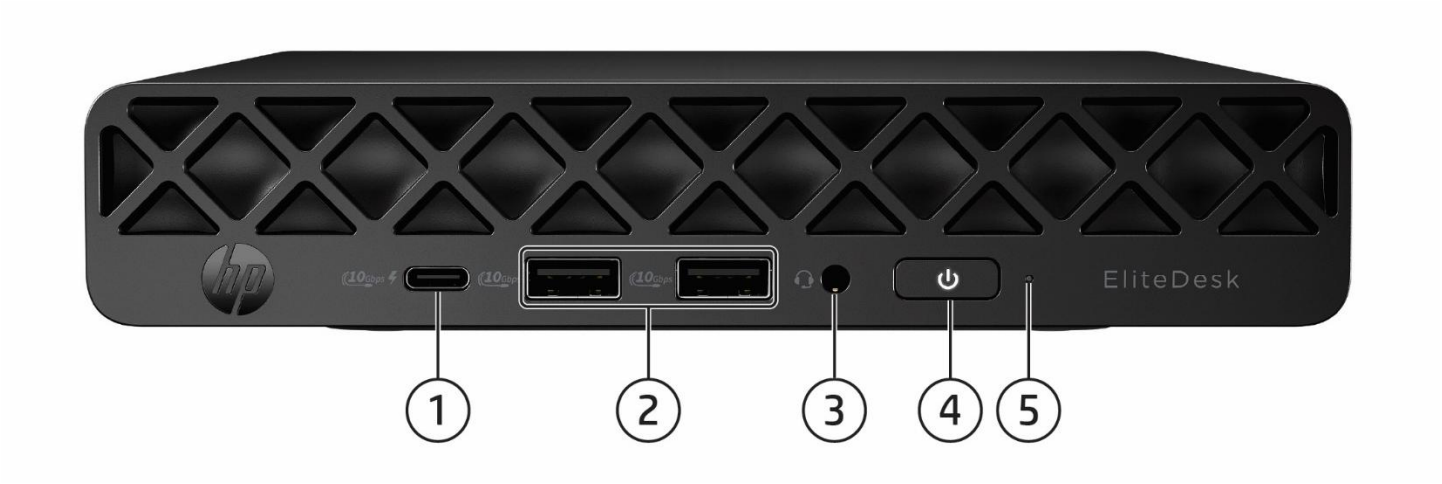
Overview

HP EliteDesk 8 Mini G1a Desktop PC

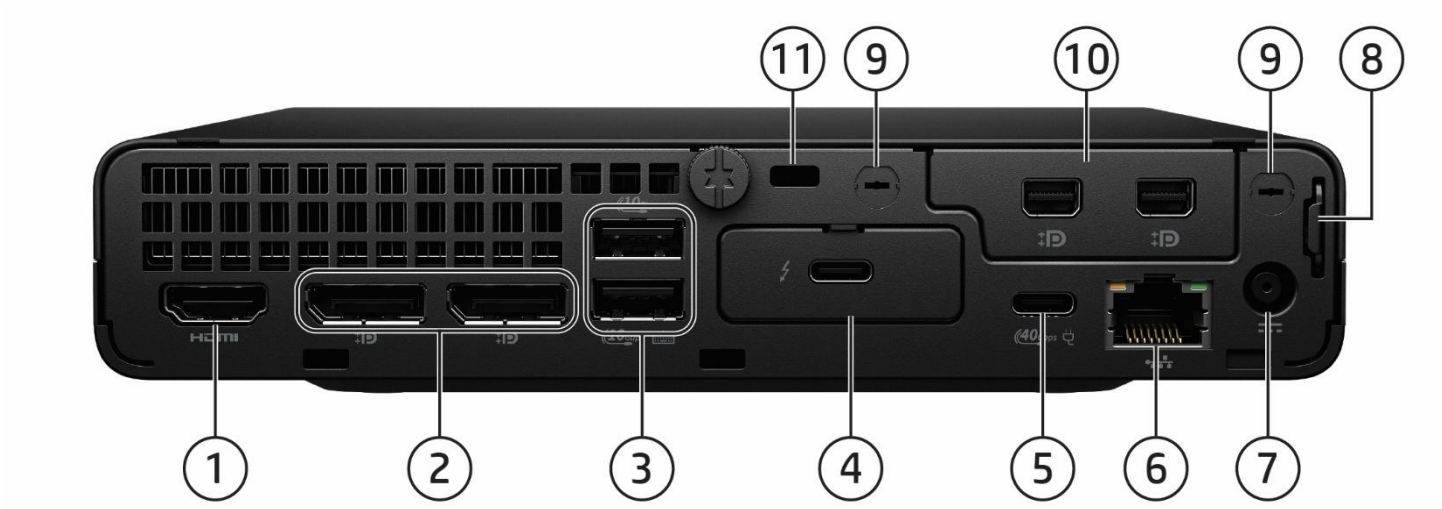


1. Type-C® SuperSpeed USB 10Gbps signaling rate[1] (charge support up to 5V/3A)
2. Type-A SuperSpeed USB 10 Gbps signaling rate[1]
3. Universal Audio Jack with CTIA headset support
4. Dual-state power button
5. Storage activity light

1. Actual throughout may vary

Overview

HP EliteDesk 8 Mini G1a Desktop PC



1. (1) HDMI 2.1
2. (2) Dual Mode DisplayPort™ 2.1 UHBR10
3. 2 x Type-A SuperSpeed USB 10Gbps signaling rate[1] (Supporting wake from S4 with keyboard/mouse connected and enabled in BIOS)
4. (1) Flex Port 1, choice of:
   - DisplayPort™ 2.1
   - HDMI 2.1
   - VGA
   - 2.5 GbE Ethernet NIC
   - Serial
   - Dual Type A SuperSpeed USB 5Gbps signaling rate port[1]
   - Type-C® SuperSpeed USB 20Gbps signaling rate port[1]
   - Thunderbolt 4.0 (shonw in the image)
5. Type-C® USB 4.0 with Alt mode and 100W Power in
6. RJ-45 Network Adapter
7. Power connector
8. Retractable Padlock Loop
9. (2) External WLAN antenna opening
10. (1) Flex Port 2, choice of:
    - Dual Type-A SuperSpeed USB 5Gbps signaling rate port[1] (shonw in the image)
    - Serial
    - HP Video Port Extender
11. Standard cable lock slot (10mm)

1. Actual throughout may vary

Not Shown

Slots

(1) internal M.2 WLAN (2230 connector)

(2) internal M.2 SSD storage (2280 connector)

