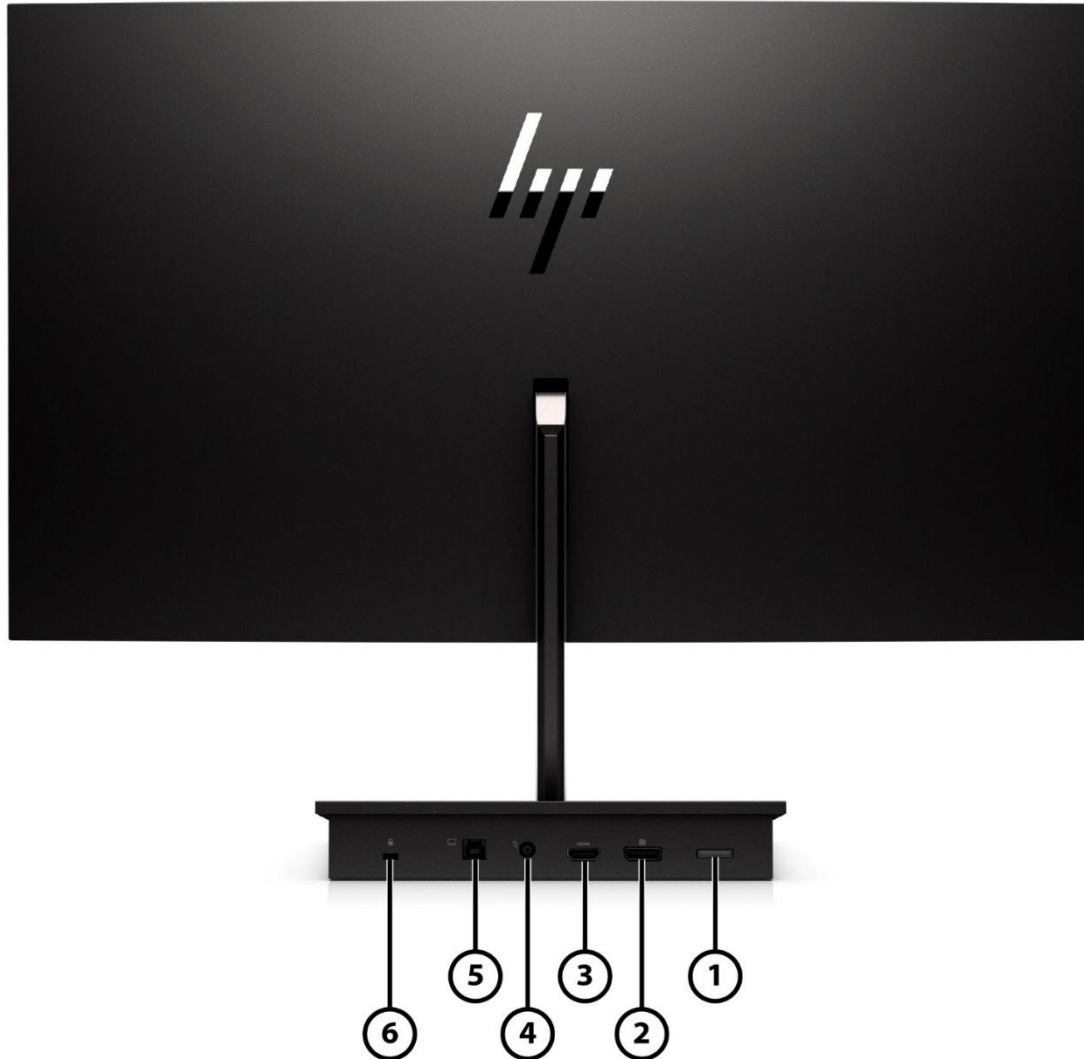


Front

- | | |
|------------------------------------|------------------------|
| 1. Webcam (optional) | 3. Power indicator LED |
| 2. On-screen display (OSD) buttons | |

Overview

HP EliteOne 1000 Display



Rear

- | | |
|------------------------|---|
| 1. Power button | 4. Power connector |
| 2. DisplayPort™ 1.2 in | 5. USB Type-B out (webcam, mics, and touch) |
| 3. HDMI connector | 6. Security lock slot |

Overview

At a Glance

- Unique All-in-One form factor with interchangeable and upgradeable display options
- Four display options: 23.8" diagonal FHD touch and non-touch, 27" diagonal 4K UHD, and 34" diagonal WQHD Curved⁵
- Ability to redeploy displays or purchase additional displays with a matching standalone display base
- Tool-less accessibility to easily reach upgradeable components or swap displays
- Creates a rich video conferencing solution with immersive video and audio engagement, capacitive touch collaboration keys, and a built-in pop-up privacy camera
- Integrated collaboration keys keep conferencing controls (call answer, microphone mute, webcam disable, call hang up, and volume controls) within reach
- Intel Unite (optional)
- Intel® Q370 chipset supporting Intel® 8th generation Core™ processors, featuring integrated Intel® UHD Graphics and Intel® vPro™ Technology (available with Core i5 and Core i7 processors)
- 35W and 65W processor support
- Windows 10
- Intel® UHD graphics
- Optional AMD discrete graphics
- USB 3.1 Type-C™ Thunderbolt port
- Intel® Ethernet Connection I219LM GbE LOM integrated network connection
- DDR4 Synchronous Dynamic Random Access Memory (SDRAM)
- Support for up to 2 additional monitors via DisplayPort™ 1.2 or HDMI connectors
- HP Sure Start Gen4¹
- HP Manageability Integration Kit Gen2²
- HP Sure Click⁴
- HP Sure Run⁶
- HP Sure Recover⁷
- HP WorkWise⁸
- HP PhoneWise¹; A phone integration solution that allows you to route phone calls and answer texts on your PC
- 23.8" and 27" screen sizes are ENERGY STAR® certified and EPEAT® Gold registered where applicable/supported. Registration may vary by country. 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>
- CCC Certified
- TCO Edge for AiO
- PC chassis and all internal components and modules are manufactured with low halogen content³
- Protected by HP Services, including limited warranties up to 3-3-3 (terms and conditions vary by country; certain restrictions and exclusions apply); Care Packs available with up to 5 years ext Business Day Onsite Hardware Support

1. HP Sure Start G4 requires Intel® 8th generation processors

2. HP Management Integration Kit Gen2 for Microsoft System Center Configuration Manager: HP Management Integration Kit Gen2 can be downloaded from <http://www8.hp.com/us/en/ads/clientmanagement/overview.html>

3. External power supplies, power cords, cables and peripherals are not low halogen. Service parts obtained after purchase may not be low halogen.

4. HP Sure Click is available on select HP platforms and supports Microsoft® Internet Explorer, Google Chrome, and Chromium™. Supported attachments include Microsoft Office (Word, Excel, PowerPoint) and PDF files in read only mode. Check <http://h20195.www2.hp.com/v2/GetDocument.aspx?docname=4AA7-0922ENW> for all compatible platforms as they become available.

5. Configurable at purchase with choice of display sizes. Additional displays sold separately.

6. HP Sure Run is available on HP Elite products equipped with 8th generation Intel® or AMD® processors.

7. HP Sure Recover is available on HP Elite PCs with 8th generation Intel® or AMD processors and requires an open, wired network connection. Not available on platforms with multiple internal storage drives, Intel® Optane™. You must back up important files, data, photos, videos, etc. before use to avoid loss of data.

8. HP WorkWise smartphone app is available as a free download on the Google Play. As of September 2017, HP WorkWise will no longer support iOS or iPhone® devices

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

Features

PRODUCT NAME

HP EliteOne 1000 G2 All-in-One Business PC
HP EliteOne 1000 G2 23.8-in All-in-One Business PC
HP EliteOne 1000 G2 23.8-in Touch All-in-One Business PC
HP EliteOne 1000 G2 27-in 4K UHD All-in-One Business PC
HP EliteOne 1000 G2 34-in Curved All-in-One Business PC
HP EliteOne 1000 G2 Base PC

OPERATING SYSTEMS

Preinstalled Windows® 10 Pro 64¹
Windows® 10 Pro 64 (National Academic License)²
Windows® 10 Home 64¹
Windows® 10 Home Single Language 64¹
FreeDos 2.0

Web-supported only Windows® 10 Enterprise 64¹

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: Your product does not support Windows 8 or Windows 7

In accordance with Microsoft's support policy, HP does not support the Windows® 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows® 8 or Windows 7 drivers on <http://www.support.hp.com>

PROCESSORS

Intel® 8th Generation Core™ Processors

NOTE: Multi-core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering, branding and/or naming is not a measurement of higher performance.

