

Overview

HP Pro x360 435 13.3 inch G9 Notebook PC



Left

- | | |
|------------------------------------|---|
| 1. Internal Microphones (2) | 7. World-facing Camera (Optional) |
| 2. Webcam LED | 8. World-facing Camera LED (Optional) |
| 3. HP Privacy Camera | 9. Vents |
| 4. Webcam and IR Camera (Optional) | 10. SuperSpeed USB Type-A 5 Gbps signaling rate charging Port (USB 3.2 Gen 1) |
| 5. IR Camera LED (Optional) | 11. Nano Security Lock Slot (Lock Sold Separately) |
| 6. Clickpad | |

Overview



Right

- | | |
|---|---|
| 1. Power Button | 5. HDMI 2.0 Port (Cable not included) |
| 2. Power Connector | 6. Audio Combo Jack |
| 3. SuperSpeed USB Type-C® 10Gbps signaling rate (USB Power Delivery, DisplayPort™ 1.4) ¹ | 7. MicroSD Card reader (Select Models) |
| 4. SuperSpeed USB Type-A 5 Gbps signaling rate Port (USB 3.2 Gen 1) | 8. Touch Fingerprint Sensor (Select models) |

1. SuperSpeed USB 20Gbps is not available.

Overview

AT A GLANCE

- Preinstalled with Windows 11 versions or FreeDOS
- A stylish and professional convertible adapts with versatile use modes from traditional laptop to tablet, stand and tent that enables to create, present and collaborate
- Sleek and durable anodized aluminum top cover and keyboard deck
- Choice of AMD Barcelo™ 5000 series mobile processors, R7, R5 and R3
- Display include your choice of 33.8 cm (13.3") diagonal IPS Wide Viewing Angle, FHD, touch screen with Corning® Gorilla® Glass 5
- Commercial-grade security features including HP Sure Start, HP Sure Sense, HP Client Security, HP Sure Click, Camera Privacy Shutter and optional HP Sure View
- Captures the world around with an optional world facing- camera in the keyboard
- Supports wireless LAN options for connectivity on the go including gigabit data rate Wi-Fi 6E
- Supports fast charging (50% in 30 minutes) with no impact on battery recharge cycles
- Passed MIL-STD 810H tests

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

Technical Specifications

PRODUCT NAME

HP Pro x360 435 13.3 inch G9 Notebook PC

OPERATING SYSTEM

Preinstalled Windows 11 Pro¹
Windows 11 Pro Education¹
Windows 11 Home - HP recommends Windows 11 Pro for Business¹
Windows 11 Home Single Language - HP recommends Windows 11 Pro for Business¹
Windows 11 Pro (Windows 11 Enterprise available with a Volume Licensing Agreement)¹
Windows 10 Pro (available through downgrade rights from Windows 11 Pro)^{1,2}
FreeDOS

1. Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 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>
2. This system is preinstalled with Windows 10 Pro software and also comes with a license for Windows 11 Pro software and provision for recovery software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.

PROCESSORS

AMD Ryzen™ 7 PRO 5875U (2.00 GHz base clock, up to 4.50 GHz AMD Boost Technology, 16 MB cache, 8 cores)^{3,4,5,6}
AMD Ryzen™ 5 PRO 5675U (2.30 GHz base clock, up to 4.30 GHz AMD Boost Technology, 16 MB cache, 6 cores)^{3,4,5,6}
AMD Ryzen™ 7 5825U (2.00 GHz base clock, up to Standard, 16 MB cache, 8 cores)^{3,4,5,6}
AMD Ryzen™ 5 5625U (2.30 GHz base clock, up to Standard, 16 MB cache, 6 cores)^{3,4,5,6}
AMD Ryzen™ 3 5425U (2.70 GHz base clock, up to Standard, 8 MB cache, 4 cores)^{3,4,5,6}

Processor Family

AMD Ryzen™ 5000 Series Mobile Processors⁶

3. Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.
4. Multicore is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. AMD's numbering is not a measurement of clock speed.
5. Max Boost clock frequency performance varies depending on hardware, software and overall system configuration.
6. In accordance with Microsoft's support policy, HP does not support the Windows 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows 8 or Windows 7 drivers on <http://www.support.hp.com>.

Technical Specifications

CHIPSET

Chipset is integrated with processor

GRAPHICS

Integrated

AMD Radeon™ Graphics ⁷

Supports

Support HW decode, DX12, HDMI2.0, via HDMI up to 4K@60Hz

7. HD content required to view HD images.

DISPLAY

Touch

33.8 cm (13.3") diagonal FHD UWVA eDP 1.3+PSR Low Blue Light touch screen with Corning® Gorilla® Glass 5, IPS anti glare, micro edge, 1000 nits, 72% NTSC with HD + IR camera (1920 x 1080) with HP Eye Ease^{7,8,9,10,11}

33.8 cm (13.3") diagonal FHD UWVA eDP BrightView WLED slim touch screen with Corning® Gorilla® Glass 5, 250 nits, 45% NTSC with HD Webcam (1920 x 1080) ^{7,8,9,10,11}

33.8 cm (13.3") diagonal FHD UWVA eDP BrightView WLED slim touch screen with Corning® Gorilla® Glass 5, 250 nits, 45% NTSC with HD Webcam + IR camera (1920 x 1080) ^{7,8,9,10,11}

33.8 cm (13.3") diagonal FHD UWVA eDP+PSR BrightView WLED ultra slim touch screen with Corning® Gorilla® Glass 5, Low Power, 400 nits, 72% NTSC with HD Webcam + IR camera (1920 x 1080) ^{7,8,9,10,11}

33.8 cm (13.3") diagonal FHD UWVA eDP+PSR BrightView WLED ultra slim touch screen with Corning® Gorilla® Glass 5, Low Power, 400 nits, 72% NTSC with HD Webcam (1920 x 1080) ^{7,8,9,10,11}

Display Size (diagonal)

13.3"

33.8 cm (13.3")

7. HD content required to view HD images.

8. Sold separately or as an optional feature.

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

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

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

Technical Specifications

DOCKING (Sold Separately)

Docking station model #1	HP Thunderbolt Dock G4
Docking station model #2	HP Thunderbolt Dock G2
Docking station model #3	HP USB-C Dock G5
Docking station model #4	HP USB-C/A Universal Dock G2

For additional aftermarket options and docking specs please see page 34.