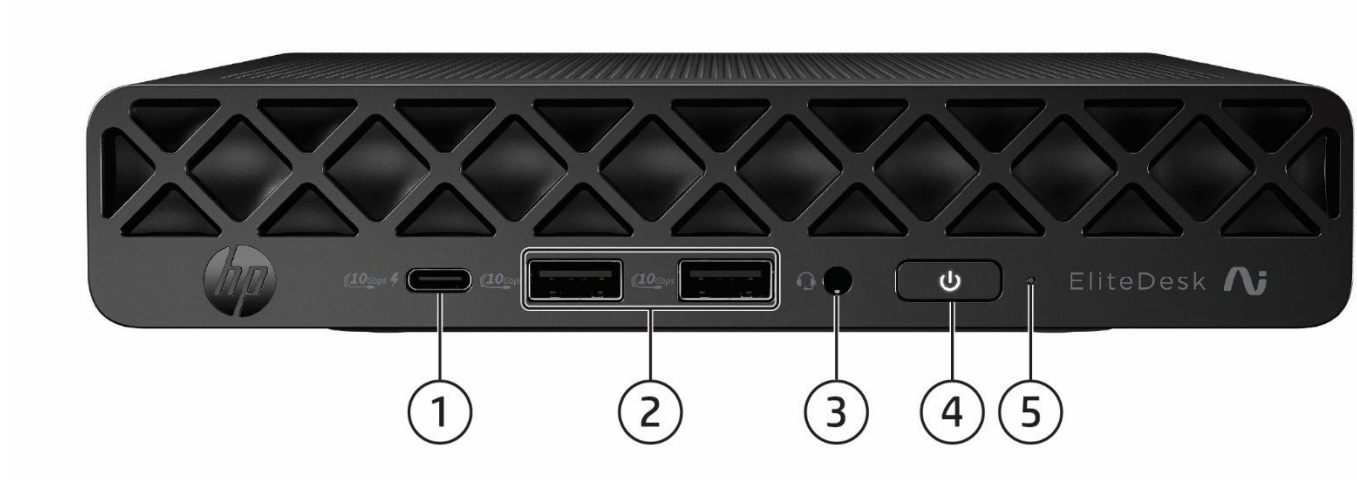
Mounting

VESA 100 mounting system integrated on bottom of PC chassis

Support for:
- VESA Sleeve standalone
- Quick Release Bracket
- B200/B300/B500/B550/B560/B600 Mounting bracket
- Integrated Work Center Stand
- HP Single Monitor Arm

Overview

HP EliteDesk 8 Mini G1a Desktop Next Gen AI PC

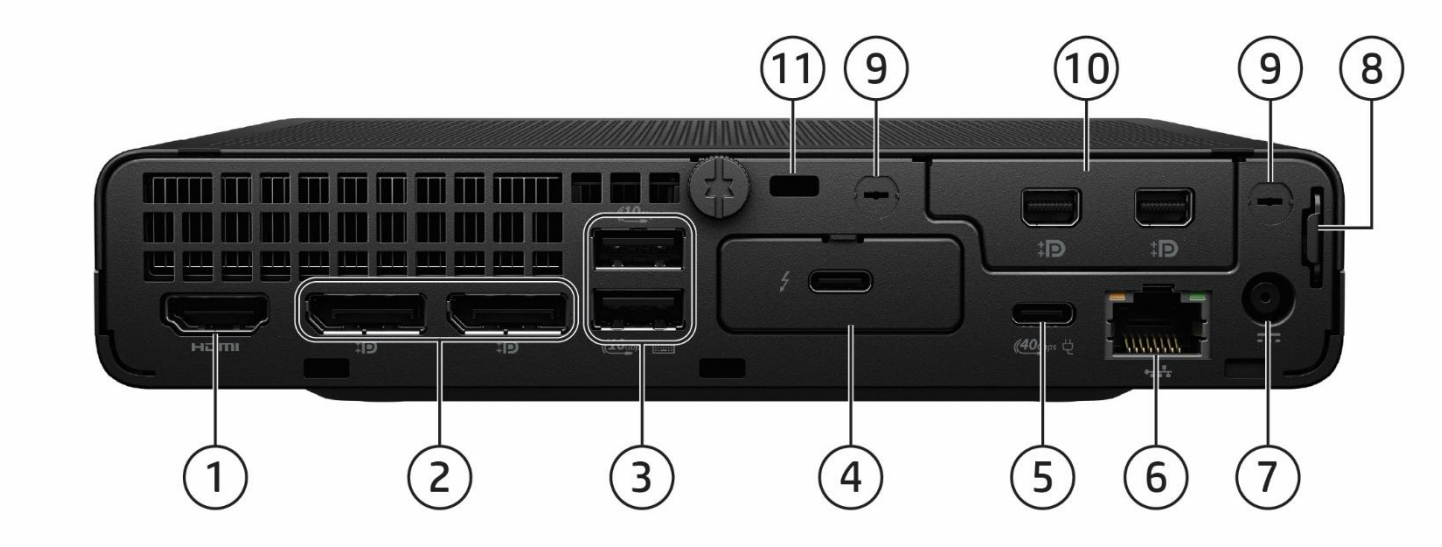


1. Type-C® SuperSpeed USB 10Gbps signaling rate[1] (charge support up to 5V/3A)
2. (2) Type-A SuperSpeed USB 10 Gbps signaling rate[1]
3. Universal Audio Jack with CTIA headset support
4. Dual-state power button
5. Storage activity light