GRAPHICS

Integrated Intel® Graphics

Optional Discrete Graphics

AMD Radeon™ RX 560 Graphics with 4GB GDDR5 dedicated memory*

*Optional discrete graphics card can only be configured with 35W CPUs and PCIe NVMe storage drives

Features

DISPLAY FEATURES

HP EliteOne 1000 23.8-in FHD Display⁹

23.8" diagonal IPS widescreen WLED backlit anti-glare LCD (1920 x 1080)¹⁰

Non-Touch

Tilt: 5 degrees forward and 25 degrees back

Height Adjustment: 40mm

HP EliteOne 1000 23.8-in FHD Touch Display⁹

23.8" diagonal IPS widescreen WLED backlit anti-glare LCD (1920 x 1080)¹⁰

Touch; Projected capacitive touch supports up to 10 touch-points

Tilt: 5 degrees forward and 25 degrees back

Height Adjustment: 40mm

HP EliteOne 1000 27-in 4K UHD Display⁹

27" diagonal IPS widescreen WLED backlit anti-glare 4K UHD LCD (3840 x 2160)¹⁰

Non-Touch

Tilt: 5 degrees forward and 25 degrees back

HP EliteOne 1000 34-in WQHD Curved Display⁹

34" diagonal IPS widescreen WLED backlit anti-glare WQHD LCD (3440 x 1440)^{5,10}

Non-Touch

Tilt: 0 degrees forward and 20 degrees back

9. HD and 4K content required to view HD and 4K images.

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

DISPLAY PANEL SPECIFICATIONS

23.8" diagonal IPS widescreen WLED backlit anti-glare LCD (1920 x 1080)

| | |
|--|------------------------|
| Type | IPS WLED Backlit LCD |
| Active area (mm) | 527.04 x 296.46 |
| Native Resolution (HxV) | 1920 x 1080 |
| Aspect ratio | 16:09 |
| Pixel pitch (HxV)(mm) | 0.2745 x 0.2745 |
| Contrast ratio (typical) | 1000:01:00 |
| Brightness (typical) | 250 nits ¹¹ |
| Viewing angle (typical) (HxV) | 178° x 178° |
| Backlight lamp life (to half brightness) | 30,000 hours minimum |
| Color support | Over 16 million colors |
| Color gamut (typical) | NTSC 72% |
| Anti-glare | Yes |
| Default color temperature | Warm (6500K) |

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

Features

27" diagonal IPS widescreen WLED backlit anti-glare 4K UHD LCD (3840 x 2160)

| | |
|--|------------------------|
| Type | IPS WLED Backlit LCD |
| Active area (mm) | 596.74 x 335.66 |
| Native Resolution (HxV) | 3840 x 2160 |
| Aspect ratio | 16:09 |
| Pixel pitch (HxV)(mm) | 0.1554 x 0.1554 |
| Contrast ratio (typical) | 1000:01:00 |
| Brightness (typical) | 350 nits ¹¹ |
| Viewing angle (typical) (HxV) | 178° x 178° |
| Backlight lamp life (to half brightness) | 30,000 hours minimum |
| Color support | Over 1 billion colors |
| Color gamut (typical) | sRGB 99% |
| Anti-glare | Yes |
| Default color temperature | Warm (6500K) |

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

34" diagonal IPS widescreen WLED backlit anti-glare WQHD LCD (3440 x 1440)

| | |
|--|------------------------|
| Type | IPS WLED Backlit LCD |
| Active area (mm) | 799.80 x 334.8 |
| Native Resolution (HxV) | 3440 x 1440 |
| Aspect ratio | 21:09 |
| Pixel pitch (HxV)(mm) | 0.2325 x 0.2325 |
| Contrast ratio (typical) | 1000:01:00 |
| Brightness (typical) | 300 nits ¹¹ |
| Viewing angle (typical) (HxV) | 178° x 178° |
| Backlight lamp life (to half brightness) | 30,000 hours minimum |
| Color support | Over 1 billion colors |
| Color gamut (typical) | sRGB 99% |
| Anti-glare | Yes |
| Default color temperature | Warm (6500K) |

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

Features

STORAGE AND DRIVES¹²

2.5 inch 7.2k RPM 2.5 inch 7.2k RPM Hard Disk Drives

500GB SATA
1TB SATA

2.5 inch Solid State Hybrid Drives (SSHD)

500GB 5400RPM 2.5in 8GB Hybrid
1TB 5400RPM 2.5in 8GB Hybrid
2TB 5400RPM 2.5in 8GB Hybrid

2.5 inch 5.4k RPM Hard Disk Drives

2TB SATA

2.5 inch Self-encrypting Drives (SED HDD)

500GB 7200RPM 2.5in SED OPAL 2
500GB 5400RPM 2.5in Federal Information Processing Standard (FIPS) SED
2.5 SATA SSD Drives
128GB SATA TLC SSD
256GB SATA TLC SSD
512GB SATA TLC SSD

2.5 inch Self-encrypting Drives (SED SSD)

256GB TLC SED SSD OPAL 2 Drive
512GB TLC SED SSD OPAL 2 Drive
256GB TLC SED SSD 2.5in Federal Information Processing Standard (FIPS) SED
512GB TLC SED SSD 2.5in Federal Information Processing Standard (FIPS) SED

PCIe NVMe SSD Drives

128GB PCIe NVMe TLC SSD
256GB PCIe NVMe TLC SSD
512GB PCIe NVMe TLC SSD
1TB PCIe NVMe TLC SSD
128GB PCIe NVMe SSD
256GB PCIe NVMe SSD
512GB PCIe NVMe SSD

PCIe NVMe Self-encrypting Drives (PCIe NVMe SED SSD)

256GB PCIe NVMe TLC SED SSD OPAL 2 Drive
512GB PCIe NVMe TLC SED SSD OPAL 2 Drive

12. For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) is reserved for system recovery software.

Features

MEMORY¹³

Maximum

32GB (16GB/slot)

Memory Slots

2 SODIMM

DDR4-2666 (Transfer rates up to 2666 MT/s)

Double channel support

Customer accessible/upgradeable

Configurations

4 GB (1 x 4 GB)

8 GB (2 x 4 GB)

8 GB (1 x 8 GB)

16 GB (2 x 8 GB)

16 GB (1 x 16 GB)

32 GB (2 x 16 GB)

Intel® Optane Memory 16GB SSD (cache)

13. Intel® Optane™ memory system acceleration does not replace or increase the DRAM in your system and requires configuration with an optional Intel® Core™ i(5or 7)+ processor.

NETWORKING

Wireless LAN

Intel® 9560 802.11b/g/n/a/ac 2x2 Wi-Fi +Bluetooth® M.2 Combo Card non-vPro™

Intel® 9560 802.11b/g/n/a/ac 2x2 Wi-Fi +Bluetooth® M.2 Combo Card vPro™

Realtek RTL8822BE ac 2x2 Wi-Fi +Bluetooth® M.2 Combo Card

Realtek ac 1x1 +Bluetooth® M.2 Combo Card (2230 PCI-e+USB)

Ethernet (RJ-45) Integrated

Intel® I219LM Gigabit Network Connection LOM (standard)

14. Wireless LAN is optional and must be bought at purchase

15. Wireless access point and Internet service required and not included. Availability of public wireless access points limited.

16. 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.

Features

AUDIO/MULTIMEDIA

Audio

Integrated Conexant CX5001 codec - up to 24-bit PCM
High performance integrated stereo speakers (2W)
Headset side port (3.5mm)
Multi-streaming capable¹⁷

Webcam & Mic

Pop-up webcam - 2MP FHD webcam, Up to 30 frames/sec, discrete dual array microphone (Fixed 2MP FHD 1080p)(maximum resolution of 1920 x1080)(optional)
Pop-up webcam - 2MP FHD webcam with IR camera front-facing and 2nd rear-facing 2MP webcam, discrete dual array microphone (Dual Camera 480P IR+1080P RGB Fixed/2MP FHD 1080P Fixed)(maximum resolution of 1920 x1080)(optional)
IR camera (optional) supports Win10 Hello

Collaboration Keys

Integrated, capacitive touch collaboration keys functions include:
Call answer, microphone mute, webcam mute, hang up, speaker mute, and volume slider

Collaboration Keys

Call answer
Microphone mute

NOTE: All HP devices which carry the Bang & Olufsen brand are custom-tuned with Bang & Olufsen's acoustical engineers for precise sound experience in business use.

17. The side headset connector supports CTIA style headsets and is re-taskable as a Line-in, Microphone-in or Headphone-out port. External speakers must be powered externally. Multi-streaming can be enabled in the audio control panel to allow independent audio streams to be sent to/from the side headset jack or internal speakers. This allows for different audio applications to use separate audio ports on the system. For example, the side audio jack could be used with a headset for a communications application while the internal speakers can be used with a multimedia application.

