

Overview

HP 250 G8 Notebook PC



Left

- | | |
|-------------------------------------|--|
| 1. Internal dual digital microphone | 7. Power indicator LED |
| 2. Webcam LED | 8. Hard drive indicator LED |
| 3. Webcam | 9. SuperSpeed USB Type-C® 5Gbps signaling rate ¹ (Data Transfer Only) |
| 4. Touchpad | 10. HDMI Port (Cable sold separately) |
| 5. Touchpad buttons | 11. RJ-45 / Ethernet port |
| 6. Audio combo jack | 12. Power button |

1. SuperSpeed USB 20Gbps is not available.

Overview



Right

1. AC Smart Pin Adapter Plug
2. SuperSpeed USB Type-A 5Gbps signaling rate ¹ port (USB 3.2 Gen 1)
3. SuperSpeed USB Type-A 5Gbps signaling rate¹ port (USB 3.2 Gen 1)
4. SD Card slot
5. Fingerprint Reader (Selected models)

1. SuperSpeed USB 20Gbps is not available.

Overview

At a Glance

- Windows 11 Pro, other Windows OS, or FreeDOS preinstalled
- A new compact narrow bezel design with thinner & lighter chassis
- Choice of 11th or 10th Generation Intel® Core™ i7, i5 and i3 processors and Intel® Pentium®, or Intel® Celeron® processors
- Choice of 39.62 cm (15.6") diagonal HD and FHD SVA Anti-Glare WLED or FHD IPS Anti-Glare WLED
- Optional NVIDIA GeForce MX130/MX330/MX350 discrete graphics with 2 GB GDDR5 video memory
- Security features including Firmware TPM 2.0 and Fingerprint Reader (selected models)
- Weight starting at 3.84 lbs (1.74 kgs)
- MM18 Battery life up to 9 hours and 45 minutes¹
- Wireless LAN (WLAN) up to 802.11ac or 802.11ax to keep you connected
- One SuperSpeed USB Type-C® 5Gbps signaling rate² (Data Transfer Only), Two SuperSpeed USB Type-A 5Gbps signaling rate² port
- Choice of Solid State Drives up to 1 TB and Hard Drive up to 2 TB
- Dual channel DDR4 SODIMM memory up to 16 GB
- HP webcam with dual digital microphone and HD (supporting WDR- Wide Dynamic Range)
- Designed to support HP docking options including HP USB-C/A Universal Dock G2
- GML-R 6W CPU offers fanless design with cooling fin³

1. 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 <http://www.bapco.com> for additional details.

2. SuperSpeed USB 20Gbps is not available.

3. Other CPU are still equipped with the cooling fan.

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

Technical Specifications

PRODUCT NAME

HP 250 G8 Notebook PC

OPERATING SYSTEMS

Preinstalled

Windows 11 Pro ²
Windows 11 Pro Education ²
Windows 11 Home – HP recommends Windows 11 Pro for business ²
Windows 11 Home Single Language – HP recommends Windows 11 Pro for business ²
Windows 10 Pro ^{1,2}
Windows 10 Pro Education ^{1,2}
Windows 10 Home – HP recommends Windows 11 Pro for business ^{1,2}
Windows 10 Home Single Language – HP recommends Windows 11 Pro for business ^{1,2}
FreeDOS

1. Device comes with Windows 10 and a free Windows 11 upgrade or may be preloaded with Windows 11. Upgrade timing may vary by device. Features and app availability may vary by region. Certain features require specific hardware (see Windows 11 Specifications).

2. 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 is automatically updated and enabled. High speed internet and Microsoft account required. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com>.

PROCESSORS

Intel® Core™ i7-1165G7 processor (2.8 GHz base frequency, up to 4.7 GHz frequency with Intel® Turbo Boost Technology, 12 MB cache, 4 cores) ^{3,4,5,6}
Intel® Core™ i5-1135G7 processor (2.4 GHz base frequency, up to 4.2 GHz frequency with Intel® Turbo Boost Technology, 8 MB cache, 4 cores) ^{3,4,5,6}
Intel® Core™ i3-1115G4 processor with Intel® UHD Graphics (3.0 GHz base frequency, up to 4.1 GHz frequency with Intel® Turbo Boost Technology, 6 MB cache, 2 cores) ^{3,4,5,6}
Intel® Core™ i7-1065G7 (1.3 GHz base frequency, up to 3.9 GHz with Intel® Turbo Boost Technology, 8 MB cache, 4 cores) ^{3,4,5,6}
Intel® Core™ i5-1035G1 processor with Intel® UHD Graphics (1.0 GHz base frequency, up to 3.6 GHz with Intel® Turbo Boost Technology, 6 MB cache, 4 cores) ^{3,4,5,6}
Intel® Core™ i3-1005G1 processor with Intel® UHD Graphics (1.2 GHz base frequency, up to 3.4GHz with Intel® Turbo Boost Technology, 4 MB cache, 2 cores) ^{3,4,5,6}
Intel Core™ i3 – 1125G4 processor with Intel® UHD Graphics (2.0 GHz base frequency, up to 3.7 GHz frequency with Intel® Turbo Boost Technology, 8 MB cache, 4 cores) ^{3,4,5,6}
Intel® Pentium® Silver N5030 Processor with Intel® UHD Graphics 605 (1.1 GHz base frequency, up to 3.1 GHz burst frequency, 4 MB cache, 4 cores) ^{3,4,6}
Intel® Celeron® N4020 Processor with Intel® UHD Graphics 600 (1.1 GHz base frequency, up to 2.8 GHz burst frequency, 4 MB cache, 2 cores) ^{3,4,6}
Intel® Pentium® Gold 7505 Processor with Intel® UHD Graphics (2.0 GHz base frequency, up to 3.5 GHz Standard, 4 MB cache, 2 cores) ^{3,4,6}
Intel® Celeron® N4120 Processor with Intel® UHD Graphics 600 (1.1 GHz base frequency, up to 2.6 GHz burst frequency, 4 MB cache, 4 cores) ^{3,4,6}

Processors Family

11th Generation Intel® Core™ i7 processor (i7-1165G7) ⁷

11th Generation Intel® Core™ i5 processor (i5-1135G7) ⁷



Technical Specifications

11th Generation Intel® Core™ i3 processor (i3-1115G4) ⁷
10th Generation Intel® Core™ i7 processor (i7-1065G7) ⁷
10th Generation Intel® Core™ i5 processor (i5-1035G1) ⁷
10th Generation Intel® Core™ i3 processor (i3-1005G1) ⁷
Intel® Pentium® Silver Processor (N5030) ⁷
Intel® Pentium® Gold Processor (7505) ⁷
Intel® Celeron® processor (N4020) ⁷
Intel® Celeron® processor (4120) ⁷

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

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

5. Intel® Turbo Boost performance varies depending on hardware, software and overall system configuration. See www.intel.com/technology/turboboost for more information.