1. Actual throughout may vary

Overview

HP EliteDesk 8 Mini G1a Desktop Next Gen AI PC



1. (1) HDMI 2.1
2. (2) Dual Mode DisplayPort™ 2.1 UHBR10
3. 2 x Type-A SuperSpeed USB 10Gbps signaling rate[1] (Supporting wake from S4 with keyboard/mouse connected and enabled in BIOS)
4. (1) Flex Port 1, choice of:
   - DisplayPort™ 2.1
   - HDMI 2.1
   - VGA
   - 2.5 GbE Ethernet NIC
   - Dual Type A SuperSpeed USB 5Gbps signaling rate port[1]
   - Thunderbolt 4.0 (shown in the image)
5. Type-C® USB 4.0 with Alt mode and 100W Power in
6. RJ-45 Network Adapter
7. Power connector
8. Retractable Padlock Loop
9. (2) External WLAN antenna opening
10. (1) Flex Port 2, choice of:
    - Dual Type-A SuperSpeed USB 5Gbps signaling rate port[1](shown in the image)
    - Serial
    - HP Video Port Extender
11. Standard cable lock slot (10mm)

1. Actual throughout may vary

Not Shown

Slots

(1) internal M.2 WLAN (2230 connector)

(3) internal M.2 SSD storage (2280 connector)

Mounting

Support for:
- VESA Sleeve standalone
- Quick Release Bracket
- B200/B300/B500/B550/B560/B600 Mounting bracket
- Integrated Work Center Stand
- HP Single Monitor Arm

NOTE: Single power on feature is available via selected HP Displays with 100W power delivery

Standard Features and Configurable Components (availability may vary by country)

PRODUCT NAME

HP EliteDesk 8 Mini G1a Desktop Next Gen AI PC
HP EliteDesk 8 Mini G1a Desktop PC

OPERATING SYSTEM

Preinstalled	Windows 11 Pro[1] Windows 11 Pro Education[1] Windows 11 Home - HP recommends Windows 11 Pro for business[1] Windows 11 Home Single Language- HP recommends Windows 11 Pro for business[1] FreeDOS[1]
Web supported	Windows 11 Pro (Windows 11 Enterprise available with a Volume Licensing Agreement)[1]

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 apply and additional requirements may apply over time for updates.
See http://www.windows.com.

Standard Features and Configurable Components (availability may vary by country)

PROCESSORS[1]

AMD® Ryzen™ AI 300 series Processors with 50 TOPS NPU, PRO technologies and integrated AMD® Radeon™ Graphics
(Available on HP EliteDesk 8 Mini G1a Desktop Next Gen AI PC)

AMD Ryzen™ AI 7 PRO 350 with Radeon™ 860M Graphics (2.0 GHz base clock, up 5.0GHz max boost clock, 24 MB cache, 8 cores, 16 threads, 54W)
AMD Ryzen™ AI 7 350 with Radeon™ 860M Graphics (2.0 GHz base clock, up 5.0GHz max boost clock, 24 MB cache, 8 cores, 16 threads, 54W)
AMD Ryzen™ AI 5 PRO 340 with Radeon™ 840 Graphics (2.0 GHz base clock, up to 4.8 GHz max boost clock, 22 MB cache, 6 cores, 12 threads, 54W)
AMD Ryzen™ AI 5 340 with Radeon™ 840 Graphics (2.0 GHz base clock, up to 4.8 GHz max boost clock, 22 MB cache, 6 cores, 12 threads, 54W)

AMD® Ryzen™ 200 series Processors with PRO technologies and integrated AMD® Radeon™ Graphics
(Available on HP EliteDesk 8 Mini G1a Desktop PC)