STORAGE AND DRIVES

Primary Storage

- 2 TB PCIe® NVMe™ TLC 2280 Solid State Drive ¹²
- 1 TB PCIe® NVMe™ TLC 2280 Solid State Drive ¹²
- 512 GB PCIe® NVMe™ TLC Solid State Drive ¹²
- 256 GB PCIe® NVMe™ M.2 SSD ¹²
- 128 GB PCIe® NVMe™ M.2 SSD ¹²

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

MEMORY

Maximum Memory

32GB DDR4 -3200 SDRAM ¹³

Memory

- 32GB DDR4 -3200 SDRAM (2x16GB) ¹³
- 16 GB DDR4-3200 SDRAM (1 x 16 GB) ¹³
- 16 GB DDR4-3200 SDRAM (2 x 8 GB) ¹³
- 8 GB DDR4-3200 SDRAM (1 x 8 GB) ¹³
- 8 GB DDR4-3200 SDRAM (2 x 4 GB) ¹³
- 4 GB DDR4-3200 SDRAM (1 x 4 GB) ¹³

Memory Slots

2 SODIMM

Both slots are accessible/upgradeable by IT or self-maintainers only (CSR-B).

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

Technical Specifications

NETWORKING/COMMUNICATIONS

WLAN

Qualcomm® Fast Connect 6900 Wi-Fi 6E + Bluetooth® 5.2 (802.11ax 2x2, AMD AIM-T AME, supporting gigabit data rate speeds) ¹⁴

Realtek RTL8852BE 802.11ax 2x2 Wi-Fi® + Bluetooth® 5.2 (802.11ax 2x2, supporting gigabit data rate) ¹⁵

Miracast

Native Miracast Support ¹⁶

Wake on WLAN

Support on S3 AC mode only

14. Wi-Fi 6E requires a Wi-Fi 6E router, sold separately, to function in the 6GHz band. Availability of public wireless access points limited. Wi-Fi 6E is backwards compatible with prior 802.11 specs. And available in countries where Wi-Fi 6E is supported. Wi-Fi 6E 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.

15. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 (802.11ax) is backwards compatible with prior 802.11 specs. 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.

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

AUDIO/MULTIMEDIA

Audio

Integrated microphone (Dual Array)

2 Integrated stereo speakers

Speaker Power

2W/4ohm per speaker

Camera

User-facing 720p HD camera ^{7,8}

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

7. HD content required to view HD images.

8. Sold separately or as an optional feature.

Technical Specifications

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard

HP Premium Keyboard, spill resistant with DuraKeys and optional backlit ¹⁷

Pointing Device

Clickpad with multi-touch gesture support

Function Keys

F1 - Display Switching

F2 - Blank or Privacy (with LED)

F3 - Brightness Down

F4 - Brightness Up

F5 - Audio Mute

F6 - Volume Down

F7 - Volume Up

F8 - Mic Mute

F9 - Blank or Backlit Toggle

F10 - Insert

F11 - Airplane Mode

F12 - HP Programmable Key

Power Button

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

Technical Specifications

SOFTWARE AND SECURITY

Software

HP Quick Touch

HP Quick Drop ¹⁸

HP PC Hardware Diagnostics Windows

myHP

HP Smart Support ¹⁹

HP Connection Optimizer

HP Hotkey Support

HP Support Assistant ²⁰

HP Notifications

HP Privacy Settings

HP Power Manager

Buy Microsoft Office (Sold separately)

Adobe Offer for CMIT

Manageability Features

HP Image Assistant Gen5 (download)

HP Manageability Integration Kit (download) ²¹

HP Client Management Script Library (download)

HP Driver Packs (download)

HP Client Catalog (download)

Security Management

HP Wolf Security of Business ²² includes:

HP Sure Click ²³

HP Sure Sense ²⁴

HP Sure Start Gen7 ²⁵

HP Tamper Lock

HP Sure Admin ²⁶

BIOS

HP BIOSphere Gen6 ²⁷

HP Secure Erase ²⁸

Absolute Persistence Module ²⁹

HP DriveLock & Automatic DriveLock

BIOS Update via Network

HP Wake on WLAN

TPM 2.0 Embedded Security Chip (Common Criteria EAL4+ Certified) (FIPS 140-2 Level 2 Certified)

HP Fingerprint Sensor ³⁰

Security

TPM

Model: Nuvoton NPCT760HAAYX

Version: 7.2.3.0

Revision: TPM 2.0

FIPS 140-2 Compliant: Yes

Technical Specifications

IPv6 Support:

Yes

FirstNet Certified:

No

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

UEFI version: 2.7

Class: Class 3

18. HP Quick Drop requires Internet access and Windows 10 or higher PC preinstalled with HP QuickDrop app and either an Android device (phone or tablet) running Android 7 or higher with the Android HP QuickDrop app, and /or an iOS device (phone or tablet) running iOS 12 or higher with the iOS HP QuickDrop app.
 19. HP Smart Support automatically collects the telemetry necessary upon initial boot of the product to deliver device-level configuration data and health insights and is available preinstalled on select products, thru HP Factory Configuration Services; or it can be downloaded. For more information about how to enable HP Smart Support or for download, please visit <http://www.hp.com/smart-support>.
 20. HP Support Assistant requires Windows and Internet Access
 21. HP Manageability Integration Kit can be downloaded from <http://www.hp.com/go/clientmanagement>.
 22. HP Wolf Security for Business requires Windows 10 or higher, includes various HP security features and is available on HP Pro, Elite, RPOS and Workstation products. See product details for included security features and OS requirement.
 23. HP Sure Click requires Windows 10 Pro or higher or Enterprise. See https://bit.ly/2PrLT6A_SureClick for complete details.
 24. HP Sure Sense is available on select HP PCs with Windows 10 Pro, Windows 10 Enterprise, Windows 11 Pro, or Windows 11 Enterprise OS.
 25. HP Sure Start Gen7 is available on select HP PCs and requires Windows 10 and higher
 26. HP Sure Admin requires Windows 10 or higher, HP BIOS, HP Manageability Integration Kit from <http://www.hp.com/go/clientmanagement> and HP Sure Admin Local Access Authenticator smartphone app from the Android or Apple store.
 27. HP BIOSphere Gen6 features may vary depending on the platform and configuration.
 28. For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88 "Clear" sanitation method. HP Secure Erase does not support platforms with Intel® Optane™.
 29. Absolute firmware module is shipped turned off and can only be activated with the purchase a license subscription and full activation of the software agent. License subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. Certain conditions apply. For full details visit: <https://www.absolute.com/about/legal/agreements/absolute/>.
 30. HP Fingerprint sensor is an optional feature that must be configured at purchase.
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Technical Specifications

POWER

Power Supply

- HP Smart 65 W External AC power adapter ³¹
- HP Smart 65 W EM External AC power adapter ³¹
- HP Smart 65 W USB Type-C adapter ³¹
- HP Smart 45 W External AC power adapter ³¹
- HP Smart 45 W USB Type-C adapter ³¹

Battery

- HP Long Life 3-cell, 42 Wh Li-ion polymer ^{32,33}
- Supports HP Fast Charge (50% in 30 minutes) ³⁴
- Compliant with UL 1642 Standard

Power Cord

- 3-wire plug - 1m ³¹
- 2-wire plug - 1m ³¹

Battery life

- Up to 16 hours 15 minutes ³⁵

Battery Weight

- HP Long Life 3-cell - 42 Wh Polymer - .42 lb
- HP Long Life 3-cell - 42 Wh Polymer - 190 g

31. Availability may vary by country.

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

33. 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.