6. AMD Max Boost frequency performance varies depending on hardware, software and overall system configuration.

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

CHIPSET

Chipset is integrated with processor

GRAPHICS

Integrated

Intel® Iris® Xe Graphics³³
Intel® Iris® Plus graphics³³
Intel® UHD Graphics
Intel® UHD Graphics 605
Intel® UHD Graphics 600

Discrete

NVIDIA® GeForce® MX130 (2 GB DDR5 dedicated) ⁹
NVIDIA® GeForce® MX330 (2 GB DDR5 dedicated) ⁹
NVIDIA® GeForce® MX350 (2 GB DDR5 dedicated) ⁹

Supports

Support HD decode, DX12, HDMI 1.4b ⁸

8. HD content required to view HD images.

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

33. Intel® Iris® Xe Graphics capabilities require system to be configured with Intel® Core™ i5 or i7 processors and dual channel memory. Intel® Iris® Xe Graphics with Intel® Core™ i5 or 7 processors and single channel memory will only function as UHD graphics.



Technical Specifications

DISPLAYS

Non-Touch

39.6 cm (15.6") diagonal, HD (1366 x 768), SVA, Anti-Glare WLED, 250nits, eDP micro-edge, 45% NTSC ^{8,10,11}
39.6 cm (15.6") diagonal, FHD (1920 x 1080), IPS, Anti-Glare WLED, 250nits eDP micro-edge, 45% NTSC ^{8,10,11}
39.6 cm (15.6") diagonal, FHD (1920 x 1080), SVA, Anti-Glare WLED, 250nits eDP micro-edge, 45% NTSC ^{8,10,11}

HDMI

Port supports resolutions up to 1920 x 1080 external resolution @60 Hz

8. HD content required to view HD images.

10. Sold separately or as an optional feature.

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

STORAGE AND DRIVES

Primary Storage

2 TB 5400 rpm SATA ¹²
1 TB 5400 rpm SATA ¹²
500 GB 7200 rpm SATA ¹²
500 GB 5400 rpm SATA ¹²

Primary M.2 Storage

128 GB M.2 SATA-3 TLC Solid State Drive ¹²
256 GB M.2 SATA-3 TLC Solid State Drive ¹²
256 GB PCIe® NVMe™ M.2 Value Solid State Drive ¹²
512 GB PCIe® NVMe™ M.2 Value Solid State Drive ¹²
512 GB PCIe® NVMe™ M.2 TLC Solid State Drive ¹²
1 TB PCIe® NVMe™ M.2 Value Solid State Drive ¹²
256 GB Intel® PCIe® NVMe™ QLC M.2 SSD with 16 GB Intel® Optane™ memory H10 ^{12,13,14}
512 GB Intel® PCIe® NVMe™ QLC M.2 SSD with 32 GB Intel® Optane™ memory H10 ^{12,13,14}
2 TB 5400 rpm SATA with 16 GB Intel® Optane™ memory ^{12,13}
1 TB 5400 rpm SATA with 16 GB Intel® Optane™ memory ^{12,13}

Dual Storage ³⁵

128 GB M.2 SATA-3 TLC Solid State Drive + 1 TB 5400rpm SATA ¹²
256 GB PCIe® NVMe™ M.2 Value Solid State Drive + 1 TB 5400rpm SATA 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.

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

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

35. GML-R don't support dual storage due to design limitation.



Technical Specifications

MEMORY

Maximum Memory

16 GB DDR4-3200 SDRAM¹⁵

Memory

16 GB DDR4-3200 SDRAM (2 x 8 GB)¹⁵

16 GB DDR4-2666 SDRAM (2 X 8 GB)¹⁵

12 GB DDR4-3200 SDRAM (4 GB (1 x 4 GB) and 8 GB (1 x 8 GB))¹⁵

12 GB DDR4-2666 SDRAM (4 GB (1 x 4 GB) and 8 GB (1 x 8 GB))¹⁵

8 GB DDR4-3200 SDRAM (1 x 8 GB)¹⁵

8 GB DDR4-2666 SDRAM (1 x 8 GB)¹⁵

8 GB DDR4-2400 SDRAM (1 x 8 GB)¹⁵

8 GB DDR4-3200 SDRAM (2 x 4 GB)¹⁵

8 GB DDR4-2666 SDRAM (2 x 4 GB)¹⁵

4 GB DDR4-3200 SDRAM (1 x 4 GB)¹⁵

4 GB DDR4-2666 SDRAM (1 x 4 GB)¹⁵

4 GB DDR4-2400 SDRAM (1 x 4 GB)¹⁵

Memory Slots

DDR4 SODIMMS, system runs at 2666³⁴

2 SODIMM (select models)

Supports Dual Channel Memory

1 SODIMM

Support Single Channel Memory

NOTE: All slots are customer non-accessible / non-upgradeable

15. Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed.

34. DDR4 3200 bridges to DDR4 2666.

Technical Specifications

NETWORKING/COMMUNICATIONS

WLAN

Realtek RTL8822CE 802.11ac 2x2 Wi-Fi® + Bluetooth® 5 ¹⁶

Realtek RTL8822CE 802.11a/b/g/n/ac (1x1) Wi-Fi® with Bluetooth® 4.2 Combo ¹⁶

Intel® Dual Band Wi-Fi 6 AX201 802.11a/b/g/n/ac/ax (2x2) WLAN and Bluetooth® 5 Combo, non-vPro® ¹⁷

Miracast

Compatible with Miracast-certified devices (For Win10) ¹⁸

Ethernet

Realtek 10/100/1000 GbE NIC ¹⁹

16. Wi-Fi supporting gigabit speeds (802.11ac) is achievable when transferring files between two devices connected to the same router. Requires a wireless router, sold separately, that supports 160MHz channels.

17. 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.