AUDIO SPECIFICATIONS

High Definition Audio

| | |
|---------------------|---|
| Type | Integrated |
| HD Audio Codec | Conexant CX5001 |
| Audio I/O Ports | Universal Audio Jack with CTIA headset support (re-taskable for headphone/line out/microphone in/line in) |
| Wavetable Syntheses | Yes - Uses OS soft wavetable |
| Analog Audio | Yes |
| Internal Speaker | Yes - two speakers |
| DAC Sampling Rates | 44.1kHz/48kHz/96kHz/192kHz |
| ADC Sampling Rates | 44.1kHz/48kHz/96kHz |

Features

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard and Mouse Combos

- HP Premium Wireless Keyboard and Mouse
- HP Premium USB Wired Keyboard and Mouse
- HP USB Keyboard and Mouse Healthcare Edition
- HP Wireless Business Slim Keyboard and Mouse

Keyboards

- HP Premium USB Wired Keyboard
- HP USB Business Slim Keyboard
- HP USB Business Slim Grey Keyboard
- HP USB Business Slim CCID SmartCard Keyboard
- HP USB Business Slim Antimicrobial Keyboard¹⁸
- HP USB Wired Keyboard
- HP Wired Keyboard EPEAT®

Mice

- HP USB 1000dpi Laser Mouse
- HP Grey V2 Mouse
- HP USB Mouse
- HP USB Antimicrobial Mouse¹⁸
- HP USB Hardened Mouse
- HP USB PS/2 Wired Washable Mouse

Other

- HP Mouse Pad

Adapters and Cables

- DisplayPort™ 1.2 Cable
- DisplayPort™ 1.2 to DVI-D Adapter
- DisplayPort™ 1.2 to HDMI 4K Adapter
- DisplayPort™ 1.2 to VGA Adapter
- HP DVI Cable
- HP USB Type-C™ to Type-A Hub
- HP USB to Serial Port Adapter
- HP USB-C™ to USB 3.0 Adapter

Headsets

- HP Business Headset v2
- HP UC Bluetooth® Headset

[18. China Only](#)

Features

SOFTWARE AND SECURITY

BIOS

- HP BIOSphere Gen4¹⁷
- HP DriveLock & Automatic DriveLock
- BIOS Update via Network
- Master Boot Record Security
- Power On Authentication
- Secure Erase¹⁸
- Absolute Persistence Module¹⁹
- Pre-boot Authentication
- HP Wireless Wakeup

Software

- HP Native Miracast Support¹⁵
- HP Velocity
- HP ePrint Driver + JetAdvantage²⁰
- HP Hotkey Support - CMIT
- HP Recovery Manager
- HP Jumpstart
- HP Support Assistant²¹
- HP Noise Cancellation Software
- HP WorkWise³⁷
- HP PhoneWise²⁹
- Buy Office (sold separately)
- Intel Unite (optional)}

Manageability Features

- HP Driver Packs²²
- HP System Software Manager (SSM)
- HP BIOS Config Utility (BCU)
- HP Client Catalog
- HP Manageability Integration Kit Gen2²³
- Ivanti Management Suite²⁴

Client Security Software

- HP Client Security Suite Gen4²⁵ including:
 - HP Client Security Manager²⁶ (including Credential Manager, Password Manager, Spare Key)
- Synaptics Fingerprint Sensor³¹
- HP Device Access Manager
- HP Power On Authentication
- Microsoft Defender²⁷

Features

Security Management

Secure Erase¹⁸

TPM 2.0 Embedded Security Chip shipped with Windows 10 (Common Criteria EAL4+ Certified) (FIPS 140-2 Level 2 Certified)³²

SATA 0,1 port disablement (viaBIOS)

Serial, USB enable/disable (viaBIOS)

Power-on password (viaBIOS)

Setup password (viaBIOS)

Support for chassis padlocks and cable lock devices

Integrated hood sensor

HP Sure Start Gen4³⁰

HP Sure Run³⁵

HP Sure Recover³⁶

HP Sure Click³⁸

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

17. HP BIOSphere Gen4 features may vary depending on the PC platform and configurations requires 8th Gen Intel® processors.

18. For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88 "Clear" sanitation method.

19. Absolute agent is shipped turned off, and will be activated when customers activate a purchased subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. The Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit: <http://www.absolute.com/company/legal/agreements/computrace-agreement>. Data Delete is an optional service provided by Absolute Software. If utilized, the Recovery Guarantee is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens from Absolute Software.

20. HP ePrint Driver requires an Internet connection to HP web-enabled printer and HP ePrint account registration (for a list of eligible printers, supported documents and image types and other HP ePrint details, see <http://www.hp.com/go/eprintcenter>). Print times and connection speeds may vary.

21. HP Support Assistant requires Windows and Internet access.

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

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

24. Ivanti Management Suite subscription required.

25. HP Client Security Suite Gen 4 requires Windows and Intel® or AMD 8th generation processors.

26. HP Password Manager requires Internet Explorer or Chrome or FireFox. Some websites and applications may not be supported. User may need to enable or allow the add-on / extension in the internet browser.

27. Microsoft Defender Opt in and internet connection required for updates.

29. HP PhoneWise Client is only available on select platforms. For supported platforms and HP PhoneWise system requirements see www.hp.com/go/HPPhoneWise.

30. HP Sure Start Gen4 is available on HP Elite and HP Pro 600 products equipped with 8th generation Intel® or AMD processors.

31. HP Fingerprint Sensor sold separately or as an optional feature.

32. Firmware TPM is version 2.0. Hardware TPM is v1.2, which is a subset of the TPM 2.0 specification version v0.89 as implemented by Intel Platform Trust Technology (PTT).

35. HP Sure Run is available on HP Elite products equipped with 8th generation Intel® or AMD® processors.

36. HP Sure Recover is available on HP Elite PCs with 8th generation Intel® or AMD processors and requires an open, wired network connection. Not available on platforms with multiple internal storage drives, Intel® Optane™. You must back up important files, data, photos, videos, etc. before use to avoid loss of data.

Features

37. HP WorkWise smartphone app is available as a free download on the Google Play. As of September 2017, HP WorkWise will no longer support iOS or iPhone® devices
38. HP Sure Click is available on select HP platforms and supports Microsoft® Internet Explorer, Google Chrome, and Chromium™. Supported attachments include Microsoft Office (Word, Excel, PowerPoint) and PDF files in read only mode. Check <http://h20195.www2.hp.com/v2/GetDocument.aspx?docname=4AA7-0922ENW> for all compatible platforms as they become available.
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POWER

Power Supply

External 180W

Standard efficiency

87%

Power cord length: 6.0 ft. (1.83 m)

Features

WEIGHTS & DIMENSIONS

Weight

23.8 Non-Touch Product Weight (Unboxed)

Without Arm: 4.71kg, 10.3lb
Without Base: 5.19kg, 11.4lb
Whole system with Base: 8.21kg, 18.1lb

23.8 Touch Product Weight (Unboxed)

Without Arm: 4.71kg, 10.3lb
Without Base: 5.26 kg, 11.6lb
Whole system with Base: 8.28kg, 18.25lb

23.8 Shipping Weight (Boxed)

System with package weight: 12.42kg , 27.38 lb

23.8 Shipping Weight (Pallet)

Total Weight including pallet: 247 kg, 544.54 lb

Dimensions (W x D x H)

23.8 System Dimensions (including Touch, Non-Touch)

Without Base: 539.5 x 33 x 324.9 mm, 21.2 x 1.3 x 12.8 in
Base only: 400 x 190 x 37 mm, 15.7 x 7.5 x 1.5 in
With Base: 539.5 x 190 x 419.2 mm, 21.2 x 7.5 x 16.5 in

23.8 Shipping Dimensions (Pallet)

Shipping pallet size : 1153 x 905 x 1728 mm, 45.39 x 35.63 x 68.03 in

23.8 Pallet Quantity (including Touch, Non-Touch)

18 units per pallet

Weight

27 Product Weight (Unboxed)

Without Arm: 6.78 kg, 14.9 lb
Without Base: 7.26 kg, 16.0lb
Whole system with Base: 10.2kg, 22.5lb

27 Shipping Weight (Boxed)

System with package weight: 14.62 kg, 32.23lb (maximum config.)

27 Shipping Weight (Pallet)

Total Weight including pallet: 243 kgf, 535.72 lb

Dimension

27 System Dimensions

Without Base: 613.3 x 30.5 x 366.7 mm, 24.15 x 1.19 x 14.44 in
Base only: 400 x 190 x 37 mm, 15.7 x 7.5 x 1.5 in
With Base: 613.3 x 190 x 457.3 mm, 24.15 x 7.5 x 18 in

27 Shipping Dimensions (Boxed)

Package: 741 x 243 x 572 mm, 29.71 x 9.57 x 22.52 in

27 Shipping Dimensions (Pallet)

Shipping pallet size : 1102 x 984 x 1851 mm, 43.39 x 38.74 x 62.87 in

27 Pallet Quantity

15 units per pallet

Weight

34 Product Weight (Unboxed)

Without Arm: 6.8 kg, 15.0 lb
Without Base: 7.28 kg, 16 lb
Whole system with Base: 10.3 kg, 22.8 lb

34 Shipping Weight (Boxed)

System with package weight: 17.32 kg , 38.14 lb

34 Shipping Weight (Pallet)

Total Weight including pallet: 228 kg, 502.65 lb

Dimension

Features

| | |
|--|--|
| 34 System Dimensions | Without Base: 815.8 x 73.8 x 366.7 mm, 32.1 x 2.9 x 14.44 in Base only: 400 x 190 x 37 mm, 15.7 x 7.5 x 1.5 in With Base: 815.8 x 190 x 457.3 mm, 32.1 x 7.5 x 18 in |
| 34 Shipping Dimensions (Boxed) | Package: 985 x 292 x 608 mm, 38.78 x 11.5 x 23.94 in |
| 34 Shipping Dimensions (Pallet) | Shipping pallet size : 1168 x 984 x 1959 mm, 45.98 x 38.74 x 77.13 in |
| 34 Pallet Quantity | 12 units per pallet |

Features

ENVIRONMENTAL AND INDUSTRY

UNIT ENVIRONMENT AND OPERATING CONDITIONS

General Unit Operating Guidelines

- Keep the computer away from excessive moisture, direct moisture and the extremes of heat and cold, to ensure that unit is operated within the specified operating range.
- Leave a 10.2 cm (4 in) clearance on all vented sides of the computer to permit the required airflow.
- Never restrict airflow into the computer by blocking any vents or air intakes.
- Do not stack computers on top of each other or place computers so near each other that they are subject to each other's re-circulated or preheated air.
- Occasionally clean the air vents on the front, back, and any other vented side of the computer. Lint, dust and other foreign matter can block the vents and limit the airflow.
- If the computer is to be operated within a separate enclosure, intake and exhaust ventilation must be provided on the enclosure, and the same operating guidelines listed above will still apply.