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

35. 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.

Technical Specifications

WEIGHTS & DIMENSIONS

Product Weight

Starting at 3.19 lb ³⁶

Starting at 1.45 kg ³⁶

Product Dimensions (W x D x H)

12.15 x 8.78 x 0.71 in

30.85 x 22.29 x 1.79 cm

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

PORTS/SLOTS

1 SuperSpeed USB Type-C® 10Gbps signaling rate (USB Power Delivery, DisplayPort™ 1.4)³⁷

2 SuperSpeed USB Type-A 5 Gbps signaling rate includes 1 charging port (USB 3.2 Gen 1)

1 HDMI ³⁸

1 Headphone/microphone combo jack

1 AC power

Expansion Slots

1 micro SD

Supports SD, SDHC, SDXC

37. SuperSpeed USB 20Gbps is not available.

38. HDMI cable sold separately.

Technical Specifications

SERVICE AND SUPPORT

HP Services offers 1-year or 3-year limited warranties 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>.³⁹

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

Technical Specifications

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)

Nominal Operating Voltage	19V
Average Operating Power	7.52W (Idle)
Integrated graphics	Yes (AMD Radeon™ Graphics)
Discrete Graphics	N/A
Max Operating Power	UMA<45W

Temperature

Operating	32° to 95° F (0° to 35° C)
Non-operating	-4° to 140° F (-20° to 60° C)

Relative Humidity

Operating	10% to 90%, non-condensing
Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature

Shock

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

Random Vibration

Operating	1.043 grams
Non-operating	3.5 grams

Altitude (unpressurized)

Operating	-50 to 10,000 ft (-15.24 to 3,048 m)
Non-operating	-50 to 40,000 ft (-15.24 to 12,192 m)

Planned Industry Standard Certifications

Regulatory Model Number	HSN-I54C
UL	Yes
CSA	Yes
FCC Compliance	Yes
ENERGY STAR®	Yes ⁴⁰
EPEAT®	EPEAT® 2019 Gold in United States ⁴¹
ICES	Yes
Australia /	Yes
NZ A-Tick Compliance	Yes
CCC	Yes
Japan VCCI Compliance	Yes
KC	Yes
BSMI	Yes
CE Marking Compliance	Yes
BNCI or BELUS	Yes
CIT	Yes
GOST	Yes
Saudi Arabian Compliance (ICCP)	Yes
SABS	Yes
UKRSERTCOMPUTER	Yes

40. Configurations of the HP Pro X360 435 13.3 inch G9 Notebook PC that are ENERGY STAR® qualified are identified as HP Pro X360 435 13.3 inch G9 Notebook PC ENERGY STAR on HP websites and on <http://www.energystar.gov>.

Technical Specifications

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

DISPLAYS

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

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

<p>13.3 in FHD (1920 x 1080) Anti-Glare UWVA Low Blue Light sRGB NB2Y 1000 eDP 1.3+PSR 100 PrivacyG4 Plus flat LCD Panel</p>	<p>Outline Dimensions (W x H x D) Active Area Weight Diagonal Size Thickness Interface Surface Treatment Touch Enabled Contrast Ratio Refresh Rate Brightness Pixel Resolution - Format Backlight Pixel Resolution Color Gamut Coverage Color Depth Viewing Angle Low Blue Light Power Consumption (W, EBL@ 150nits max/ 200nits max)</p>	<p>299.060 x 185.550 (max) 293.760 x 165.240 (typ) 210 (max) 13.3 (inch) 2.2 / 3.9 (max) eDP 1.3 Bright View glass Yes¹ 1500:1 (typ) 60 Hz 1000 nits¹ 1920 x1080 (FHD) WLED RGB sRGB 100% 8 UWVA 85/85/85/85 Yes N/A</p>
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<p>Panel LCD 13.3 inch FHD (1920x1080) Anti-Glare WLED UWVA 45percent cg 250nits eDP 1.2 w/o PSR slim NWBZ</p>	<p>Outline Dimensions (W x H x D) Active Area Weight Diagonal Size Thickness Interface Surface Treatment Touch Enabled Contrast Ratio Refresh Rate Brightness Pixel Resolution - Format Backlight Pixel Resolution Color Gamut Coverage</p>	<p>300.56 x 187.77 mm (max) (w/ PCB & w/o bracket) 293.76 x 165.24 mm (typ.) 260 g (max) 13.3 inch 3.0 mm (max) eDP 1.2 (2 lane) Bright View glass Yes 600:1 (typ.) 60 Hz 250 nits (typ.) 1920 x 1080 (FHD) LED RGB Stripe 45%</p>
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Technical Specifications

Color Depth	6
Viewing Angle	UWVA 85/85/85/85
Low Blue Light	No
Power Consumption (W, EBL@ 150nits max/ 200nits max)	2.40 (max)/ NA

Panel LCD 13.3 inch FHD (1920x1080) Anti-Glare WLED UWVA 72percent cg 400nits eDP 1.4+PSR2 ultra slim LP NWBZ

Outline Dimensions (W x H x D)	299.06 x 185.54 mm (max)
Active Area	293.76 x 165.24 mm (typ.)
Weight	170 g (max)
Diagonal Size	13.3 (inch)
Thickness	2.0 mm (max)
Interface	eDP 1.4 + PSR2 (2 lane)
Surface Treatment	Bright View glass
Touch Enabled	Yes
Contrast Ratio	1200:1 (typ.)
Refresh Rate	60 Hz
Brightness	400 nits
Pixel Resolution - Format	1920 x 1080 (FHD)
Backlight	LED
Pixel Resolution	RGB Stripe
Color Gamut Coverage	NTSC 72%
Color Depth	8
Viewing Angle	UWVA 85/85/85/85
Low Blue Light	No
Power Consumption (W, EBL@ 150nits max/ 200nits max)	1.09 (max)/ 1.30 (max)

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 and 11) is reserved for system recovery software.