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

19. The term "10/100/1000" or "Gigabit" Ethernet indicates compatibility with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

AUDIO/MULTIMEDIA

Audio

2 Integrated stereo speakers

Integrated dual digital microphone

Camera

HP TrueVision HD Camera ⁸

8. HD content required to view HD images.



Technical Specifications

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard

Full Size Textured island-style Keyboard

Pointing Device

Touchpad with multi-touch gesture support (PTP certified)

Function Keys

F1 - Open " How to get help in Windows 10" webpage

F2 - Brightness Down

F3 - Brightness Up

F4 - Display Switching

F5 - Blank

F6 - Mute

F7 - Volume Down

F8 -Volume Up

F9 - Previous

F10 - Play/Pause

F11 - Next

F12 - Airplane mode

SOFTWARE AND SECURITY

Preinstalled Software**Software**

HP Support Assistant ²⁰

Native Miracast Support ²¹

HP documentation

HP Setup Integrated OOBE

HP SSRM

HP Audio Switch

HP JumpStarts

McAfee LiveSafe™ ¹⁹

Xerox® DocuShare® 30 day free trial offer³⁰

HP QuickDrop

HP Smart Support ³¹

Security Management

Firmware TPM 2.0 ²²

Fingerprint Reader (Select models)

19. 30 days free trial

20. HP Support Assistant requires Windows and Internet access.

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

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

30. Simply sign up and start using Xerox® DocuShare® Go. No credit card. No obligation. Data will become unavailable unless a subscription is entered before the end of the 30 day free trial period. See visit <http://www.xerox.com/docusharego> for details.

31. HP Smart Support is available to commercial customers through your HP Service Representative and HP Factory Configuration Services; or it can be downloaded at: <http://www.hp.com/smart-support>. HP Smart Support automatically



Technical Specifications

collects the telemetry necessary upon initial boot of the product to deliver device-level configuration data and health insights.

POWER

Power Supply

HP Smart 65 W External AC power adapter ²³
HP Smart 65 W EM External AC power adapter ²³
HP Smart 45 W External AC power adapter ²³

Primary Battery

HP Long Life 3-cell, 41 Wh Li-ion (Polymer) ^{24, 32}

Power Cord

1M (3.28 feet) length power cord

MM18 Battery life

Up to 9 hours and 45 minutes ²⁵

Battery Weight

0.19 kg
0.42 lb

23. Availability may vary by country.

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

25. 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.

32. 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.

Technical Specifications

WEIGHTS & DIMENSIONS

Product Weight ²⁶

Starting at 3.84 lb

Starting at 1.74 kg

Product Dimensions (w x d x h)

14.09 x 9.53 x 0.78 in

35.8 x 24.2 x 1.99 cm

26. Weight will vary by configuration. Does not include power adapter.

PORTS/SLOTS

Ports2 SuperSpeed USB Type-A 5Gbps signaling rate (USB 3.2 Gen 1) ²⁷1 SuperSpeed USB Type-C[®] 5Gbps signaling rate²⁷ (Data Transfer Only)1 HDMI v1.4b ²⁸

1 RJ-45

1 AC Power

1 Headphone/microphone combo jack

Expansion Slots

Support SD/SDHC/SDXC

1 Multi-format digital media reader

27. SuperSpeed USB 20Gbps is not available.

28. HDMI cable sold separately.

SERVICE AND SUPPORT

1-year limited warranty and 90 day software limited warranty options depending on country. Batteries have a default one year limited warranty. 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>. ²⁹

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



Technical Specifications

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)

| | |
|---------------------------|----------------------------------|
| Nominal Operating Voltage | 19.5 V |
| Average Operating Power | TBD |
| Integrated graphics | 6.37W |
| Discrete Graphics | N/A (Switchable graphics design) |
| Max Operating Power | Discrete < 65W UMA < 45W |

Temperature

| | |
|---------------|--|
| Operating | 32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical) |
| Non-operating | -4° to 140° F (-20° to 60° C) |

Relative Humidity

| | |
|---------------|----------------------------|
| Operating | 10% to 90%, non-condensing |
| Non-operating | 5% to 95% |

Shock

| | |
|---------------|------------------------|
| Operating | 40 G, 2 ms, half-sine |
| Non-operating | 240 G, 2 ms, half-sine |

Random Vibration

| | |
|---------------|------------|
| Operating | 1.043 grms |
| Non-operating | 3.5 grms |

Altitude (unpressurized)

| | |
|---------------|---------------------------------------|
| Operating | -15 m to 3048 m (-50 ft to 10000 ft) |
| Non-operating | -15 m to 12192 m (-50 ft to 40000 ft) |

Planned Industry Standard Certifications

| | |
|-------------------------|-----|
| UL | Yes |
| CSA | No |
| FCC Compliance | Yes |
| ENERGY STAR® | Yes |
| EPEAT® | Yes |
| ICES | Yes |
| Australia / | Yes |
| NZ A – Tick Compliance | Yes |
| CCC | Yes |
| Japan VCCI Compliance | Yes |
| KC | Yes |
| BSMI | Yes |
| CE Marketing Compliance | Yes |
| BNCI or BELUS | Yes |
| CIT | Yes |
| GOST | Yes |



Technical Specifications

| | |
|---------------------------------|-----|
| Saudi Arabian Compliance (ICCP) | Yes |
| SABS | Yes |
| UKRSERTCOMPUTER | Yes |

DISPLAYS

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

| | | |
|--|---------------------------------------|--|
| Panel LCD 15.6 inch FHD (1920x1080) Anti-Glare WLED UWVA 45percent cg 250nits eDP 1.2 w/o PSR slim NWBZ | Outline Dimensions (W x H x D) | 350.96 x 216.75 (max.) x 3.2 (max.) mm |
| | Active Area | 344.16 x 193.59 mm |
| | Weight | 370g max. |
| | Diagonal Size | 15.6" |
| | Surface Treatment | AG |
| | Touch enabled | None |
| | Contrast Ratio | 600:1 (typ.) |
| | Refresh Rate | 60Hz |
| | Brightness | 250nits typ. |
| | Pixel Resolution | |
| | Configuration | 1920 x 1080 (FHD) |
| | Interface | eDP 1.2 w/o PSR |
| | LCD Mode | IPS/PLS/AHVA |
| | PPI | 142 |
| | Viewing Angle | UWVA 85/85/85/85 |

| | | |
|--|---------------------------------------|--|
| Panel LCD 15.6-in FHD (1920x1080) Anti-Glare WLED SVA 45percent cg 250nits eDP 1.2 w/o PSR NWBZ ultraslim | Outline Dimensions (W x H x D) | 350.96 x 216.75 (max.) x 3.2 (max.) mm |
| | Active Area | 344.16 x 193.59 mm |
| | Weight | 360g max. |
| | Diagonal Size | 15.6" |
| | Surface Treatment | AG |
| | Touch enabled | None |
| | Contrast Ratio | 300:1 (typ.) |
| | Refresh Rate | 60Hz |
| | Brightness | 250nits typ. |
| | Pixel Resolution | |
| | Configuration | 1920 x 1080 (FHD) |
| | Interface | eDP 1.2 w/o PSR |
| | LCD Mode | TN |
| | PPI | 142 |
| | Viewing Angle | UWVA 45/45/15/35 |