Temperature Range

Operating: 50° to 95° F (10° to 35° C)*
Non-operating: -22° to 140° F (-30° to 60° C)

Relative Humidity

Operating: 10% to 90% (non-condensing at ambient)
Non-operating: 5% to 95% (non-condensing at ambient)

Maximum Altitude (unpressurized)

Operating: 5000m
Non-operating: 50000ft (15240 m)

NOTE: Operating temperature is de-rated 1.0 deg C per 300 m (1000 ft) to 3000 m (10,000 ft) above sea level, no direct sustained sunlight. Maximum rate of change is 10 deg C/Hr. The upper limit may be limited by the type and number of options installed.

PORTS/SLOTS

Rear I/O Connectors

- (2) Type A USB 3.1 Gen2 (KB wake capable)
- (2) Type A USB 3.1 Gen2
- (1) DisplayPort™ 1.2 1.2 (out)
- (1) DisplayPort™ 1.2 1.2 (in)
- (1) HDMI 2.0a (out)
- (1) RJ45 network interface

Side I/O Connectors

- (1) Type C USB 3.1 Gen2 with Thunderbolt (DP Alt mode and 15W)³⁹
- (1) Type A USB 3.1 Gen1 (fast charging port)
- (1) Headset side port (3.5mm)

Slots

- (1) M.2 2230 for WLAN
- (1) M.2 2280 for NVMe SSD storage

Bays

- (1) 2.5" HDD

39. Thunderbolt DP Alt mode functionality is shared with the DisplayPort™ out port; DisplayPort™ out is prioritized and automatically selected over Thunderbolt DP Alt mode

Features

STORAGE AND DRIVES

| | | |
|---------------------------------------|-----------------------|-----------------------------|
| 500GB 7200 RPM SATA Hard Drive | Capacity | 500 GB |
| | Rotational Speed | 7,200 rpm |
| | Interface | SATA 6 Gb/s |
| | Buffer Size | 16 MB |
| | Logical Blocks | 976,773,168 |
| | Seek Time | 12 ms (Average) |
| | Height | 0.267 in/6.8 mm (nominal) |
| | Width | 2.75 in/70 mm (nominal) |
| | Operating Temperature | 41° to 131° F (5° to 55° C) |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

| | | |
|-------------------------------------|-----------------------|-----------------------------|
| 1TB 7200 RPM SATA Hard Drive | Capacity | 1 TB |
| | Rotational Speed | 7,200 rpm |
| | Interface | SATA 6 Gb/s |
| | Buffer Size | 32 MB |
| | Logical Blocks | 1,953,525,168 |
| | Seek Time | 12 ms (Average) |
| | Height | 0.374 in/9.5 mm (nominal) |
| | Width | 2.75 in/70 mm (nominal) |
| | Operating Temperature | 41° to 131° F (5° to 55° C) |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

| | | |
|--|-----------------------|--|
| 500GB 5400 RPM Solid State Hybrid Drive | Capacity | 500 GB |
| | Rotational Speed | 5,400 rpm |
| | Drive Type | Solid State Hybrid Drive (SSHD) technology with NAND Flash |
| | Interface | SATA 6 Gb/s |
| | Buffer Size | 64 MB |
| | NAND Flash | 8GB |
| | Seek Time | 12 ms (Average) |
| | Height | 0.267 in/6.8 mm (nominal) |
| | Width | 2.75 in/70 mm (nominal) |
| | Operating Temperature | 41° to 131° F (5° to 55° C) |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

Features

| | | |
|--|-----------------------|--|
| 1TB 5400 RPM Solid State Hybrid Drive | Capacity | 1 TB |
| | Rotational Speed | 5,400 rpm |
| | Drive Type | Solid State Hybrid Drive (SSHD) technology with NAND Flash |
| | Interface | SATA 6 Gb/s |
| | Buffer Size | 64 MB |
| | NAND Flash | 8 GB |
| | Seek Time | 12 ms (Average) |
| | Height | 0.374 in/9.5 mm (nominal) |
| | Width | 2.75 in/70 mm (nominal) |
| | Operating Temperature | 41° to 131° F (5° to 55° C) |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

| | | |
|--|-----------------------|--|
| 2TB 5400 RPM Solid State Hybrid Drive | Capacity | 2 TB |
| | Rotational Speed | 5,400 rpm |
| | Drive Type | Solid State Hybrid Drive (SSHD) technology with NAND Flash |
| | Interface | SATA 6 Gb/s |
| | Buffer Size | 128 MB |
| | NAND Flash | 8GB |
| | Seek Time | 12 ms (Average) |
| | Height | 0.374 in/9.5 mm (nominal) |
| | Width | 2.75 in/70 mm (nominal) |
| | Operating Temperature | 41° to 131° F (5° to 55° C) |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

Features

2TB 5400 RPM SATA Hard Drive

| | |
|-----------------------|-----------------------------|
| Capacity | 2 TB |
| Rotational Speed | 5,400 rpm |
| Interface | SATA 6 Gb/s |
| Buffer Size | 128MB |
| Logical Blocks | 3,907,050,336 |
| Seek Time | 12 ms (Average) |
| Height | 0.374 in/9.5 mm (nominal) |
| Width | 2.75 in/70 mm (nominal) |
| Operating Temperature | 41° to 131° F (5° to 55° C) |
| Capacity | 2TB |
| Rotational Speed | 5,400 rpm |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

500GB SED Solid State Drive

| | |
|-----------------------|---|
| Capacity | 500 GB |
| Rotational Speed | Self-Encrypting (SED) Solid State Drive with SATA interface |
| Interface | SATA 6 Gb/s |
| Buffer Size | 32 MB |
| Logical Blocks | 976,773,168 |
| Seek Time | 12 ms (Average) |
| Height | 0.267 in/6.8 mm (nominal) |
| Width | 2.75 in/70 mm (nominal) |
| Operating Temperature | 41° to 131° F (5° to 55° C) |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

Features

| | | |
|---|--------------------------|--|
| 128GB SATA TLC Solid State Drive | Drive Weight | up to 50g (0.11lb) |
| | Capacity | 128 GB |
| | Height | 7mm (0.276in) |
| | Width | 70mm (2.756 in) |
| | Interface | SATA 3.0 (6Gb/s) |
| | Maximum Sequential Read | Up to 530MB/s |
| | Maximum Sequential Write | Up to 450MB/s |
| | Logical Blocks | 250,069,680 |
| | Operating Temperature | 0° to 70°C (32° to 158°F) [ambient temp] |
| | Features | DIPM; TRIM; |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

| | | |
|---|--------------------------|--|
| 256GB SATA TLC Solid State Drive | Drive Weight | up to 50g (0.11lb) |
| | Capacity | 256GB |
| | Height | 7mm (0.276in) |
| | Width | 70mm (2.756 in) |
| | Interface | SATA 3.0 (6Gb/s) |
| | Maximum Sequential Read | Up to 540MB/s |
| | Maximum Sequential Write | Up to 500MB/s |
| | Logical Blocks | 500,118,192 |
| | Operating Temperature | 0° to 70°C (32° to 158°F) [ambient temp] |
| | Features | DIPM; TRIM; |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

Features

| | | |
|---|--------------------------|--|
| 512GB SATA TLC Solid State Drive | Drive Weight | up to 50g (0.11lb) |
| | Capacity | 512 GB |
| | Height | 7mm (0.276in) |
| | Width | 70mm (2.756 in) |
| | Interface | SATA 3.0 (6Gb/s) |
| | Maximum Sequential Read | Up to 540MB/s |
| | Maximum Sequential Write | Up to 500MB/s |
| | Logical Blocks | 1,000,215,216 |
| | Operating Temperature | 0° to 70°C (32° to 158°F) [ambient temp] |
| | Features | DIPM; TRIM; |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

| | | |
|---|--------------------------|--|
| 256GB SATA TLC SED OPAL2 Solid State Drive | Drive Weight | up to 50g (0.11lb) |
| | Capacity | 256 GB |
| | Height | 7mm (0.276in) |
| | Width | 70mm (2.756 in) |
| | Interface | SATA 3.0 (6Gb/s) |
| | Maximum Sequential Read | Up to 540MB/s |
| | Maximum Sequential Write | Up to 500MB/s |
| | Logical Blocks | 500,118,192 |
| | Operating Temperature | 0° to 70°C (32° to 158°F) [ambient temp] |
| | Features | DIPM; TRIM; Self Encrypting Drive with OPAL2.0 |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

| | | |
|---|--------------------------|--|
| 512GB SATA TLC SED OPAL2 Solid State Drive | Drive Weight | up to 50g (0.11lb) |
| | Capacity | 512 GB |
| | Height | 7mm (0.276in) |
| | Width | 70mm (2.756 in) |
| | Interface | SATA 3.0 (6Gb/s) |
| | Maximum Sequential Read | Up to 540MB/s |
| | Maximum Sequential Write | Up to 500MB/s |
| | Logical Blocks | 1,000,215,216 |
| | Operating Temperature | 0° to 70°C (32° to 158°F) [ambient temp] |
| | Features | DIPM; TRIM; Self Encrypting Drive with OPAL2.0 |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