SSD 128GB 2230 PCIe NVMe Value	Form Factor	M.2 2230
	Capacity	128 GB
	NAND Type	Value
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Weight	0.01 lb (5 g)
	Interface	PCIe NVMe Gen3X4 or Gen3X2
	Maximum Sequential Read	1400 MB/s ±20%
	Maximum Sequential Write	395 MB/s ±20%
	Logical Blocks	250,069,680
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	Pyrite; TRIM; L1.2

SSD 256GB 2280 PCIe NVMe Value	Form Factor	M.2 2280
	Capacity	256 GB
	NAND Type	TLC
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen3X4
	Maximum Sequential Read	1500 MB/s ±20%
	Maximum Sequential Write	750 MB/s ±20%
	Logical Blocks	500,118,192
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	Pyrite 2.0; TRIM; L1.2

SSD 512GB 2280 PCIe-4x4 NVMe Three Layer Cell	Form Factor	M.2 2280
	Capacity	512GB
	NAND Type	TLC
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen4X4
	Maximum Sequential Read	3200 MB/s ±20%
	Maximum Sequential Write	3200 MB/s ±20%
	Logical Blocks	1,000,215,215
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	Pyrite 2.0; TRIM; L1.2

Technical Specifications

1TB 2280 PCIe-4x4 NVMe Three Layer Cell	Form Factor	M.2 2280
	Capacity	1TB
	NAND Type	TLC
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Weight	0.02 lb (10 g)
	Interface	PCIe NVMe Gen4X4
	Maximum Sequential Read	3200 MB/s \pm 20%
	Maximum Sequential Write	3200 MB/s \pm 20%
	Logical Blocks	2,000,409,264
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]

2TB 2280 PCIe-4x4 NVMe Three Layer Cell	Form Factor	M.2 2280
	Capacity	2TB
	NAND Type	TLC
	Height	0.09 in (2.3 mm)
	Width	0.87 in (22 mm)
	Interface	PCIe NVMe Gen4X4
	Maximum Sequential Read	3200 MB/s \pm 20%
	Maximum Sequential Write	3200 MB/s \pm 20%
	Logical Blocks	4,000,797,360
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
	Features	Pyrite 2.0; TRIM; L1.2

Technical Specifications

NETWORKING/COMMUNICATIONS

<p>Qualcomm® Fast Connect Wireless LAN Standards 6900 Wi-Fi 6E + Bluetooth® 5.2 (802.11ax 2x2, AMD AIM-T AME, supporting gigabit file transfer speeds) ¹</p>	<p>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 802.11u IEEE 802.11v IEEE 802.11w</p>
<p>Interoperability</p>	<p>Wi-Fi certified</p>
<p>Frequency Band</p>	<ul style="list-style-type: none"> •802.11b/g/n/ax 2.402 – 2.482 GHz •802.11a/n/ac/ax 5.15 – 5.25 GHz 5.25 – 5.35 GHz 5.47 – 5.725 GHz 5.825 – 5.850 GHz 5.925 – 7.125 GHz
<p>Data Rates</p>	<ul style="list-style-type: none"> • 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) • 802.11ac : MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, ,80MHz & 160MHz) • 802.11ax : MCS0 ~ MCS11, (1SS and 2SS) (20MHz, 40MHz, ,80MHz & 160MHz)
<p>Modulation</p>	<p>Direct Sequence Spread Spectrum OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM, 4096QAM</p>
<p>Security³</p>	<ul style="list-style-type: none"> • 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
<p>Network Architecture Models</p>	<p>Wi-Fi Direct in Win10 for peer-to-peer connection. Infrastructure (Access Point Required)</p>
<p>Roaming</p>	<p>IEEE 802.11 compliant roaming between access points</p>
<p>Output Power²</p>	<p>2.4GHz (MIMO, typical):</p> <ul style="list-style-type: none"> • 802.11b : +18dBm • 802.11g : +16.5dBm • 802.11n/ac/ax (HT20/VHT20/HE20) : +16dBm

Technical Specifications

	<ul style="list-style-type: none"> • 802.11n/ac/ax (HT40/VHT40/HE40) : +12.5dBm
	5GHz (MIMO, typical):
	<ul style="list-style-type: none"> • 802.11a : +13dBm • 802.11n/ac/ax (HT20/VHT20/HE20) : +13.5dBm • 802.11n/ac/ax (HT40/VHT40/HE40) : +12.5dBm • 802.11ac/ax (VHT80/HE80) : +11.5dBm • 802.11ax HE160 : +11.5dBm
	6GHz LPI mode (MIMO, typical)::
	<ul style="list-style-type: none"> • 802.11a : 0dBm • 802.11ax HE20 : +1dBm • 802.11ax HE40 : +4dBm • 802.11ax HE80 : +7dBm • 802.11ax HE160 : +7.5dBm
Power Consumption	<ul style="list-style-type: none"> • Transmit mode: 3.0 W • Receive mode: 2.0 W • Idle mode (WLAN associated): 300mW • Idle mode (WLAN unassociated): 100mW • Modern Connected Standby: 10mW • Radio disabled: 8 mW
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity⁴	2.4GHz (SISO): <ul style="list-style-type: none"> • 802.11b, 11Mbps : -82dBm maximum • 802.11g, 54Mbps : -71 dBm maximum • 802.11n, MCS7 : -64dBm maximum • 802.11ac, MCS9 : -52dBm maximum • 802.11ax, MCS11(HT40): -49dBm maximum 5GHz (SISO): <ul style="list-style-type: none"> • 802.11a, 54Mbps : -71 dBm maximum • 802.11n, MCS07 : -64dBm maximum • 802.11ac, MCS9 : -52dBm maximum • 802.11ax, MCS11(HE80/HE160): -46dBm maximum 6GHz (SISO): <ul style="list-style-type: none"> • 802.11a, 54Mbps : -71 dBm maximum • 802.11n, MCS7 : -64dBm maximum • 802.11ac, MCS9 : -52dBm maximum • 802.11ax, MCS11(HE160): -46dBm maximum
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5/6 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 : 3g
Operating Voltage	3.3 +/- 0.165v
Temperature	Operating -10° to 60° C Non-operating -40° to 85° C

Technical Specifications

Humidity	Operating	10% to 60% (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	N/A	

HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0/5.1/5.2 Wireless Technology

Bluetooth Specification	4.0/4.1/4.2/5.0/5.1/5.2 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 1.5 Bluetooth device with a maximum transmit power of + 14 dBm and 10 dBm for BR and EDR, respectively.