Technical Specifications

| | | |
|--|---------------------------------------|--|
| Panel LCD 15.6-in HD (1366x768) Anti-Glare WLED SVA 45percent cg 250nits eDP 1.2 w/o PSR NWBZ ultraslim | Outline Dimensions (W x H x D) | 351.03 x 216.75 (max.) x 3.2 (max.) mm |
| | Active Area | 344.23 x 193.54 mm |
| | Weight | 360g max. |
| | Diagonal Size | 15.6" |
| | Surface Treatment | AG |
| | Touch enabled | None |
| | Contrast Ratio | 300:1 (typ.) |
| | Refresh Rate | 60Hz |
| | Brightness | 250nits typ. |
| | Pixel Resolution | |
| | Configuration | 1366 x 768 (HD) |
| | Interface | eDP 1.2 w/o PSR |
| | LCD Mode | TN |
| | PPI | 101 |
| | Viewing Angle | UWVA 40/40/15/30 |

Technical Specifications

STORAGE AND DRIVES*

* 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.

| | | |
|---|---------------------------------|---|
| HDD 1TB 5400RPM 7mm SATA (HDD 1TB 5400RPM 2.5in) | Drive Weight | 0.21 lbs (95 g) |
| | Capacity | 1TB |
| | Height | 0.28 in (7 mm) |
| | Width | 2.75 in (69.85 mm) |
| | Interface | ATA-8, SATA 3.0 |
| | Maximum Sequential Read | Up to 100 MB/s |
| | Maximum Sequential Write | Up to 100 MB/s |
| | Logical Blocks | 1,953,525,168 |
| | Operating Temperature | 32° to 140° F (0° to 60° C) [case temp] |
| | Features | S.M.A.R.T., NCQ, Ultra DMA |

| | | |
|--|---------------------------------|---|
| HDD 2TB 5400RPM 7mm SATA 2.5in (HDD 2TB 5400RPM SATA 2.5in 2nd) | Drive Weight | 0.21 lbs (95 g) |
| | Capacity | 2TB |
| | Height | Up to 128MB |
| | Width | 0.28 in (7 mm) |
| | Interface | 2.75 in (69.85 mm) |
| | Maximum Sequential Read | Up to 100 MB/s |
| | Maximum Sequential Write | Up to 100 MB/s |
| | Logical Blocks | 3,907,029,168 |
| | Operating Temperature | 32° to 140° F (0° to 60° C) [case temp] |
| | Features | S.M.A.R.T., NCQ, Ultra DMA |

| | | |
|---------------------------------------|---------------------------------|---|
| HDD 500GB 5400RPM 7mm SATA | Drive Weight | 0.21 lbs (95 g) |
| | Capacity | 500GB |
| | Height | 0.28 in (7 mm) |
| | Width | 2.75 in (69.85 mm) |
| | Interface | ATA-8, SATA 3.0 |
| | Maximum Sequential Read | Up to 100 MB/s |
| | Maximum Sequential Write | Up to 100 MB/s |
| | Logical Blocks | 976,773,168 |
| | Operating Temperature | 32° to 140° F (0° to 60° C) [case temp] |
| | Features | S.M.A.R.T., NCQ, Ultra DMA |

Technical Specifications

| | | |
|---|---------------------------------|---|
| HDD 500GB 7200RPM 7mm SATA (HDD 500GB 7200RPM 2.5in) | Drive Weight | 0.21 lbs (95 g) |
| | Capacity | 500GB |
| | Height | 0.28 in (7 mm) |
| | Width | 2.75 in (69.85 mm) |
| | Interface | ATA-8, SATA 3.0 |
| | Maximum Sequential Read | Up to 120 MB/s |
| | Maximum Sequential Write | Up to 120 MB/s |
| | Logical Blocks | 976,773,168 |
| | Operating Temperature | 32° to 140° F (0° to 60° C) [case temp] |
| | Features | S.M.A.R.T., NCQ, Ultra DMA |

| | | |
|--|---------------------------------|--|
| SSD 128GB 2280 M2 SATA-3 TLC (SSD 128GB 2280 M2 SATA-3 TLC) | Drive Weight | 0.01 lb (6 g) ~ 0.02 lb (10 g) |
| | Capacity | 128 GB |
| | Height | 0.09 in (2.3 mm) |
| | Width | 0.87 in (22 mm) |
| | Interface | ATA-8, SATA 3.0 |
| | Maximum Sequential Read | Up to 100MB/s |
| | Maximum Sequential Write | Up to 400MB/s |
| | Logical Blocks | 250,069,680 |
| | Operating Temperature | 32° to 158°F (0° to 70°C) [ambient temp] |
| | Features | DIPM; TRIM; DEVSLP |

| | | |
|--|---------------------------------|--|
| SSD 1TB 2280 PCIe NVMe Value (SSD 1TB 2280 PCIe NVMe Value) | Drive Weight | 0.01 lb (6 g) ~ 0.02 lb (10 g) |
| | Capacity | 1TB |
| | Height | 0.09 in (2.3 mm) |
| | Width | 0.87 in (22 mm) |
| | Interface | PCIe NVMe Gen3X2 |
| | Maximum Sequential Read | Up to 1500MB/s |
| | Maximum Sequential Write | Up to 750MB/s |
| | Logical Blocks | 2,000,409,264 |
| | Operating Temperature | 32° to 158°F (0° to 70°C) [ambient temp] |
| | Features | L1.2 |