AMD Ryzen™ 5 PRO 215 with Radeon™ 740M Graphics (3.2 GHz base clock, up to 4.7GHz max boost clock, 22 MB cache, 6 cores, 12 threads, 28W)
AMD Ryzen™ 5 220 with Radeon™ 740M Graphics (3.2 GHz base clock, up to 4.9GHz max boost clock, 22 MB cache, 6 cores, 12 threads, 28W)
AMD Ryzen™ 3 210 with Radeon™ 740M Graphics (3.0 GHz base clock, up to 4.7 GHz max boost clock, 12 MB cache, 4 cores, 8 threads, 28W)

1. Multi-core is designed to improve the 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.

GRAPHICS

System Integrated Graphics

AMD® Radeon™ 860M Graphics (Integrated in Ryzen AI 7 350/ Ryzen AI 7 PRO 350)
AMD® Radeon™ 840M Graphics (Integrated in Ryzen AI 5 340/ Ryzen AI 7 PRO 340)
AMD Radeon™ 740M Graphics (Integrated in Ryzen 3 210/Ryzen 5 PRO 215/ Ryzen 5 220)

Note: Integrated graphics support up to 4 display signals.
Support up to 7 displays with a maximum of 6 active at a time when configured with 1 video port flex IO and 1 HP Video Port Extender.

Adapters and Cables

HP DisplayPort™ Cable
HP DisplayPort™ to DVI-D Adapter
HP DisplayPort™ to VGA Adapter
Mini DisplayPort™ to DisplayPort™ Adapter
1m Thunderbolt 4™ Cable (100W power delivery)
HP 1.8m HDMI Cable
HP USB-C® to DisplayPort™ Adapter G2
HP USB-C® to HDMI Adapter
HP USB-C® to USB 3.0 Adapter

Standard Features and Configurable Components (availability may vary by country)

STORAGE

M.2 PCIe NMVe Solid State Drives (SSD)[1]

256GB M.2 2280 PCIe NVMe SSD
512GB M.2 2280 PCIe NVMe SSD
1TB M.2 2280 PCIe NVMe SSD
512GB M.2 2280 PCIe NVMe Three Layer Cell SSD
1TB M.2 2280 PCIe NVMe Three Layer Cell SSD
2TB M.2 2280 PCIe NVMe Three Layer Cell SSD
256GB M.2 2280 PCIe NVMe Self Encrypted OPAL2 SSD[2]
512GB M.2 2280 PCIe NVMe Self Encrypted OPAL2 Three Layer Cell SSD[2]

1. For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows) of system disk is reserved for the system recovery software.
2. Storage Drivelock does not work with Self Encrypting storage.

MEMORY[1,2,3,4]

Max Memory Configuration

DDR5-5600 (Transfer rates up to 5600 MT/s), Max 64 GB, 2 SO-DIMM

1. All memory slots are customer accessible/upgradeable.
2. Actual transfer rate will vary and is determined by the system's configured processor. See processor specifications for supported memory data rate.
3. System architecture design is 1DIMM per channel and the population starts from the furthest memory slot from the processor.
4. To achieve optimal memory speed, HP strongly recommends using identical memory modules (e.g., same capacity, same part number and from the same supplier) within the same memory channel.
5. Transfer rates determined by processor and memory configuration.

Memory Configuration

8GB (1 x 8GB)
16GB (2 x 8GB)
16GB (1 x 16GB)
32GB (2 x 16GB)
32GB (1 x 32GB)
64GB (2 x 32GB)

NETWORKING/COMMUNICATIONS

Ethernet (RJ-45)

Ethernet Realtek RTL8111EPP 1GbE[1]
Intel® I226V 2.5 Gigabit Network Connection LOM

1. Supports full-featured AMD DASH and hardware enforced KVM

Wireless[1]

MediaTek MT7925 Wi-Fi7 + Bluetooth 5.4 Wireless Card (802.11be 2x2, AMD AIM-T)
MediaTek RZ616 Wi-Fi 6E + Bluetooth 5.3 Wireless Card (802.11ax 2x2, AMD AIM-T)
Realtek RTL8852BE-VT 802.11ax 2x2 Wi-Fi + Bluetooth 5.4 Wireless Card (802.11ax 2x2, supporting gigabit data rate)