1. Wi-Fi 6E requires a Wi-Fi 6E router, sold separately, to function in the 6GHz band. Availability of public wireless access points limited. Wi-Fi 6E is backwards compatible with prior 802.11 specs. And available in countries where Wi-Fi 6E is supported. Wi-Fi 6E 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.
2. The FCC has declared as of September 1, 2014 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.
3. Check latest software/driver release for updates on supported security features.
4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

Technical Specifications

<p>Realtek RTL8852BE 802.11ax 2x2 Wi-Fi® + Bluetooth® 5.2 (802.11ax 2x2, supporting gigabit data rate) ¹</p>	<p>Wireless LAN Standards</p>	<p>IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac IEEE 802.11ax IEEE 802.11d IEEE 802.11e IEEE 802.11h IEEE 802.11i IEEE 802.11k IEEE 802.11r IEEE 802.11v</p>
	<p>Interoperability</p>	<p>Wi-Fi certified modules</p>
	<p>Frequency Band</p>	<ul style="list-style-type: none"> •802.11b/g/n/ax 2.402 – 2.482 GHz •802.11a/n/ac/ax 4.9 – 4.95 GHz (Japan) 5.15 – 5.25 GHz 5.25 – 5.35 GHz 5.47 – 5.725 GHz 5.825 – 5.850 GHz
	<p>Data Rates</p>	<ul style="list-style-type: none"> • 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: max 300Mbps • 802.11ac : max 866.7Mbps • 802.11ax : max 1201Mbps
	<p>Modulation</p>	<p>Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM</p>
	<p>Security³</p>	<ul style="list-style-type: none"> • IEEE and WiFi certified 64 / 128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware • 802.1x authentication • WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification • WPA3 certification • IEEE 802.11i • WAPI
	<p>Network Architecture Models</p>	<p>Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)</p>
	<p>Roaming</p>	<p>IEEE 802.11 compliant roaming between access points</p>
	<p>Output Power²</p>	<ul style="list-style-type: none"> • 802.11b : +18.5dBm minimum • 802.11g : +17.5dBm minimum • 802.11a : +18.5dBm minimum • 802.11n HT20(2.4GHz) : +15.5dBm minimum • 802.11n HT40(2.4GHz) : +14.5dBm minimum • 802.11n HT20(5GHz) : +15.5dBm minimum

Technical Specifications

Power Consumption	<ul style="list-style-type: none"> • 802.11n HT40(5GHz) : +14.5dBm minimum • 802.11ac VHT80(5GHz) : +11.5dBm minimum • 802.11ax HE40(2.4GHz) : +10dBm minimum • 802.11ax HE80(5GHz) : +10dBm minimum • Transmit mode :2.5 W • Receive mode :2 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 •802.11ax, MCS11(HE40): -57dBm maximum •802.11ax, MCS11(HE80): -54dBm maximum
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications
Form Factor	PCI-Express M.2 MiniCard
Dimensions	1. Type 2230 : 2.3 x 22.0 x 30.0 mm 2. Type 1216: 1.67 x 12.0 x 16.0 mm
Weight	1. Type 2230 : 2.8g 2. Type 126: 1.3g
Operating Voltage	3.3v +/- 9%
Temperature	Operating 14° to 158° F (-10° to 70° C) Non-operating -40° to 176° F (-40° to 80° C)
Humidity	Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing)
Altitude	Operating 0 to 10,000 ft (3,048 m) Non-operating 0 to 50,000 ft (15,240 m)
LED Activity	LED Amber – Radio OFF; LED OFF – Radio ON
HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0/5.1/5.2 Wireless Technology	
Bluetooth Specification	4.0/4.1/4.2/5.0/5.1 Compliant/5.2 Compliant
Frequency Band	2402 to 2480 MHz
Number of Available Channels	Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH)

Technical Specifications

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.

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. 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.
 2. The FCC has declared as of September 1, 2014 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.
 3. Check latest software/driver release for updates on supported security features.
 4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
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Technical Specifications

POWER

1. 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.

AC Adapter 45 Watt nPFC Standard USB type C Straight 1.8m	Dimensions	94.0mm*40.0mm*26.5mm
	Weight	192.5g +/-10%
	Input Efficiency	Average Efficiency of 25%, 50%, 75%, 100% load condition with 115Vac/230Vac Spec: 5V : 81.5% 9V : 86.7% 12V : 87.41% 15V : 87.8%
	Input frequency range	47 ~ 63Hz
	Input AC current	Max. 1.4 A at 90 Vac
	Output	
	Output power	5V/15W 9V/27W 12V/36W 15V/45W
	DC output	5V/9V/12V/15V
	Hold-up time	5ms at 115 Vac input
	Output current limit	<5.0A
	Connector	C6
	Environmental Design	
	Operating temperature	32° to 95° F (0° to 35° C)
	Non-operating (storage) temperature	-4° to 185° F (-20° to 85° C)
	Altitude	0 to 16,400 ft (0 to 5000m)
	Humidity	20% to 95%
	Storage Humidity	10% to 95%
	EMI and Safety Certifications	Eg: *CE Mark - full compliance with LVD and EMC directives * Worldwide safety standards - IEC60950-1 and/or IEC62368-1, EN60950-1 and/or EN62368-1, UL60950-1 and/or UL62368-1 , Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55032 Class B, FCC Class B, CISPR32 Class B, CCC, NOM-001 NYCE. * MTBF - over 200,000 hours at 25°C ambient condition.

AC Adapter 45 Watt Smart nPFC Standard Barrel 4.5mm Right Angle 1.8m	Dimensions	95 x 45 x 26.5 mm
	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

Technical Specifications

Output	
Output power	45W
DC output	19.5V
Hold-up time	5ms at 115 Vac input
Output current limit	<8.0A
Connector	4.5mm Barrel Type
Environmental Design	
Operating temperature	32° to 95° F (0° to 35° C)
Non-operating (storage) temperature	-4° to 185° F (-20° to 85° C)
Altitude	0 to 16,400 ft (0 to 5000m)
Humidity	20% to 95%
Storage Humidity	10% to 95%
EMI and Safety Certifications	Eg: *CE Mark - full compliance with LVD and EMC directives * Worldwide safety standards - IEC60950-1 and/or IEC62368-1, EN60950-1 and/or EN62368-1, UL60950-1 and/or UL62368-1 , Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55032 Class B, FCC Class B, CISPR32 Class B, CCC, NOM-001 NYCE. * MTBF - over 200,000 hours at 25°C ambient condition.