Technical Specifications

| | | |
|--|---------------------------------|--|
| SSD 16GB 2280 PCIe-3x2 NVMe 3D Xpoint (SSD 16GB 2280 PCIe-3x2 NVMe 3D Xpoint) | Drive Weight | 0.01 lb (6 g) ~ 0.02 lb (10 g) |
| | Capacity | 16GB |
| | Height | 0.09 in (2.3 mm) |
| | Width | 0.87 in (22 mm) |
| | Interface | PCIe NVMe Gen3X2 |
| | Maximum Sequential Read | 900MB/s |
| | Maximum Sequential Write | 145MB/s |
| | Logical Blocks | 28,181,188 |
| | Operating Temperature | 32° to 158°F (0° to 70°C) [ambient temp] |
| | Features | TRIM, L1.2 |

| | | |
|---|---------------------------------|--|
| SSD 256GB 2280 M2 SATA-3 TLC (SSD 256GB 2280 M2 SATA-3 Three Layer Cell) | Drive Weight | 0.01 lb (6 g) ~ 0.02 lb (10 g) |
| | Capacity | 256GB |
| | Height | 0.09 in (2.3 mm) |
| | Width | 0.87 in (22 mm) |
| | Interface | PCIe NVMe Gen3X2 |
| | Maximum Sequential Read | Up to 2900 MB/s |
| | Maximum Sequential Write | Up to 1100 MB/s |
| | Logical Blocks | 500,118,191 |
| | Operating Temperature | 32° to 158°F (0° to 70°C) [ambient temp] |
| | Features | DIPM; TRIM; DEVSLP |

| | | |
|--|---------------------------------|--|
| SSD 256GB 2280 PCIe NVMe Value (SSD 256GB 2280 PCIe NVMe Value) | Drive Weight | 0.01 lb (6 g) ~ 0.02 lb (10 g) |
| | Capacity | 256GB |
| | Height | 0.09 in (2.3 mm) |
| | Width | 0.87 in (22 mm) |
| | Interface | PCIe NVMe Gen3X2 |
| | Maximum Sequential Read | Up to 1500MB/s |
| | Maximum Sequential Write | Up to 750MB/s |
| | Logical Blocks | 500,118,192 |
| | Operating Temperature | 32° to 158°F (0° to 70°C) [ambient temp] |
| | Features | TRIM, L1.2 |



Technical Specifications

| | | |
|---|---------------------------------|--|
| SSD 256GB 2280 PCIe-3x2x2 NVMe+SSD 16GB 3D Xpoint (SSD 256GB 2280 PCIe-3x2x2 NVMe +SSD 16GB 3D Xpoint) | Drive Weight | 0.01 lb (6 g) ~ 0.02 lb (10 g) |
| | Capacity | 256GB |
| | Height | 0.09 in (2.3 mm) |
| | Width | 0.87 in (22 mm) |
| | Interface | PCIe NVMe Gen3X2 |
| | Maximum Sequential Read | 1450MB/s |
| | Maximum Sequential Write | 500MB/s |
| | Logical Blocks | 500,188,192 |
| | Operating Temperature | 32° to 158°F (0° to 70°C) [ambient temp] |
| | Features | TRIM, L1.2 |

| | | |
|--|---------------------------------|--|
| SSD 512GB 2280 M2 PCIe-3x4 SS NVMe TLC (SSD 512GB M.2 2280 PCIe NVMe Three Layer Cell w/Caddy 2nd) | Drive Weight | 0.01 lb (6 g) ~ 0.02 lb (10 g) |
| | Capacity | 512GB |
| | Height | 0.09 in (2.3 mm) |
| | Width | 0.87 in (22 mm) |
| | Interface | PCIe NVMe Gen3X2 |
| | Maximum Sequential Read | Up to 3000MB/s |
| | Maximum Sequential Write | Up to 150MB/s |
| | Logical Blocks | 1,000,215,216 |
| | Operating Temperature | 32° to 158°F (0° to 70°C) [ambient temp] |
| | Features | TRIM, L1.2 |

| | | |
|--|---------------------------------|--|
| SSD 512GB 2280 PCIe NVMe Value (SSD 512GB 2280 PCIe NVMe Value) | Drive Weight | 0.01 lb (6 g) ~ 0.02 lb (10 g) |
| | Capacity | 512GB |
| | Height | 0.09 in (2.3 mm) |
| | Width | 0.87 in (22 mm) |
| | Interface | PCIe NVMe Gen3X2 |
| | Maximum Sequential Read | Up to 1500MB/s |
| | Maximum Sequential Write | Up to 750MB/s |
| | Logical Blocks | 1,000,215,216 |
| | Operating Temperature | 32° to 158°F (0° to 70°C) [ambient temp] |
| | Features | TRIM, L1.2 |



Technical Specifications

| | | |
|--|---------------------------------|--|
| SSD 512GB 2280 PCIe NVMe Value (SSD 512GB 2280 PCIe NVMe Value) | Drive Weight | 0.01 lb (6 g) ~ 0.02 lb (10 g) |
| | Capacity | 512GB |
| | Height | 0.09 in (2.3 mm) |
| | Width | 0.87 in (22 mm) |
| | Interface | PCIe NVMe Gen3X2 |
| | Maximum Sequential Read | Up to 1500MB/s |
| | Maximum Sequential Write | Up to 750MB/s |
| | Logical Blocks | 1,000,215,216 |
| | Operating Temperature | 32° to 158°F (0° to 70°C) [ambient temp] |
| | Features | TRIM, L1.2 |

| | | |
|---|---------------------------------|--|
| SSD 512GB 2280 PCIe-3x2x2 NVMe+SSD 32GB 3D Xpoint (SSD 512GB 2280 PCIe-3x2x2 NVMe +SSD 32GB 3D Xpoint) | Drive Weight | 0.01 lb (6 g) ~ 0.02 lb (10 g) |
| | Capacity | 512GB |
| | Height | 0.09 in (2.3 mm) |
| | Width | 0.87 in (22 mm) |
| | Interface | PCIe NVMe Gen3X2 |
| | Maximum Sequential Read | 2400MB/s |
| | Maximum Sequential Write | 1300MB/s |
| | Logical Blocks | 1,000,215,215 |
| | Operating Temperature | 32° to 158°F (0° to 70°C) [ambient temp] |
| | Features | TRIM, L1.2 |