NOTE: Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 7 (802.11BE) functionality requires Windows 11 24H2 and a Wi-Fi 7 router, sold separately. Wi-Fi 7 is backwards compatible with prior 802.11 specs. Available in countries where Wi-Fi 7 is supported. The specification for 802.11BE is a draft specification and is not final. If the final specification differs from the draft specification, it may affect the ability of the device to communicate with other 802.11BE devices.
NOTE: WiFi-6E and Wi-Fi 7might be restricted by local regulation and only available in countries where Wi-Fi 6E and Wi-Fi 7 are supported. HP will enable countries in the future by upgrading BIOS in default as the technology becomes available in more regions.

KEYBOARDS AND POINTING DEVICES

Keyboards

HP 125 v2 Wired Keyboard
HP 125 v2 Antimicrobial Wired Keyboard[1]
HP 320K v2 Keyboard
HP USB Business Slim v2 Wired Smart Card CCID Keyboard

Keyboard and Mouse Combo

HP 725 Multi-Device Rechargeable Wireless Keyboard and Mouse Combo

NOTE: v2 keyboards contains copilot* shortcut key.
*Copilot in Windows requires Windows 11. Some features require an NPU. Timing of feature delivery and availability varies by market and device. Requires Microsoft account to log in. Where Microsoft in Windows is not available, the Copilot key will lead to the Bing search engine. Use of Recall requires customer authentication using Windows Hello Enhanced Sign in Security (ESS) which requires a fingerprint reader or facial recognition camera and may not be supported on all platforms. See http://aka.ms/WindowsAIFeatures.

Mouse

HP Wired Desktop 320M Mouse
HP 125 Laser Wired Mouse
HP 128 Laser Wired Mouse
HP 125 Antimicrobial Wired Mouse (China Only)

1. Available in China only.

Standard Features and Configurable Components (availability may vary by country)

SECURITY

Keyboards

TPM 2.0 endpoint security controller (Infineon SLB9672/Nuvoton NPCT760HABYX). Common Criteria EAL4+ Certified. FIPS 140-2 Level 2 Certified.
Intrusion Sensor for Mini (integrated in the PCA, can be enabled/disabled through BIOS)
Support for chassis cable lock devices (10 mm barrel or smaller)
Support for chassis padlocks devices
SATA port disablement (via BIOS)
Serial, USB enable / disable (via BIOS)
Serial, parallel, USB enable / disable (via BIOS)
Optional USB Port Disable at factory (user configurable via BIOS)
Removable media write/boot control
Power-on password (via BIOS)
Setup password (via BIOS)

PORTS

I/O Ports – Internal Ports

M.2 PCIe	(1) M.2 PCIe 3 x1 2230 (for WLAN) (2) M.2 PCIe 4 x 4 2280 (for storage)
3rd SSD connector[1]	(1) M.2 PCIe 4x4 2280 (only available with 3rd SSD expansion module)

1. 3rd SSD connector only available on Ryzen AI 300 series

I/O Ports – Standard

Type-A SuperSpeed USB 10 Gbps signaling rate port[2]	2 (front), 2 (rear)
Type-C® SuperSpeed USB 10 Gbps signaling rate port[2] (15W)	1 (front)
Video	2 DisplayPort™ 2.1 UHBR10 1 HDMI 2.1 1 USB 4.0 with Alt Mode DisplayPort™
Audio	1 Combo Audio Jack with CTIA and OMTP headset support (front)
Network Interface	RJ45

2. Actual throughout may vary

(1) Flexible Port 1 – Optional (rear), choice of one of the following:

Dual SuperSpeed USB Type-A 5Gbps signaling rate port[1]	1
Dual SuperSpeed USB Type-C 10Gbps signaling rate port[1] with 15W power out	1
Thunderbolt™ 4.0	1
Video	1 DisplayPort™ 2.1 or HDMI 2.1 or VGA**
Serial (RS-232)	1
RJ-45 Ethernet NIC	(1) 2.5Gbps

NOTE*: Configurable VGA port does not support 4K resolution.
1. Actual throughout may vary

(1) Flexible Port 2 – Optional (rear), choice of <u>one</u> of the following:

Dual Type-A SuperSpeed USB 5Gbps signaling rate port[1]	1
Serial (RS-232)	1
HP Video Port Extender	1

USB SPECIFICATION AND MARKETING NAME MAPPING TABLE

Marketing Name	Technical Terminology
Hi-Speed USB 480Mbps signaling rate[1]	USB 2.0
SuperSpeed USB 5Gbps signaling rate[1]	USB 3.2 Gen 1
SuperSpeed USB 10Gbps signaling rate[1]	USB 3.2 Gen 2
SuperSpeed USB 20Gbps signaling rate[1]	USB 3.2 Gen 2x2

1. Actual throughout may vary

Standard Features and Configurable Components (availability may vary by country)

SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS

Software
Buy Microsoft Office[1] (sold separately)
Edge Customization
HP AI Companion (Only on Next Gen AI PC's)
HP Connection Optimizer
HP Desktop Support Utilities
HP Documentation
HP Hot Key Support
HP Notifications
HP PC Hardware Diagnostics UEFI
HP PC Hardware Diagnostics Windows
HP Privacy Settings
HP Services Scan[2]
HP Smart Support[3]
HP Setup Integrated OOBE
HP Support Assistant[4]
HSA Fusion for Commercial
HSA Telemetry for Commercial
myHP
Poly Lens[5]
Poly Camera Pro

Manageability Features
HP Client Catalog (download)[6]
HP Client Management Script Library (download)[7]
HP Cloud Recovery[8]
HP Connect for Microsoft Endpoint Manager[9]
HP Driver Packs (download)[10]
HP Image Assistant (download)[11]
HP Manageability Integration Kit (download)[12]
HP Patch Assistant[13]

Security Features
HP Wolf Security for Business includes:[14]
HP Sure Admin[15]
HP Sure Click[16]
HP Sure Recover[17]
HP Sure Sense[18]
HP Sure Run[19]
HP Sure Start[20]
HP Tamper Lock[21]
Secured-Core PC Enable

BIOS
Absolute Persistence Module[22]
Audio Permanent Disable
HP Bios Recovery
HP BIOS Update via Network
HP BIOSphere[23]
HP DriveLock & Automatic DriveLock
HP Secure Erase[24]