AC Adapter 65 Watt nPFC Standard USB type C Straight 1.8m	Dimensions	90.0x51x28.5mm
	Weight	unit: 250g +/- 10g
	Input	
	Input Efficiency	Average Efficiency of 25%, 50%, 75%, 100% load condition with 115Vac/230Vac Spec: 5V : 81.5% 9V : 86.7% 12V : 88% 15V : 88% 20V : 89%
	Input frequency range	47 ~ 63 Hz
	Input AC current	1.6 A at 90 VAC and maximum load
	Output	
	Output power	5V/15W 9V/27W 12V/60W 15V/60W 20V/65W
	DC output	5V/9V/12V/15V/20V
	Hold-up time	5ms at 115 Vac input
	Output current limit	<8.0A
	Connector	USB Type-C
	Environmental Design	

Technical Specifications

Operating temperature	32° to 95° F (0° to 35° C)
Non-operating (storage) temperature	-4° to 185° F (-20° to 85° C)
Altitude	0 to 16,400 ft (0 to 5000m)
Humidity	20% to 95%
Storage Humidity	10% to 95%
EMI and Safety Certifications	Eg: *CE Mark - full compliance with LVD and EMC directives * Worldwide safety standards - IEC60950-1 and/or IEC62368-1, EN60950-1 and/or EN62368-1, UL60950-1 and/or UL62368-1 , Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55032 Class B, FCC Class B, CISPR32 Class B, CCC, NOM-001 NYCE. * MTBF - over 200,000 hours at 25°C ambient condition.

AC Adapter 65 Watt Smart nPFC EM Barrel 4.5mm	Dimensions	102 x 55 x 30 mm
	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	4.5mm Barrel Type
	Environmental Design	
	Operating temperature	32° to 95° F (0° to 35° C)
	Non-operating (storage) temperature	-4° to 185° F (-20° to 85° C)
	Altitude	0 to 16,400 ft (0 to 5000m)
Humidity	20% to 95%	
Storage Humidity	10% to 95%	
EMI and Safety Certifications	Eg: *CE Mark - full compliance with LVD and EMC directives * Worldwide safety standards - IEC60950-1 and/or IEC62368-1, EN60950-1 and/or EN62368-1, UL60950-1 and/or UL62368-1 , Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55032 Class B, FCC Class B, CISPR32 Class B, CCC, NOM-001 NYCE. * MTBF - over 200,000 hours at 25°C ambient condition.	

Technical Specifications

AC Adapter 65 Watt Smart nPFC Standard Barrel 4.5mm Right Angle 1.8m	Dimensions	90 x 51 x 28.5 mm
	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	4.5mm Barrel Type
	Environmental Design	
	Operating temperature	32° to 95° F (0° to 35° C)
	Non-operating (storage) temperature	-4° to 185° F (-20° to 85° C)
	Altitude	0 to 16,400 ft (0 to 5000m)
	Humidity	20% to 95%
	Storage Humidity	10% to 95%
	EMI and Safety Certifications	Eg: *CE Mark - full compliance with LVD and EMC directives * Worldwide safety standards - IEC60950-1 and/or IEC62368-1, EN60950-1 and/or EN62368-1, UL60950-1 and/or UL62368-1 , Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55032 Class B, FCC Class B, CISPR32 Class B, CCC, NOM-001 NYCE. * MTBF - over 200,000 hours at 25°C ambient condition.

3-cell Long Life Li-Ion (42 Wh)¹	Dimensions (H x W x L)	6.52 x 249.5 x 70.3 mm (0.257 x 9.82 x 2.77 inch)
	Weight	0.183 kg +/- 10g (0.403 lb)
	Cells/Type	3cell Lithium-Ion Polymer cell / 545974
	Energy	
	Voltage	11.4V
	Amp-hour capacity	3.75Ah
	Watt-hour capacity	42.75Wh
	Temperature	
	Operating (Charging)	32° to 113° F (0° to 45° C)
	Operating (Discharging)	14° to 140° F (-10° to 60° C)
	Fuel Gauge LED	NA
	Warranty	15months
	Optional Travel Battery Available	N/A

Technical Specifications

AUDIO

HD Stereo Codec	ALC3247-CG
Audio I/O Ports	Headset: CTIA only and Headphone-out
Internal Speaker Amplifier	ALC 3247 has Embedded Class-D 2W Stereo Amplifier
Multi-streaming Capable	Playback multi-streaming can be enabled in the audio control panel to allow independent audio. Following MSFT Behavior
Sampling	DAC: 48kHz ADC: 44.1k/48kHz
Wavetable Syntheses	N/A
Analog Audio	Support 3.5mm Headset: CTIA only and Headphone-out
# of Channels on Line-Out	N/A
Internal Speaker	Yes

FINGERPRINT READER

Sensor vendor	Elan efsa80ST (Module: P1515E/P1515D)
Sensor type	Capacitive
DPI resolution	508 DPI
Scan area	80 x 80 pixels
False Rejection Rate	FRR: ≤ 3%
False Acceptance Rate	FAR: 1:100K
Mobile Voltage Operation	3.0V to 3.6V
Operating Temperature	14° – 167°F (-10°-75°C)
Current Consumption Image	35mA (MAX)
Low Latency Wait For Finger Capture Rate	900uA 30 frame/sec
ESD Resistance	+15KV
Detection Matrix	80*80 pixels/ 508 dpi / 4*4mm sensor area

Technical Specifications

ENVIRONMENTAL DATA

Eco-Label Certifications & declarations	<p>This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:</p> <ul style="list-style-type: none"> • IT ECO declaration • US ENERGY STAR® • US Federal Energy Management Program (FEMP) • EPEAT[®] Gold registered in the United States. See http://www.epeat.net for registration status in your country. • TTCO Certified • China Energy Conservation Program (CECP) • China State Environmental Protection Administration (SEPA) • Taiwan Green Mark • Korea Eco-label • Japan PC Green label* 		
Sustainable Specifications	Impact	<ul style="list-style-type: none"> • 35% post-consumer recycled plastic • External Power Supply 90% Efficiency halogen • Outside Box and corrugated cushions are 100% sustainably sourced and recyclable • Molded Paper Pulp Cushion inside box is 100% sustainably sourced and recyclable • Bulk packaging available 	
System Configuration		<p>The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a “Typically Configured Notebook”.</p>	
Energy Consumption (in accordance with US ENERGY STAR® test method)	115VAC, 60Hz	230VAC, 50Hz	100VAC, 50Hz
Normal Operation (Sort idle)	4.69 W	4.78 W	4.73 W
Normal Operation (Long idle)	1.34 W	1.33 W	1.27 W
Sleep	1.34 W	1.33 W	1.27 W
Off	0.3 W	0.34 W	0.3 W
<p>Note: Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.</p>			
Heat Dissipation*	115VAC, 60Hz	230VAC, 50Hz	100VAC, 50Hz
Normal Operation (Short idle)	16 BTU/hr	16.3 BTU/hr	16.2 BTU/hr
Normal Operation (Long idle)	4.6 BTU/hr	4.5 BTU/hr	4.3 BTU/hr
Sleep	4.6 BTU/hr	4.5 BTU/hr	4.3 BTU/hr
Off	1 BTU/hr	1.2 BTU/hr	1 BTU/hr
<p>*NOTE: Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.</p>			