Technical Specifications

NETWORKING/COMMUNICATIONS

| | | |
|---|------------------------------------|--|
| Intel® Wi-Fi 6 AX201 + Bluetooth® 5 (802.11ax 2x2, non-vPro®, supporting gigabit file transfer speeds) non-vPro®^{1,2} | Wireless LAN Standards | IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac IEEE 802.11ax IEEE 802.11d IEEE 802.11e IEEE 802.11h IEEE 802.11i IEEE 802.11k IEEE 802.11r IEEE 802.11v |
| | Interoperability | Features Wi-Fi® 6 technology |
| | Frequency Band | <ul style="list-style-type: none"> • 802.11b/g/n/ax 2.402 – 2.482 GHz • 802.11a/n/ac/ax 4.9 – 4.95 GHz (Japan) 5.15 – 5.25 GHz 5.25 – 5.35 GHz 5.47 – 5.725 GHz 5.825 – 5.850 GHz |
| | Data Rates | <ul style="list-style-type: none"> • 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) • 802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, ,80MHz & 160MHz) • 802.11ax: MCS0 ~ MCS11, (1SS and 2SS) (20MHz, 40MHz, ,80MHz & 160MHz) |
| | Modulation | Direct Sequence Spread Spectrum OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM |
| | Security³ | <ul style="list-style-type: none"> • IEEE compliant 64 /128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware • 802.1x authentication • WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification • IEEE 802.11i • WAPI |
| | Network Architecture Models | Ad-hoc (Peer to Peer) Infrastructure (Access Point Required) |
| | Roaming | IEEE 802.11 compliant roaming between access points |
| | Output Power⁴ | <ul style="list-style-type: none"> • 802.11b: +18.5dBm minimum • 802.11g: +17.5dBm minimum • 802.11a: +18.5dBm minimum |



Technical Specifications

| | | | | | |
|---|--|------------------|-------------------------------|----------------------|--------------------------------|
| | <ul style="list-style-type: none"> • 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 Sensitivity⁵ | <ul style="list-style-type: none"> • 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 | <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 | <ol style="list-style-type: none"> 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 | <ol style="list-style-type: none"> 1. Type 2230: 2.8 g 2. Type 126: 1.3 g | | | | |
| Operating Voltage | 3.3v +/- 9% | | | | |
| Temperature | <table border="0"> <tbody> <tr> <td>Operating</td> <td>14° to 158° F (-10° to 70° C)</td> </tr> <tr> <td>Non-operating</td> <td>-40° to 176° F (-40° to 80° C)</td> </tr> </tbody> </table> | Operating | 14° to 158° F (-10° to 70° C) | Non-operating | -40° to 176° F (-40° to 80° C) |
| Operating | 14° to 158° F (-10° to 70° C) | | | | |
| Non-operating | -40° to 176° F (-40° to 80° C) | | | | |
| Humidity | <table border="0"> <tbody> <tr> <td>Operating</td> <td>10% to 90% (non-condensing)</td> </tr> <tr> <td>Non-operating</td> <td>5% to 95% (non-condensing)</td> </tr> </tbody> </table> | Operating | 10% to 90% (non-condensing) | Non-operating | 5% to 95% (non-condensing) |
| Operating | 10% to 90% (non-condensing) | | | | |
| Non-operating | 5% to 95% (non-condensing) | | | | |
| Altitude | <table border="0"> <tbody> <tr> <td>Operating</td> <td>0 to 10,000 ft (3,048 m)</td> </tr> <tr> <td>Non-operating</td> <td>0 to 50,000 ft (15,240 m)</td> </tr> </tbody> </table> | Operating | 0 to 10,000 ft (3,048 m) | Non-operating | 0 to 50,000 ft (15,240 m) |
| Operating | 0 to 10,000 ft (3,048 m) | | | | |
| Non-operating | 0 to 50,000 ft (15,240 m) | | | | |
| LED Activity | <p>LED Amber – Radio OFF</p> <p>LED Off – Radio ON</p> | | | | |



Technical Specifications

1. 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.
2. Wi-Fi 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
3. Check latest software/driver release for updates on supported security features.
4. 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.
5. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

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

| | |
|-------------------------------------|--|
| Bluetooth Specification | 4.0/4.1/4.2/5.0/5.1 Compliant |
| Frequency Band | 2402 to 2480 MHz |
| Number of Available Channels | Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH) |
| Signaling Data Rate | Legacy: 3 Mbps signaling data rate ⁶ 2.17 Mbps BLE: 1 Mbps signaling data rate ⁶ 0.2 Mbps 6. 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. |



Technical Specifications

| | | |
|---|--|---|
| Realtek 802.11a/b/g/n/ac (1x1) Wi-Fi® and Bluetooth® 4.2 Combo¹ | Wireless LAN Standards | IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac IEEE 802.11d IEEE 802.11e IEEE 802.11h IEEE 802.11i IEEE 802.11k IEEE 802.11r IEEE 802.11v |
| | Interoperability | Wi-Fi certified modules |
| | Frequency Band | 802.11b/g/n <ul style="list-style-type: none"> • 2.402 – 2.482 GHz 802.11a/n/ac <ul style="list-style-type: none"> • 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 |
| | Security² | <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 • WAPI |
| | Network Architecture Models | Ad-hoc (Peer to Peer) Infrastructure (Access Point Required) |
| | Roaming | IEEE 802.11 compliant roaming between access points |
| | Output Power³ | <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 mode: 2.0 W |



Technical Specifications

| | | | | | |
|---|--|------------------|-------------------------------|----------------------|--------------------------------|
| | <ul style="list-style-type: none"> • 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 | <ul style="list-style-type: none"> • 802.11 b, 1Mbps: -93.5dBm maximum • 802.11 b, 11Mbps: -84dBm maximum • 802.11 a/g, 6Mbps: -86dBm maximum • 802.11 a/g, 54Mbps: -72dBm maximum • 802.11 n, MCS07: -67dBm maximum • 802.11 n, MCS15: -64dBm maximum • 802.11 ac, MCS0: -84dBm maximum • 802.11 ac, 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 | <table border="0"> <tr> <td>Operating</td> <td>14° to 158° F (-10° to 70° C)</td> </tr> <tr> <td>Non-operating</td> <td>-40° to 176° F (-40° to 80° C)</td> </tr> </table> | Operating | 14° to 158° F (-10° to 70° C) | Non-operating | -40° to 176° F (-40° to 80° C) |
| Operating | 14° to 158° F (-10° to 70° C) | | | | |
| Non-operating | -40° to 176° F (-40° to 80° C) | | | | |
| Humidity | <table border="0"> <tr> <td>Operating</td> <td>10% to 90% (non-condensing)</td> </tr> <tr> <td>Non-operating</td> <td>5% to 95% (non-condensing)</td> </tr> </table> | Operating | 10% to 90% (non-condensing) | Non-operating | 5% to 95% (non-condensing) |
| Operating | 10% to 90% (non-condensing) | | | | |
| Non-operating | 5% to 95% (non-condensing) | | | | |
| Altitude | <table border="0"> <tr> <td>Operating</td> <td>0 to 10,000 ft (3,048 m)</td> </tr> <tr> <td>Non-operating</td> <td>0 to 50,000 ft (15,240 m)</td> </tr> </table> | Operating | 0 to 10,000 ft (3,048 m) | Non-operating | 0 to 50,000 ft (15,240 m) |
| Operating | 0 to 10,000 ft (3,048 m) | | | | |
| Non-operating | 0 to 50,000 ft (15,240 m) | | | | |
| LED Activity | LED Amber – Radio OFF LED Off – Radio ON | | | | |