Features

| | | |
|---|--------------------------|--|
| 256 GB SATA TLC FIPS 140-2 SED Solid State Drive | Drive Weight | up to 50g (0.11lb) |
| | Capacity | 256 GB |
| | Height | 7mm (0.276in) |
| | Width | 70mm (2.756 in) |
| | Interface | SATA 3.0 (6Gb/s) |
| | Maximum Sequential Read | Up to 540MB/s |
| | Maximum Sequential Write | Up to 500MB/s |
| | Logical Blocks | 500,118,192 |
| | Operating Temperature | 0° to 70°C (32° to 158°F) [ambient temp] |
| | Features | DIPM; TRIM; FIPS 140-2 |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

| | | |
|---|--------------------------|--|
| 512GB 2.5" SATA-3 TLC FIPS 140-2 SED Solid State Drive | Drive Weight | up to 50g (0.11lb) |
| | Capacity | 512 GB |
| | Height | 7mm (0.276in) |
| | Width | 70mm (2.756 in) |
| | Interface | SATA 3.0 (6Gb/s) |
| | Maximum Sequential Read | Up to 540MB/s |
| | Maximum Sequential Write | Up to 500MB/s |
| | Logical Blocks | 1,000,215,216 |
| | Operating Temperature | 0° to 70°C (32° to 158°F) [ambient temp] |
| | Features | DIPM; TRIM; FIPS 140-2 |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

Features

| | | |
|--|--------------------------|--|
| 256GB M.2 PCIE NVME Solid State Drive | Drive Weight | up to 10g (0.022lb) |
| | Capacity | 256GB |
| | Height | 2.38mm (0.093in) |
| | Width | 22mm (0.87in) |
| | Length | 80mm (3.15in) |
| | Interface | PCIE Gen3 |
| | Maximum Sequential Read | Up to 1600MB/s |
| | Maximum Sequential Write | Up to 550MB/s |
| | Logical Blocks | 500,118,192 |
| | Operating Temperature | 0° to 70°C (32° to 158°F) [ambient temp] |
| | Features | APST; ASPM L1.2; NVME spec 1.2 |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

| | | |
|--|--------------------------|--|
| 512GB M.2 PCIE NVME Solid State Drive | Drive Weight | up to 10g (0.022lb) |
| | Capacity | 512 GB |
| | Height | 2.38mm (0.093in) |
| | Width | 22mm (0.87in) |
| | Length | 80mm (3.15in) |
| | Interface | PCIE Gen3 |
| | Maximum Sequential Read | Up to 1800MB/s |
| | Maximum Sequential Write | Up to 550MB/s |
| | Logical Blocks | 1,000,215,216 |
| | Operating Temperature | 0° to 70°C (32° to 158°F) [ambient temp] |
| | Features | APST; ASPM L1.2; NVME spec 1.2 |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

Features

| | | |
|--|--------------------------|--|
| 256GB M.2 PCIE NVME TLC Solid State Drive | Drive Weight | up to 10g (0.022lb) |
| | Capacity | 256GB |
| | Height | 2.38mm (0.093in) |
| | Width | 22mm (0.87in) |
| | Length | 80mm (3.15in) |
| | Interface | PCIE Gen3 x 4 |
| | Performance | Up to 2700MB/s |
| | Maximum Sequential Read | Up to 1100MB/s |
| | Maximum Sequential Write | 500,118,192 |
| | Logical Blocks | 0° to 70°C (32° to 158°F) [ambient temp] |
| | Operating Temperature | APST; ASPM L1.2; NVME spec 1.2 |
| | Features | Up to 2700MB/s |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

| | | |
|--|--------------------------|--|
| 512GB M.2 PCIE NVME TLC Solid State Drive | Drive Weight | up to 10g (0.022lb) |
| | Capacity | 512GB |
| | Height | 2.38mm (0.093in) |
| | Width | 22mm (0.87in) |
| | Length | 80mm (3.15in) |
| | Interface | PCIE Gen3 x 4 |
| | Maximum Sequential Read | Up to 2700MB/s |
| | Maximum Sequential Write | Up to 1400MB/s |
| | Logical Blocks | 1,000,215,216 |
| | Operating Temperature | 0° to 70°C (32° to 158°F) [ambient temp] |
| | Features | APST; ASPM L1.2; NVME spec 1.2 |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

Features

| | | |
|--|--------------------------|--|
| 1TB M.2 PCIE NVME TLC Solid State Drive | Drive Weight | up to 10g (0.022lb) |
| | Capacity | 1 TB |
| | Height | 2.38mm (0.093in) |
| | Width | 22mm (0.87in) |
| | Length | 80mm (3.15in) |
| | Interface | PCIE Gen3 x 4 |
| | Maximum Sequential Read | Up to 2700MB/s |
| | Maximum Sequential Write | Up to 1500MB/s |
| | Logical Blocks | 2,000,409,264 |
| | Operating Temperature | 0° to 70°C (32° to 158°F) [ambient temp] |
| | Features | APST; ASPM L1.2; NVME spec 1.2 |

NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

Features

GRAPHICS

Intel® UHD Graphics (integrated)

| | |
|----------------------------|---|
| DisplayPort™ | Multimode capable; supports HDCP 2.2, Display Port Audio (2 streams), HBR2 link rates and Multi-Stream Technology for a maximum of 3 displays (including the integrated panel) |
| HDMI | Supports HDMI 2.0a features |
| Optional Memory | The actual amount of maximum graphics memory can be >4GB. System memory is allocated for graphics as needed using Intel's Dynamic Video Memory Technology (DVMT), to provide an optimal balance between graphics and system memory use. |
| Maximum Color Depth | Up to 10 bits/color |
| Graphics/Video API Support | HEVC 10b Enc/Dec HW VP9 10b Dec HW HDR Rec. 2020 DX12" |

AMD Radeon™ RX 560 Graphics

| | |
|-----------------------|--|
| Architecture | Discrete hybrid graphics configuration |
| Memory | 4GB GDDR5 on a x128 bit bus |
| Outputs | Since this is a hybrid design, the AMD graphics' output capabilities are the same as listed for Intel Graphics |
| System Bus Connection | PCIEx8 |
| API support | DirectX 12 OpenCL 2.0 OpenGL 4.5 |

Display Output chart.

| Resolution | Refresh Rate | VGA (Using HP DP to VGA adapter) | DVI-D (Using HP DP to DVI-D adapter) | DisplayPort™ | HDMI | Standard |
|-------------|------------------|-------------------------------------|---|--------------|------|---------------------------------|
| 640 x 480 | 60, 75, 85 | X | X | X | X | VESA DMT, CVT 0.31M3 |
| 720 x 400 | 70 | X | X | X | X | IBM VGA |
| 800 x 600 | 60, 75, 85 | X | X | X | X | VESA DMT, CVT0.48M3 |
| 1024 x 768 | 60, 75, 85 | X | X | X | X | VESA DMT, CVT 0.79M3 |
| 1152 x 864 | 60, 75, 85 | X | X | X | X | VESA DMT, CVT 0.83MA |
| 1280 x 720 | 60, 75, 85 | X | X | X | X | VESA DMT, CVT 0.92M9, CEA-770.3 |
| 1280 x 768 | 60, 60RB, 75, 85 | X | X | X | X | VESA DMT, CVT 0.98M9/0.98M9-R |
| 1280 x 800 | 60, 75, 85 | X | X | X | X | VESA DMT |
| 1280 x 960 | 60, 75, 85 | X | X | X | X | VESA DMT |
| 1280 x 1024 | 60, 75, 85 | X | X | X | X | VESA DMT, CVT 1.31M4 |
| 1366 x 768 | 60, 60RB | X | X | X | X | VESA DMT |
| 1440 x 900 | 60, 60RB | X | X | X | X | VESA DMT |