Technical Specifications

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)	Sound Power (L_{WAd} , bels)	Sound Pressure (L_{pAm} , decibels)	
Typically Configured – Idle	2.6	14.4	
Fixed Disk – Random writes	3.9	32.1	
Optical Drive – Sequential reads	3.9	32.1	
Longevity and Upgrading	This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the		
	Spare parts are available throughout the warranty period and or for up to “5” years after the end of production.		
Additional Information	<ul style="list-style-type: none"> This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC. This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC. This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986). This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold level, see www.epeat.net Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043. This product is 94.6% recycle-able when properly disposed of at end of life. 		
Packaging Materials	External:	PAPER/Corrugated	261 g
		PAPER/Molded Pulp	139 g
		PAPER/Paper	3 g
	Internal:	PLASTIC/Polyethylene low density - LDPE	14 g
		The plastic packaging material contains at least xx% recycled content.	
		The corrugated paper packaging materials contains at least 56.5% recycled content.	
RoHS Compliance	<p>HP Inc. complies fully with materials regulations. We were among the first companies to extend the restrictions in the European Union (EU) Restriction of Hazardous Substances (RoHS) Directive to our products worldwide through the HP GSE. HP has contributed to the development of related legislation in Europe, as well as China, India, and Vietnam.</p> <p>We believe the RoHS directive and similar laws play an important role in promoting industry-wide elimination of substances of concern. We have supported the inclusion of additional substances—including PVC, BFRs, and certain phthalates—in future RoHS legislation that pertains to electrical and electronics products.</p> <p>We met our voluntary objective to achieve worldwide compliance with the new EU RoHS requirements for virtually all relevant products by July 2013, and we will continue to extend the scope of the commitment to include further restricted substances as regulations continue to evolve.</p> <p>To obtain a copy of the HP RoHS Compliance Statement, see HP RoHS position statement.</p>		
Material Usage	This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at		

Technical Specifications

	<p>http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html):</p> <ul style="list-style-type: none"> • Asbestos • Certain Azo Colorants • Certain Brominated Flame Retardants – may not be used as flame retardants in plastics • Cadmium • Chlorinated Hydrocarbons • Chlorinated Paraffins • Bis(2-Ethylhexyl) phthalate (DEHP) • Benzyl butyl phthalate (BBP) • Dibutyl phthalate (DBP) • Diisobutyl phthalate (DIBP) • Formaldehyde • Halogenated Diphenyl Methanes • Lead carbonates and sulfates • Lead and Lead compounds • Mercuric Oxide Batteries • Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user. • Ozone Depleting Substances • Polybrominated Biphenyls (PBBs) • Polybrominated Biphenyl Ethers (PBBEs) • Polybrominated Biphenyl Oxides (PBBOs) • Polychlorinated Biphenyl (PCB) • Polychlorinated Terphenyls (PCT) • Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications. • Radioactive Substances • Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)
<p>Packaging Usage</p>	<p>HP follows these guidelines to decrease the environmental impact of product packaging:</p> <ul style="list-style-type: none"> • Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials. • Eliminate the use of ozone-depleting substances (ODS) in packaging materials. • Design packaging materials for ease of disassembly. • Maximize the use of post-consumer recycled content materials in packaging materials. • Use readily recyclable packaging materials such as paper and corrugated materials. • Reduce size and weight of packages to improve transportation fuel efficiency. • Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.
<p>End-of-life Management and Recycling</p>	<p>HP offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/go/reuse-recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.</p>

Technical Specifications

	<p>The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/recyclers. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.</p>
<p>HP, Inc. Corporate Environmental Information</p>	<p>For more information about HP's commitment to the environment:</p> <p>Global Citizenship Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html</p> <p>Eco-label certifications http://www8.hp.com/us/en/hp-information/environment/ecolabels.html</p> <p>ISO 14001 certificates: http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c04755842 and http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf</p>
<p>footnotes</p>	<ul style="list-style-type: none"> • Percentage of ocean-bound plastic contained in each component varies by product • Recycled plastic content percentage is based on the definition set in the IEEE 1680.1 - 2018 standard. • External power supplies, WWAN modules, power cords, cables and peripherals excluded. • 100% outer box packaging and corrugated cushions made from sustainably sourced certified and recycled fibers. • Fiber cushions made from 100% recycled wood fiber and organic materials.

COUNTRY OF ORIGIN

China

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

DOCKING (Sold Separately)

Docking station model #1	HP Thunderbolt Dock G4
Total number of supported displays (incl. the notebook display)	4
Max. resolutions supported	Dual 4K @30Hz or dual 4K UHD @ 60Hz is supported Single 8K @30Hz (multiple tiles) for Thunderbolt hosts Non-TBT hosts DP 1.4 in high res mode(1) 8K video single cable @30Hz
Dock Connectors	2xDP, 1xHDMI, 1xTB, 1xUSB-C Alt Mode
Technical limitations	Thunderbolt Hosts: Maximum of (4) displays with maximum resolution of 5K@ 30Hz running Thunderbolt host. Max resolution possible is dual 8K displays @ 60Hz running Thunderbolt host or running a non-Thunderbolt host in High Resolution mode @30Hz Non-Thunderbolt hosts: The highest resolution for dual displays running a non-Thunderbolt host in multi-function mode is (1) 5K dual cable (using both DP ports) +(1) 4K on USB-C DP port Non-Thunderbolt hosts support (3) displays with a max resolution of: (2) 5K single cable + (1) 4K UHD @ 60 Hz in high resolution mode. In multi-function mode the maximum resolution for (3) displays is (2) 5K single cable @ 30Hz + (1) 4K UHD @ 30Hz.
Docking station model #2	HP Thunderbolt Dock G2
Total number of supported displays (incl. the notebook display)	4
Max. resolutions supported	Dual 4K @30Hz or dual 4K UHD @ 60Hz is supported Single 8K@ 30Hz (multiple tiles) for Thunderbolt hosts Non-TBT hosts DP 1.4 in high res mode(1) 8K video single cable@30Hz
Dock Connectors	2xDP, 1xVGA, 1xTB, 1xUSB-C alt-mode
Technical limitations	Thunderbolt Hosts: Maximum of (4) displays with maximum resolution of 5K@ 30Hz running Thunderbolt host. Max resolution possible is dual 8K displays @ 60Hz running Thunderbolt host or running a non-Thunderbolt host in High Resolution mode @30Hz Non-Thunderbolt hosts: The highest resolution for dual displays running a non-Thunderbolt host in multi-function mode is (1) 5K dual cable (using both DP ports) +(1) 4K on USB-C DP port Non-Thunderbolt hosts support (3) displays with a max resolution of: (2) 5K single cable + (1) 4K UHD @ 60 Hz in high resolution mode. In multi-function mode the maximum resolution for (3) displays is (2) 5K single cable @ 30Hz + (1) 4K UHD @ 30Hz.
Docking station model #3	HP USB-C Dock G5
Total number of supported displays (incl. the notebook display)	3
Max. resolutions supported	Dual 5K@ 30Hz + 1 4K UHD (multi-function mode) 5120 x 2880

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

Dock Connectors

1xHDMI, 2xDP

Technical limitations

Highest resolution with dual displays is two 8K@ 60Hz host in High Resolution mode.