1. 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. Check latest software/driver release for updates on supported security features.
3. 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.
4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11 b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

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

Bluetooth Specification 4.0/4.1/4.2 Compliant



Technical Specifications

| | |
|-------------------------------------|--|
| 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. |

**Realtek RTL8822CE
802.11ac 2x2 Wi-Fi®+
Bluetooth® 5¹**

| | |
|-------------------------------|--|
| Wireless LAN Standards | IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac IEEE 802.11d IEEE 802.11e IEEE 802.11h IEEE 802.11i IEEE 802.11k IEEE 802.11r IEEE 802.11v |
| Interoperability | Wi-Fi certified modules |
| 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, and 80MHz) |
| Modulation | Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM |
| Security² | • 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. |



Technical Specifications

| | | | | | |
|---|---|------------------|-------------------------------|----------------------|--------------------------------|
| | <ul style="list-style-type: none"> • WPA2 certification • IEEE 802.11i • WAPI | | | | |
| Network Architecture | Ad-hoc (Peer to Peer) | | | | |
| Models | Infrastructure (Access Point Required) | | | | |
| Roaming | IEEE 802.11 compliant roaming between access points | | | | |
| Output Power³ | <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 | | | | |
| 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 | <ul style="list-style-type: none"> • 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 | <ol style="list-style-type: none"> 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 | <ol style="list-style-type: none"> 1. Type 2230 : 2.8g 2. Type 126: 1.3g | | | | |
| Operating Voltage | 3.3v +/- 9% | | | | |
| Temperature | <table> <tr> <td>Operating</td> <td>14° to 158° F (-10° to 70° C)</td> </tr> <tr> <td>Non-operating</td> <td>-40° to 176° F (-40° to 80° C)</td> </tr> </table> | Operating | 14° to 158° F (-10° to 70° C) | Non-operating | -40° to 176° F (-40° to 80° C) |
| Operating | 14° to 158° F (-10° to 70° C) | | | | |
| Non-operating | -40° to 176° F (-40° to 80° C) | | | | |
| Humidity | <table> <tr> <td>Operating</td> <td>10% to 90% (non-condensing)</td> </tr> <tr> <td>Non-operating</td> <td>5% to 95% (non-condensing)</td> </tr> </table> | Operating | 10% to 90% (non-condensing) | Non-operating | 5% to 95% (non-condensing) |
| Operating | 10% to 90% (non-condensing) | | | | |
| Non-operating | 5% to 95% (non-condensing) | | | | |
| Altitude | <table> <tr> <td>Operating</td> <td>0 to 10,000 ft (3,048 m)</td> </tr> <tr> <td>Non-operating</td> <td>0 to 50,000 ft (15,240 m)</td> </tr> </table> | Operating | 0 to 10,000 ft (3,048 m) | Non-operating | 0 to 50,000 ft (15,240 m) |
| Operating | 0 to 10,000 ft (3,048 m) | | | | |
| Non-operating | 0 to 50,000 ft (15,240 m) | | | | |



Technical Specifications

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

1. 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. Check latest software/driver release for updates on supported security features.
3. 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.
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).

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. |



Technical Specifications

POWER

| | | |
|---|--------------------------------------|---|
| AC Adapter 45 Watt Smart nPFC Standard Barrel 4.5mm Right Angle 1.8m | Dimensions (H x W x D) | 95.0x40.0x26.5mm |
| | Weight | unit: 200g +/- 10g |
| | Input | Input Efficiency 87.74 % at 115 Vac and 88.4 % at 230Vac |
| | | Input frequency range 47 ~ 63 Hz |
| | | Input AC current Max. 1.4 A at 90 Vac |
| | Output | Output power 45W |
| | | DC output 19.5V |
| | | Hold-up time 5ms at 115 Vac input |
| | | Output current limit <8.0A |
| | Connector | C6 (3pin/with grounded, with Smart ID DC connector) |
| | Environmental Design | Operating temperature 32°F to 95°F (0° to 35°C) |
| | | Non-operating (storage) temperature -4°F to 185°F (-20° to 85°C) |
| | | Altitude 0 to 16,400 ft (0 to 5,000 m) |
| | | Humidity 20% to 95% |
| | | Storage Humidity 10% to 95% |
| | 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. |

| | | |
|---|-----------------------------|---|
| AC Adapter 65 Watt Smart nPFC EM Barrel 4.5mm New EM | Dimensions | 102x55x30mm |
| | Weight | unit: 250g +/- 10g |
| | Input | Input Efficiency 88.0 % at 115 Vac and 89.0 % at 230Vac |
| | | Input frequency range 47 ~ 63 Hz |
| | | Input AC current Max. 1.7 A at 90 Vac |
| | Output | Output power 65W |
| | | DC output 19.5V |
| | | Hold-up time 5ms at 115 Vac input |
| | | Output current limit <11.0A |
| | Connector | C6 (3pin/with grounded, with Smart ID DC connector) |
| | Environmental Design | Operating temperature 32°F to 95°F (0° to 35°C) |
| | | Non-operating (storage) temperature -4°F to 185°F (-20° to 85°C) |
| | | Altitude 0 to 16,400 ft (0 to 5000m) |
| | | Humidity 20% to 95% |