Features

| | | | | | | |
|-------------|------------------|----------------|---|---|---|--|
| 1600 x 900 | 60, 60RB, 75, 85 | X | X | X | X | VESA DMT |
| 1680 x 1050 | 60, 60RB | X | X | X | X | VESA DMT, CVT 1.76MA/1.76MA-R |
| 1920 x 1080 | 60 | X | X | X | X | VESA DMT, CVT 2.07M9, SMPTE 274M |
| 1920 x 1080 | 75 | | | X | X | CVT-RBv2 (2.07M-R) |
| 1920 x 1080 | 100 | | | X | X | CVT-RBv2 (6.14M-R) |
| 1920 x 1080 | 120 | | | X | X | SMPTE 274M |
| 1920 x 1080 | 144 | | | X | X | SMPTE 274M |
| 1920 x 1200 | 60, 60RB | X ¹ | X | X | X | DMT, CVT 2.30MA/2.30MA-R |
| 1600 x 1200 | 60 | X | X | X | X | VESA DMT, 1.92M3 |
| 1920 x 1440 | 60, 75, 85 | | | X | X | VESA DMT, CVT 2.76M3 |
| 1920 X 1600 | 59.95 | | | X | X | CVT-RBv2 (Not CVT Standard Aspect Ratio) |
| 2048 x 1536 | 60 | | | X | X | CVT 3.15M3 |
| 2560 x 1440 | 59.951 | | | X | X | CVT 3.69M9-R |
| 2560 x 1600 | 60, 60RB | | | X | X | VESA DMT, CVT 4.10MA/4.10MA-R |
| 3440 x 1200 | 60 | | | X | X | CVT-4.61M-R |
| 3440 x 1440 | 49.987 | | | X | X | CVT-RB v1 |
| 3440 x 1440 | 59.973 | | | X | X | CVT-RB v1 |
| 3440 x 1440 | 60 | | | X | X | Samsung Custom |
| 3440 x 1440 | 100 | | | X | X | CVT-RBv2 (4.95M-R) |
| 3440 x 1440 | 120 | | | X | X | CVT-RBv2 (4.95M-R) |
| 3840 x 1600 | 30 | | | X | X | CVT-RBv2 (6.14M-R) |
| 3840 x 1600 | 59.994 | | | X | X | CVT-RBv2 |
| 3840 x 2160 | 24 | | | X | X | SMPTE 274M |
| 3840 x 2160 | 25 | | | X | X | SMPTE 274M |
| 3840 x 2160 | 30 | | | X | X | SMPTE 274M |
| 3840 x 2160 | 29.981 | | | X | X | CVT-RB v1 |
| 3840 x 2160 | 50 | | | X | X | SMPTE 274M |
| 3840 x 2160 | 59.997 | | | X | X | CVT-RBv1 (8.29M9-R) |
| 3840 x 2160 | 60 | | | X | X | SMPTE 274M |
| 4096 x 2160 | 24 | | | X | X | SMPTE 274M |
| 4096 x 2160 | 25 | | | X | X | SMPTE 274M |
| 4096 x 2160 | 30 | | | X | X | SMPTE 274M |
| 4096 x 2160 | 50 | | | X | X | SMPTE 274M |

Features

| | | | | | | |
|-------------|-------|--|---|---|---|-------------------|
| 4096 x 2160 | 59.94 | | | X | X | CVT-RBv2 |
| 4096 x 2160 | 60 | | | X | X | CVT-RBv2 |
| 1920 x 1080 | 60 | | X | X | X | VESA (SMPTE 274M) |
| 1920 x 1080 | 50 | | X | X | X | SMPTE 274M |
| 1920 x 1080 | 30 | | X | X | X | SMPTE 274M |
| 1920 x 1080 | 24 | | X | X | X | SMPTE 274M |
| 1280 x 720 | 60 | | X | X | X | VESA (CEA-770.3) |
| 1280 x 720 | 50 | | X | X | X | SMPTE 296M |
| 720 x 480 | 59.94 | | X | X | X | MHL (CEA-770.2) |
| 720 x 576 | 50 | | X | X | X | ITU-R BT.1358 |
| 640 x 480 | 59.94 | | X | X | X | CEA (VESA DMT) |

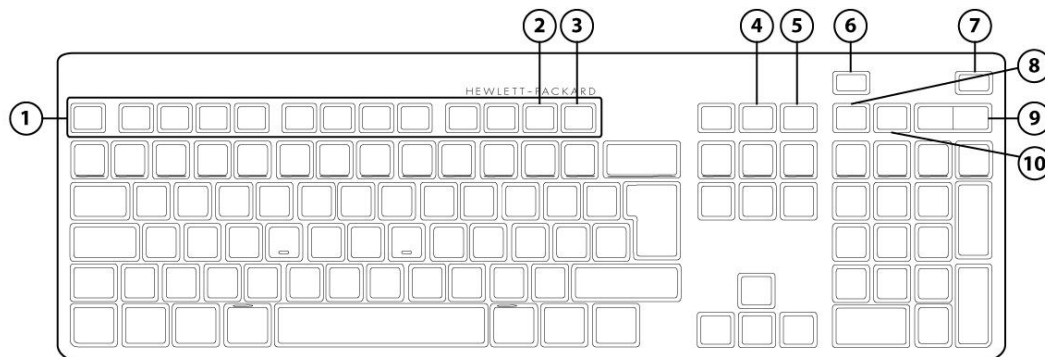
NOTE: Other refresh rates and resolutions may also work, but have not been validated.

>60Hz refresh rates only for analog (VGA) signaling

1. 60Hz Reduced Blanking only

INPUT/OUTPUT DEVICES

HP Conferencing Keyboard



- | | |
|---|-----------------------|
| 1. Function Keys | 6. End/Decline a Call |
| 2. F11 Lync or Skype for Business Contact list ¹ | 7. Answer a Call |
| 3. F12 Lync or Skype for Business Calendar ² | 8. Microphone Mute |
| 4. Share Screen | 9. Volume Up/Down |
| 5. Stop Webcam | 10. Audio Mute |

1. Microsoft Lync 2013, or Skype for Business Contact list

2. Microsoft Lync 2013, or Skype for Business Calendar

Features

HP USB Premium Keyboard

| | | |
|--------------------------|---------------------------|--|
| Physical Characteristics | Keys | 104, 105 layout (depending upon country) |
| | Dimensions (L x W x H) | 17.04 x 5.55 x 0.52 in (433 x 141 x 13.2 mm) |
| | Weight | 1.54 lb (698g) |
| | Operating voltage | 5 VDC, +/-5% |
| Electrical | Power consumption | 35mA (All LED on) |
| | System interface | USB Type A plug connector |
| | ESD | Contact Discharge: 8 KV Air Discharge: 15 KV |
| | EMI - RFI | Conforms to FCC rules for a Class B computing device |
| Mechanical | Microsoft® PC 99 - 2001 | Mechanically compliant |
| | Keycaps | Low-profile design |
| | Switch actuation | 60±10g nominal peak force with tactile feedback |
| | Switch life | 10 million keystrokes (Life tester) |
| | Switch type | Contamination-resistant switch membrane |
| | Key-leveling mechanisms | For all double-wide and greater-length keys |
| | Cable length | 6 ft (1.8 m) |
| | Microsoft PC 99 - 2001 | Mechanically compliant |
| | Acoustics | 43-dBA maximum sound pressure level |
| | Operating temperature | 50° to 122° F (10° to 50° C) |
| Environmental | Non-operating temperature | -22° to 140° F (-30° to 60° C) |
| | Operating humidity | 10% to 90% (non-condensing at ambient) |
| | Non-operating humidity | 20% to 80% (non-condensing at ambient) |
| | Operating shock | 40 g, six surfaces |
| | Non-operating shock | 80 g, six surfaces |
| | Operating vibration | 2-g peak acceleration |
| | Non-operating vibration | 4-g peak acceleration |
| | Drop (out of box) | 26 in (66 cm) on carpet, six-drop sequence |
| | Drop (in box) | 30 in (76.2 cm) on concrete, 16-drop sequence |
| | Approvals | UL, FCC, CE Mark, TUV GS, VCCI, BSMI, C-Tick, KC |
| | Ergonomic compliance | TUVGS |
| | Kit contents | Keyboard, QSP |
| | Warranty Card | Product Notice |

Features

Skylab USB wired Keyboard

| | | |
|---------------------------------|------------------------|---|
| Physical Characteristics | Keys | 104, 105, 106, 107, 109 layout (depending upon country) |
| | Dimensions (L x W x H) | 171.97 x 68.35 x 8.27 in (436.8± 1.5 x 137.6± 1.0 x 21.0± 1.0 cm) |
| | Weight | 1.32 lb (0.6± 0.08 kg) |
| | Operating voltage | 4.4-5.25VDC |
| Electrical | Power consumption | 50-mA maximum (with 5 VDC power supplied and three LEDs ON) |
| | System interface | USB |
| | ESD | Contact Discharge: 2, 4,6,8KV Air Discharge: 2, 4, 8,10,12.5KV |
| | EMI - RFI | Conforms to FCC rules for a Class B computing device |
| Mechanical | Keycaps | Low-profile design |
| | Switch actuation | 60±15g nominal peak force with tactile feedback |
| | Switch life | 10 million keystrokes (Life tester) |
| | Switch type | Silicon rubber switch membrane |
| Environmental | Cable length | 6 ft (1.8 m) |
| | Acoustics | 43-dBA maximum sound pressure level |
| | Temperature | 50° to 122° F (10° to 50° C) |
| | Humidity | 20% to 80% (non-condensing at ambient) |
| | Vibration | 2-g peak acceleration |
| | Drop (out of box) | 26 in (66 cm) on carpet, six-drop sequence |
| | Drop (in box) | 30 in (76.2 cm) on concrete, 16-drop sequence |
| | Approvals | UL, FCC, CE Mark, TUV GS, VCCI, BSMI, C-Tick, KC |
| | Ergonomic compliance | ANSI HFS 100, ISO 9241-4, and TUVGS |
| | Kit contents | Keyboard, Installation Guide, Warranty card, Safety and Comfort Guide |