Three maximum displays supported are two 5K@ 30 Hz on DP ports plus one 4K UHD@ 30 Hz on HDMI in multi-function mode

The highest resolution for a non-Thunderbolt host in Multi-function mode is a single 5K dual cable (using both DP ports) + (1) 4K on HDMI port .

Docking station model #4

HP USB-C/A Universal Dock G2

Total number of supported displays (incl. the notebook display)

3

Max. resolutions supported

Triple 4K UHD@ 60Hz

Dock Connectors

1xHDMI, 2xDP

Technical limitations

The best resolution for dual or triple displays is 4K UHD@ 60Hz.

For use with the USB-A adapter that comes in the box the maximum number of displays supported is (2) 4k x 60 Hz on the Type-A Gen 1 connection from the host

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

Category	Description	Part Number
Audio/Video	HP Wired USB-A Stereo Headset	428K6AA
	HP Wired 3.5mm Stereo Headset	428K7AA
Cases	HP Executive 15.6 Backpack	6KD07AA
	HP Executive 15.6 Top Load	6KD06AA
	HP Prelude G2 15.6 Backpack	1E7D6AA
	HP Prelude G2 15.6 Top Load	1E7D7AA
	HP Prelude Pro Recycled 15.6 Backpack	1X644AA
	HP Prelude Pro Recycled 15.6 Top Load	1X645AA
	HP Renew Business 17.3 Laptop Backpack	3E2U5AA
	HP Renew Business 17.3 Laptop Bag	3E2U6AA
	HP Renew Business 15.6 Laptop Bag	3E5F8AA
	HP Renew Business 14.1 Laptop Bag	3E5F9AA
HP Renew Business 14.1 Laptop Sleeve	3E2U7AA	
Docking	HP Thunderbolt 120W G2 Dock	2UK37AA
	HP Thunderbolt 120W G2 Dock w/Audio	3YE87AA
	HP Thunderbolt 120W G4 Dock	4J0A2AA
	HP Thunderbolt 230W G2 Dock w/Combo Cable	3TR87AA
	HP Thunderbolt 280W G4 Dock w/Combo Cable	4J0G4AA
	HP USB-C/A 120W G2 Universal Dock	5TW13AA
	HP USB-C 120W G5 Dock	26D32AA
Hub	HP USB-C Mini Dock	1PM64AA
	HP Universal USB-C Multiport Hub	50H55AA
	HP USB-C Travel Dock G2	7PJ38AA
	HP USB-C to USB-A Hub	Z6A00AA
Adapter	HP HDMI to DVI Adapter	F5A28AA
	HP HDMI to VGA Adapter	H4F02AA
	HP USB 3.0 to Gigabit RJ45 Adapter G2	4Z7Z7AA
	HP USB-C to DisplayPort Adapter	N9K78AA
	HP USB-C to HDMI 2.0 Adapter	1WC36AA
	HP USB-C to RJ45 Adapter G2	4Z527AA
	HP USB-C to RJ45 Adapter Hot Dog	V7W66AA
	HP USB-C to USB 3.0 Adapter	N9K76AA
	HP USB-C to VGA Adapter	8JU62AA
Pen	HP Slim Rechargeable PEN	630W7AA
Pen Accessory	HP Rechargeable Slim Pen Charger	4X491AA
Keyboard/Combo	HP 975 USB+BT Dual-Mode Wireless Keyboard	3Z726AA

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

	HP 455 Programmable Wireless Keyboard	4R177AA
	HP 125 WD USB Keyboard	266C9AA
	HP 320K WD USB Keyboard	9SR37AA
	HP 655 Wireless Keyboard and Mouse Combo	4R009AA
	HP 225 Wired Mouse and Keyboard Combo	286J4AA
	HP 235 Wireless Mouse and Keyboard Combo	1Y4D0AA
	HP Slim Wireless Keyboard and Mouse	T6L04AA
	HP Wired Desktop 320MK Mouse and Keyboard	9SR36AA
	HP Wireless Rechargeable 950MK Mouse and Keyboard	3M165AA
	HP 155 Wired Mouse and Keyboard Combo	5B8C0AA#ACJ
Mouse	HP USB Premium Wireless Mouse	1JR31AA
	HP 435 Multi-Device Wireless Mouse	3B4Q5AA
	HP 125 USB-A Wired Mouse	265A9AA
	HP 128 USB Laser Wired Mouse	265D9AA
	HP 320M USB-A Wired Mouse	9VA80AA
	HP Creator USB-A+Bluetooth 935 Wireless Mouse Black	1D0K8AA
	HP USB-A+Bluetooth Multi-Device 635 Wireless Mouse Black	1D0K2AA
	HP USB-A+Bluetooth Travel Bluetooth Mouse	6SP30AA
	HP 155 USB-A Wired Mouse	5B8B7AA#ACJ
Power	HP 45W USB-C G2 Zeus AC Power Adapter	1HE07AA
	HP 45W USB-C LC Dali AC Power Adapter	1MZ01AA
	HP 65W USB-C Hades AC Power Adapter	1HE08AA
	HP 65W USB-C LC AC Power Adapter	1P3K6AA
	HP 65W USB-C Travel Slim Kermit AC Power Adapter	3PN48AA
Commodity	HP USB DVD-Writer EXT ODD	F2B56AA
	HP Nano Keyed Cable Lock	1AJ39AA
	HP Nano Master Keyed Cable Lock	1AJ40AA
	HP SureKey Standard/Nano/Wedge Cable Lock	6UW42AA

Summary of Changes

Date of change:	Version History:	Updated	Description of change:
April 11, 2022	V1 to V2	Added	Reference for USB ports and Battery Life
May 6, 2022	V2 to V3	Added	Environmental Data
	V3 to V4		

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