Technical Specifications

| | | |
|--------------------------------------|---|------------|
| EMI and Safety Certifications | Storage Humidity | 10% to 95% |
| | CE Mark - full compliance with LVD and EMC directives Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. MTBF - over 200,000 hours at 25°C ambient condition. | |

| | | | |
|---|---|--|---|
| AC Adapter 65 Watt Smart nPFC Standard Barrel 4.5mm Right Angle 1.8m | Dimensions | 90.0x51x28.5mm | |
| | Weight | unit: 230g +/- 10g | |
| | Input | Input Efficiency | 88.0 % at 115 Vac and 89.0% at 230Vac |
| | | Input frequency range | 47 ~ 63 Hz |
| | | Input AC current | Max. 1.7 A at 90 Vac |
| | Output | Output power | 65W |
| | | DC output | 19.5V |
| | | Hold-up time | 5ms at 115 Vac input |
| | | Output current limit | <11.0A |
| | | Connector | C6 (3pin/with grounded, with Smart ID DC connector) |
| | Environmental Design | Operating temperature | 32°F to 95°F (0°to 35°C) |
| | | Non-operating (storage) temperature | -4°F to 185°F (-20°to 85°C) |
| | | Altitude | 0 to 16,400 ft (0 to 5000m) |
| Humidity | | 20% to 95% | |
| Storage Humidity | | 10% to 95% | |
| EMI and Safety Certifications | CE Mark - full compliance with LVD and EMC directives Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. MTBF - over 200,000 hours at 25°C ambient condition. | | |

Technical Specifications

| | | |
|--|--|---|
| Battery HT 3 Cell 41 Wh Long Life -PR+PL Fast Charge (Battery 3 Cell Wh 41 Long Life -PR+PL Fast) | Dimensions | 6.0mm x 186.85mm x 90.2mm |
| | Weight | 192g |
| | Cells/Type | 3cell Lithium-Ion Prismatic cell / 496080 |
| | Energy | Voltage 11.55V Amp-hour capacity 3615mAh Watt-hour capacity 41Wh |
| | Temperature | Operating (Charging) 0°C ~ 45°C Operating (Discharging) -10°C ~ 60°C |
| | Fuel Gauge LED | N/A |
| | Warranty | 1000 cycles > 65% (at 23°C) |
| | Optional Travel Battery Available | No |

FINGERPRINT READER

| | |
|--|-----------------------------|
| Model | Elan eFSA80ST touch sensor |
| Mobile Voltage Operation | 2.65V to 3.6V |
| Operating Temperature: | 32° to 95° F (0° to 35° C) |
| Current Consumption Image: | 50mA peak |
| Low Latency Wait For Finger | <900 uA |
| Capture Rate: Image transmitter output frequency | 20cm/sec |
| ESD Resistance | IEC 61000-4-2 (+15KV) |
| Detection Matrix | 508 dpi / 4x4mm sensor area |
| FRR (False Reject Rate) / FAR (False Acceptance Rate) | FRR ~ 2% @ 1:50K FAR |

COUNTRY OF ORIGIN

China



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

| Type | Description | Part Number |
|---------------------|--|-------------|
| Cases | HP Prelude Pro Top Load | 1X645AA |
| | HP Prelude Pro Backpack | 1X644AA |
| | HP Prelude Top Load 15.6 | 1E7D7AA |
| | HP Prelude Backpack 15.6 | 1E7D6AA |
| Docking | HP USB-C®/A Universal Dock G2 | 5TW13AA |
| | HP 4.5 mm and USB-C® Dock Adapter G2 | 6LX61AA |
| Input/Output | HP USB Essential Keyboard/Mouse | H6L29AA |
| | HP Wired Desktop 320MK Mouse and Keyboard | 9SR36AA |
| | HP Slim Wireless Keyboard & Mouse | T6L04AA |
| | HP Wired Desktop 320K Keyboard | 9SR37AA |
| | HP Slim Wireless Keyboard (Link-5) | T6U20AA |
| | HP 3-Button USB Laser Mouse | H4B81AA |
| | HP Essential USB Mouse | 2TX37AA |
| | HP USB Travel Mouse | G1K28AA |
| | HP Bluetooth Travel Mouse | 6SP30AA |
| | HP Comfort Grip Wireless Mouse | H2L63AA |
| | HP Wired Desktop 320M Mouse | 9VA80AA |
| | HP HDMI to VGA Adapter | H4F02AA |
| | HP HDMI to DVI | F5A28AA |
| Power | HP 45W Smart AC Adapter | H6Y88AA |
| | HP 65W Smart AC Adapter | H6Y89AA |
| | HP 65W Slim Adapters (w/ detachable DC cable + TIPS) | H6Y82AA |
| Storage | HP External USB Optical Drive | F2B56AA |

Summary of Changes

| Date of change: | Version History: | | Description of change: |
|------------------------|-------------------------|---------|---|
| 4 November 2020 | V1 to V2 | Updated | Removed - Intel® Iris® X ^e Graphics from processor name and added Iris footnote in graphics section |
| December 14, 2020 | V2 to V3 | Updated | USB Information |
| February 25, 2021 | V3 to V4 | Update | Xerox DocuShare offer value |
| March 2, 2021 | V4 to V5 | Added | Fingerprint Reader Specs and update System Unit and At a Glance |
| April 20, 2021 | V5 to V6 | Update | TechSpecs/Memory Modules |
| May 6, 2021 | V6 to V7 | Added | HP Smart Support |
| July 6, 2021 | V7 to V8 | Added | Battery disclaimer |
| October 12, 2021 | V8 to V9 | Updated | Windows 10 with Free upgrade to Windows 11 when available in OS section and footnote. Removed Windows 10 Pro (Windows 10 Enterprise available with a Volume Licensing Agreement) |
| October 15, 2021 | V9 to V10 | Removed | Memory from Options and Accessories section |
| November 2, 2021 | V10 to V11 | Added | At a glance section |
| November 11, 2021 | V11 to V12 | Updated | Processors section |
| December 13, 2021 | V12 to V13 | Updated | OS footnotes and Wi-Fi 6 footnotes |
| April 4, 2022 | V13 to V14 | Added | Memory Slot section and footnote |
| April 26, 2022 | V14 to V15 | Added | Dual Storage footnote |
| | V15 to V16 | | |
| | | | |
| | | | |

Copyright © 2021 HP Development Company, L.P. The only warranties for HP products are set forth in the express limited warranty statements accompanying such products. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Intel®, Core®, and Intel vPro® are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. Bluetooth is a trademark owned by its proprietor and used by HP Inc. under license. USB Type-C® and USB-C® are trademarks of USB Implementers Forum. ENERGY STAR is a registered trademark of the U.S. Environmental Protection Agency. Windows is either a registered trademark or trademark of Microsoft Corporation in the United States and/or other countries.