Features

HP USB Premium Mouse

| | | |
|---------------------------------|-----------------------------|--|
| Physical characteristics | Dimensions (L x W x H) | 4.21 x 2.64 x 1.52 in (107 x 67 x 38.7 mm) |
| | Weight w/o cable | 0.19lb (90g) |
| | Operating temperature | 50° to 122° F (10° to 50° C) |
| | Non-operating temperature | -22° to 140° F (-30° to 60° C) |
| Environmental | Operating humidity | 10% to 90% (non-condensing at ambient) |
| | Non-operating humidity | 20% to 80% (non-condensing at ambient) |
| | Operating shock | 50 g, 6 surfaces |
| | Non-operating shock | 80 g, 6 surfaces |
| Electrical | Operating vibration | 2-g peak acceleration |
| | Non-operating vibration | 4-g peak acceleration |
| | Operating voltage | 5 VDC, +/-5% |
| | Power consumption (typical) | 12mA |
| Mechanical | Connector | USB 2.0 |
| | Type | 3D mouse (3 keys and wheel) |
| | Resolution | 800, 1200, 1600 DPI |
| | Sensor | Pixart PAN3606DL |
| | Tracking speed | 30 inch/sec (max) |
| | Tracking acceleration | 8G(max), 1G=9.8m/s ² |
| | Cable length | 6 ft (1.8 m) |
| | Color | Jack Black |
| | Regulatory Approvals | UL, FCC, CE Mark, TUV GS, VCCI, BSMI, C-Tick, KC |

Apollo wired USB MS

| | | |
|---------------------------------|-------------------------|--|
| Physical characteristics | Dimensions (H x L x W)" | 2.5 x 4.5 x 1.5 in (63.5 x 114.3 x 38.1 mm) |
| | Weight | 0.22 lb (99.79 g) |
| | Color | Black |
| | Connector | USB |
| | Resolution | 799 DPI sensitivity |
| | Buttons | Two primary buttons and clickable scroll wheel |

Features

AUDIO

Audio by Bang & Olufsen*
Internal 2watt stereo speaker
3.5mm Combo Jack

High Definition Audio

| | |
|---------------------|--|
| Type | Integrated |
| HD Audio Codec | Conexant CX5001 |
| Audio I/O Ports | Universal Audio Jack with CTIA headset support (re-taskable for headphone/line out/microphone in/line in) |
| Wavetable Syntheses | Yes - Uses OS soft wavetable |
| Analog Audio | Yes |
| Internal Speaker | Yes - two speakers |
| DAC Sampling Rates | 44.1kHz/48kHz/96kHz/192kHz |
| ADC Sampling Rates | 44.1kHz/48kHz/96kHz |

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

WEBCAM & MICROPHONE

Integrated microphones and FHD (1920X1080) RGB webcam
No support for RealSense
Integrated dual discrete microphone modules
For Windows Hello

NOTE: All HP devices which carry the Bang & Olufsen brand are custom-tuned with Bang & Olufsen's acoustical engineers for precise sound experience in business use.

Features

POWER SUPPLY

| | |
|---|---|
| Operating Voltage Range | 90 – 264 VAC |
| Rated Voltage Range | 100-240V AC |
| Rated Line Frequency | 50/60 HZ |
| Operating Line Frequency | 47 – 63 Hz |
| Rated Input Current | 180W: 2.5A |
| Rated Input Current with Energy Efficient* Power Supply | 180W: 2.5A 180W active PFC 87/90/87% efficient at 20/50/100% load (115V) 88/91/88% efficient at 20/50/100% load (230V) |
| DC Output | +19.5V |
| Current Leakage (NFPA 99: 2102) | Less than 500 microamps of leakage current at 120 Vac with the ground wire disconnected, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1. Less than 100 microamps of leakage current at 120 Vac with the ground wire intact with normal polarity, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1. |
| Power cord length | 6.0 ft. (1.83 m) |

Features

NETWORKING

| 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) 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 |
| | |

Features

| Intel® Jefferson Peak 9560 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 5.0 Combo [1] vPro | | |
|---|---|--|
| Wireless LAN Standards | IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac | |
| Interoperability | Wi-Fi certified | |
| Frequency Band | 802.11b/g/n | •2.402 – 2.482 GHz |
| | 802.11a/n | •4.9 – 4.95 GHz (Japan) •5.15 – 5.25 GHz •5.25 – 5.35 GHz •5.47 – 5.725 GHz •5.825 – 5.850 GHz |
| Data Rates | <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 | Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM | |
| Security | <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 Power | <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 mode2.0 W •Receive mode1.6 W •Idle mode (PSP)180 mW(WLAN Associated) •Idle mode50 mW(WLAN unassociated) •Connected Standby 10mW •Radio disabled8 mW | |
| Power Management | ACPI and PCI Express compliant power management 802.11 compliant power saving mode | |

Features

| | | |
|---|---|-------------------------------|
| Receiver Sensitivity | 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 : 2.8g | |
| Operating Voltage | 3.3v +/- 9% | |
| Temperature | Operating | 14° to 158° F (–10° to 70° C) |
| | Non-operating | –40° to 176° F (–40° to 80° C |
| Humidity | Operating | 10% to 90% (non-condensing) |
| | Non-operating | 5% to 95% (non-condensing) |
| Altitude | Operating | 0 to 10,000 ft (3,048 m) |
| | Non-operating | 0 to 50,000 ft (15,240 m) |
| LED Activity | LED Amber – Radio OFF; LED White – Radio ON | |
| | | |
| HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0 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) | |
| Data Rates and Throughput | Legacy: 3 Mbps data rate; throughput up to 2.17 Mbps BLE : 1 Mbps data rate; throughput up to 0.2 Mbps Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5) | |
| Transmit Power | The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR. | |
| Power Consumption | Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW | |
| Bluetooth Software Supported Link Topology | 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 | |

Features

| | |
|--|--|
| 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 |
| NOTE: 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 | |

| Intel® Jefferson Peak 9560 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 5.0 Combo [1] non-vPro | | |
|--|---|--|
| Wireless LAN Standards | IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac | |
| Interoperability | Wi-Fi certified | |
| Frequency Band | 802.11b/g/n | •2.402 – 2.482 GHz |
| | 802.11a/n | •4.9 – 4.95 GHz (Japan) •5.15 – 5.25 GHz •5.25 – 5.35 GHz •5.47 – 5.725 GHz •5.825 – 5.850 GHz |
| Data Rates | •802.11b: 1, 2, 5.5, 11 Mbps •802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps •802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps •802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) •802.11ac : MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz) | |
| Modulation | Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM | |
| Security³ | •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 | |

Features

| | | |
|--|--|--------------------------------|
| Output Power² | <ul style="list-style-type: none">• 802.11b : +14dBm minimum• 802.11g : +12dBm minimum• 802.11a : +12dBm minimum• 802.11n HT20(2.4GHz) : +12dBm minimum• 802.11n HT40(2.4GHz) : +12dBm minimum• 802.11n HT20(5GHz) : +10dBm minimum• 802.11n HT40(5GHz) : +10dBm minimum• 802.11ac VHT80(5GHz) : +10dBm minimum | |
| Power Consumption | <ul style="list-style-type: none">•Transmit mode2.0 W•Receive mode1.6 W•Idle mode (PSP)180 mW(WLAN Associated)•Idle mode50 mW(WLAN unassociated)•Connected Standby 10mW•Radio disabled8 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 | |
| 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 : 2.8g | |
| Operating Voltage | 3.3v +/- 9% | |
| Temperature | Operating | 14° to 158° F (–10° to 70° C) |
| | Non-operating | –40° to 176° F (–40° to 80° C) |
| Humidity | Operating | 10% to 90% (non-condensing) |
| | Non-operating | 5% to 95% (non-condensing) |
| Altitude | Operating | 0 to 10,000 ft (3,048 m) |
| | Non-operating | 0 to 50,000 ft (15,240 m) |
| LED Activity | LED Amber – Radio OFF; LED White – Radio ON | |
| | | |
| HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0 Wireless Technology | | |
| Bluetooth Specification | 4.0/4.1/4.2 Compliant | |
| Frequency Band | 2402 to 2480 MHz | |
| Number of Available Channels | Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH) | |
| Data Rates and Throughput | Legacy: 3 Mbps data rate; throughput up to 2.17 Mbps BLE : 1 Mbps data rate; throughput up to 0.2 Mbps Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5) | |
| Transmit Power | The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR. | |

Features

| | |
|--|--|
| Power Consumption | Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW |
| Bluetooth Software Supported Link Topology | Microsoft Windows Bluetooth Software |
| Power Management | Microsoft Windows ACPI, and USB Bus Support |
| Power Management Certifications | FCC (47 CFR) Part 15C, Section 15.247 & 15.249 ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark |
| Bluetooth Profiles Supported | ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark |
| | 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) |
| NOTE: 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 | |

| Realtek 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo [1] | | |
|---|---|--|
| Wireless LAN Standards | IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac | |
| Interoperability | Wi-Fi certified | |
| Frequency Band | 802.11b/g/n | •2.402 – 2.482 GHz |
| | 802.11a/n | •4.9 – 4.95 GHz (Japan) •5.15 – 5.25 GHz •5.25 – 5.35 GHz •5.47 – 5.725 GHz •5.825 – 5.850 GHz |
| Data Rates | <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, and 80MHz) | |
| Modulation | Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM | |



Features

| | | |
|---|---|--------------------------------|
| Security | <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 Power | <ul style="list-style-type: none"> • 802.11b : +14dBm minimum • 802.11g : +12dBm minimum • 802.11a : +12dBm minimum • 802.11n HT20(2.4GHz) : +12dBm minimum • 802.11n HT40(2.4GHz) : +12dBm minimum • 802.11n HT20(5GHz) : +10dBm minimum • 802.11n HT40(5GHz) : +10dBm minimum • 802.11ac VHT80(5GHz) : +10dBm minimum | |
| Power Consumption | <ul style="list-style-type: none"> •Transmit mode2.0 W •Receive mode1.6 W •Idle mode (PSP)180 mW(WLAN Associated) •Idle mode50 mW(WLAN unassociated) •Connected Standby 10mW •Radio disabled8 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 | |
| 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 : 2.8g | |
| Operating Voltage | 3.3v +/- 9% | |
| Temperature | Operating | 14° to 158° F (–10° to 70° C) |
| | Non-operating | –40° to 176° F (–40° to 80° C) |
| Humidity | Operating | 10% to 90% (non-condensing) |
| | Non-operating | 5% to 95% (non-condensing) |
| Altitude | Operating | 0 to 10,000 ft (3,048 m) |
| | Non-operating | 0 to 50,000 ft (15,240 m) |
| LED Activity | LED Amber – Radio OFF; LED White – Radio ON | |

Features

| HP Integrated Module with Bluetooth 4.0/4.1/4.2 Wireless Technology | |
|--|--|
| Bluetooth Specification | 4.0/4.1/4.2 Compliant |
| Frequency Band | 2402 to 2480 MHz |
| Number of Available Channels | Legacy : 0~79 (1 MHz/CH) BLE : 0~39 (2 MHz/CH) |
| Data Rates and Throughput | Legacy : 3 Mbps data rate; throughput up to 2.17 Mbps BLE : 1 Mbps data rate; throughput up to 0.2 Mbps Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5) |
| Transmit Power | The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR. |
| Power Consumption | Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW |
| Electrical Interface | USB 2.0 compliant |
| Bluetooth Software Supported Link Topology | 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) |
| NOTE: 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 | |

Features

| Realtek 802.11a/b/g/n/ac (1x1) WiFi and Bluetooth® 4.2 Combo ¹ | | |
|--|---|--|
| Wireless LAN Standards | IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac | |
| Interoperability | Wi-Fi certified | |
| Frequency Band | 802.11b/g/n | •2.402 – 2.482 GHz |
| | 802.11a/n | •4.9 – 4.95 GHz (Japan) •5.15 – 5.25 GHz •5.25 – 5.35 GHz •5.47 – 5.725 GHz •5.825 – 5.850 GHz |
| Data Rates | <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, and 80MHz) | |
| Modulation | Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM | |
| Security | <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 Power | <ul style="list-style-type: none"> • 802.11b : +14dBm minimum • 802.11g : +12dBm minimum • 802.11a : +12dBm minimum • 802.11n HT20(2.4GHz) : +12dBm minimum • 802.11n HT40(2.4GHz) : +12dBm minimum • 802.11n HT20(5GHz) : +10dBm minimum • 802.11n HT40(5GHz) : +10dBm minimum • 802.11ac VHT80(5GHz) : +10dBm minimum | |
| Power Consumption | <ul style="list-style-type: none"> •Transmit mode2.0 W •Receive mode1.6 W •Idle mode (PSP)180 mW(WLAN Associated) •Idle mode50 mW(WLAN unassociated) •Connected Standby 10mW •Radio disabled8 mW | |
| Power Management | ACPI and PCI Express compliant power management 802.11 compliant power saving mode | |

Features

| | | |
|---|---|-------------------------------|
| Receiver Sensitivity | 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. One embedded dual band 2.4/5 GHz antenna is provided to the card to support WLAN 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 : 2.8g | |
| Operating Voltage | 3.3v +/- 9% | |
| Temperature | Operating | 14° to 158° F (–10° to 70° C) |
| | Non-operating | –40° to 176° F (–40° to 80° C |
| Humidity | Operating | 10% to 90% (non-condensing) |
| | Non-operating | 5% to 95% (non-condensing) |
| Altitude | Operating | 0 to 10,000 ft (3,048 m) |
| | Non-operating | 0 to 50,000 ft (15,240 m) |
| LED Activity | LED Amber – Radio OFF; LED White – Radio ON | |
| | | |
| HP Integrated Module with Bluetooth 4.0/4.1/4.2 Wireless Technology | | |
| Bluetooth Specification | 4.0/4.1/4.2 Compliant | |
| Frequency Band | 2402 to 2480 MHz | |
| Number of Available Channels | Legacy: 0~79 (1 MHz/CH) BLE : 0~39 (2 MHz/CH) | |
| Data Rates and Throughput | Legacy: 3 Mbps data rate; throughput up to 2.17 Mbps BLE : 1 Mbps data rate; throughput up to 0.2 Mbps Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5) | |
| Transmit Power | The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR. | |
| Power Consumption | Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW | |
| Electrical Interface | USB 2.0 compliant | |
| Bluetooth Software Supported Link Topology | 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 | |

Features

| | |
|--|--|
| 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) |
| NOTE: 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 | |

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

| Category | Description | Part # |
|------------------------------------|---|-------------|
| DDR4-2666 Memory SoDIMMs | HP 16GB DDR4-2666 SODIMM | 3TK84AA |
| DDR4-2666 Memory SoDIMMs | HP 4GB DDR4-2666 SODIMM | 3TK86AA |
| DDR4-2666 Memory SoDIMMs | HP 8GB DDR4-2666 SODIMM | 3TK88AA |
| 2.5" SATA Solid State Drive | HP 256GB SATA TLC Non-SED Solid State Drive | P1N68AA |
| 2.5" SATA Solid State Hybrid Drive | HP 500GB SATA 6G 2.5 (8GB Cache) SSHD Drive | E1C62AA |
| M.2 PCIe NVME SSD/Optane | HP PCIe NVME TLC 512GB SSD M.2 Drive | X8U75AA |
| M.2 PCIe NVME SSD/Optane | HP PCIe NVME TLC 256GB SSD M.2 Drive | 1CA51AA |
| M.2 PCIe NVME SSD/Optane | Intel® Optane Memory 16GB (cache) **** | 1WV97AA |
| I/O Devices | HP USB to Serial Adapter | J7B60AA |
| HP EliteOne 1000 Accessories | HP EliteOne 1000 IR Camera with Rear Webcam | 2HW55AA |
| HP EliteOne 1000 Accessories | HP EliteOne 1000 23.8in FHD Display (See Note H for localization support) | 2SC22AA# |
| HP EliteOne 1000 Accessories | HP EliteOne 1000 23.8in FHD Touch Display (See Note H for localization support) | 2SC23AA# |
| HP EliteOne 1000 Accessories | HP EliteOne 1000 27in 4K UHD Display (See Note H for localization support) | 2SC24AA# |
| HP EliteOne 1000 Accessories | HP EliteOne 1000 34in WQHD Curved Display (See Note H for localization support) | 2SC25AA# |
| Graphics - Cables & Adapters | HP DVI Cable Kit | DC198A |
| Graphics - Cables & Adapters | HP DisplayPort To DVI-D Adapter | FH973AA |
| Graphics - Cables & Adapters | HP DisplayPort To VGA Adapter | AS615AA |
| Graphics - Cables & Adapters | HP DisplayPort Cable Kit | VN567AA |
| Graphics - Cables & Adapters | HP DisplayPort To HDMI 4k Adapter | K2K92AA |
| Graphics - Cables & Adapters | HP DisplayPort To HDMI True 4k Adapter | 2JA63AA |
| Graphics - Cables & Adapters | HP HDMI Standard Cable Kit | T6F94AA |
| Audio & Multimedia | HP Business Headset v2 | T4E61AA |
| Audio & Multimedia | HP UC Wireless Duo Headset | W3K09AA |
| Pointing Devices | HP USB Grey v2 Mouse | Z9H74AA |
| Pointing Devices | HP USB Mouse | QY777AA |
| Pointing Devices | HP USB 1000dpi Laser Mouse | QY778AA |
| Pointing Devices | HP Mouse Pad | AT485AA |
| Pointing Devices | HP USB PS/2 Washable Scroll Mouse | BM866AA |
| Pointing Devices | HP USB Hardened Mouse | P1N77AA |
| Keyboards | HP Bus Slim Wirles Localize Kit Nordic | 2MY27AA |
| Keyboards | HP Bus Slim Localize Kit - Nordic USB | 2MY28AA |
| Keyboards | HP USB Keyboard and Mouse Healthcare Edition | 1VD81AA |
| Keyboards | HP Business Slim Smartcard Keyboard | Z9H48AA |
| Keyboards | HP USB (Grey) Business Slim Keyboard | Z9H49AA |
| Keyboards | HP USB Antimicrobial Slim Kybd and Mouse | Z9H50AA |
| Keyboards | HP USB Keyboard | QY776AA |
| Keyboards | HP USB PS2 Washable Keyboard & Mouse | BU207AA#xxx |
| Keyboards | HP USB Business Slim Keyboard | N3R87AA |
| Keyboards | HP Wireless Business Slim Keyboard and Mouse | N3R88AA |
| Keyboards | HP USB Business Slim Keyboard and Mouse and MousePad | T4E63AA |

Summary of Changes

| Date of change: | Version History: | | Description of change: |
|-----------------|------------------|--------|---|
| July 11, 2018 | V1 to V2 | Update | RAID reference removed from software security section |
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