1. Microsoft 365 sold separately and requires Internet access for activation.
2. HP Services Scan is preinstalled and/or provided thru Windows Update and checks for service entitlement on each hardware device and downloads the HP Insights agent automatically. To disable this feature, please follow the instructions at http://www.hpdaas.com/requirements. The HP Insights agent is a telemetry and analytics platform that provides critical data around devices and applications and is not sold as a standalone service. Select HP Workforce Solutions require an HP Insights agent for Windows, Mac, & Android, available for download at https://admin.hp.com/software. For full system requirements and services that require the agent, please visit: https://admin.hp.com/requirements. The agent collects telemetry and analytics around devices and applications that integrate into the Workforce Experience platform and is not sold as a standalone service. Internet access with connection to the Workforce Experience platform is required. HP follows stringent GDPR privacy regulations, and the platform is ISO27001, ISO27701, ISO27017 and SOC2 Type2 certified for Information Security. Not available in China.
3. 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.
4. HP Support Assistant is available on Windows. For more information, please visit http://www.support.hp.com/help/hp-support-assistant
5. Poly Lens Desktop requires a Windows OS.
6. HP Client Catalog not preinstalled, however available for download at (https://www.hp.com/us-en/solutions/client-management-solutions.html)
7. HP Client Management Script Library (https://www.hp.com/us-en/solutions/client-management-solutions.html#tab=manageability-tools).
8. HP Cloud Recovery is available for Z by HP, HP Elite and Pro desktops and laptops PCs with Intel® or AMD processors and requires an open, wired network connection. Note: You must back up important files, data, photos, videos, etc. before use to avoid loss of data. Detail, please refer to: https://apps.microsoft.com/detail/9mtks9pr7r3n?hl=en-US&gl=US.
9. HP Connect for Microsoft Endpoint Manager is available from the Azure Market Place for HP Pro, Elite, Z and Point-of-Sale PCs managed with Microsoft Endpoint Manager. Subscription to Microsoft Endpoint Manager required and sold separately. Network connection required.
10. HP Driver Packs not preinstalled, however available for download at http://www.hp.com/go/clientmanagement.
11. HP Image Assistant not preinstalled, however available for download at (https://ftp.ext.hp.com/pub/caps-softpaq/cmit/HPIA.html),
12. HP Manageability Integration Kit can be downloaded from https://www.hp.com/us-en/solutions/client-management-solutions.html#tab=manageability-tools.
13. HP Patch Assistant available on select HP PCs with the HP Manageability Kit that are managed through Microsoft System Center Configuration Manager. HP Manageability Integration Kit can be downloaded from Client Management Solutions Overview HP® Official Site.
14. HP Wolf Security for Business requires Windows 10 or 11 Pro 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.
15. HP Sure Admin requires HP G8 or newer platforms, Windows 10 or higher, HP BIOS, HP Manageability Kit or KMS Service from http://www.hp.com/go/clientmanagement and HP Sure Admin Local Access Authenticator smartphone app from the Android or Apple store.
16. HP Sure Click requires Windows 10 Pro or higher or Enterprise. See https://bit.ly/2PrLT6A_SureClick for complete details.
17. HP Sure Recover is available on select HP PCs and requires Windows 10 or 11 and an open network connection. You must back up important files, data, photos, videos, etc. before using HP Sure Recover to avoid loss of data.
18. HP Sure Sense is available on select HP PCs with Windows 10 Pro, Windows 10 Enterprise, Windows 11 Pro, or Windows 11 Enterprise OS
19. HP Sure Run is available on select HP PCs and requires Windows 10 and higher.
20. HP Sure Start is available on select HP PCs and requires Windows 10 and higher.
21. HP Tamper Lock can be Enabled/disabled by customers or IT administrator with administrator authority. Ensures that only authorized users can start up the PC or access the BIOS by requiring user authentication using a password prior to system start-up.
22. Absolute firmware module is shipped turned off and can only be activated with the purchase a license subscription and full activation of the software agent. License subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. Certain conditions apply. For full details visit: https://www.absolute.com/about/legal/agreements/absolute.
23. HP BIOSphere features may vary depending on the platform and configuration.
24. HP Secure Erase implements the methods outlined in the National Institute of Standards and Technology Special Publication 800-88r "Clear" sanitation method. HP Secure Erase does not support platforms with Intel® Optane™.

ENVIRONMENTAL & INDUSTRY

ENERGY STAR® certified models available

ENERGY STAR® certified. EPEAT® registered[1].
Low halogen (chassis, all internal components and modules)[2]
TAA compliant models available

1. Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. EPEAT® status varies by country. Visit www.epeat.net for more information.
2. External power supplies, power cords, cables and peripherals are not Low Halogen. Service parts obtained after purchase may not be Low Halogen.

UNIT ENVIRONMENT AND OPERATING CONDITIONS

General Unit Operating Guidelines

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

Temperature Range	Operating: 50° to 95° F (10° to 35° C)[3] Non-operating: -22° to 140° F (-30° to 60° C)
Relative Humidity	Operating: 10% to 90% (non-condensing at ambient) Non-operating: 5% to 95% (non-condensing at ambient)
Maximum Altitude (unpressurized)	Operating: 5000m Non-operating: 50000ft (15240 m)

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

Standard Features and Configurable Components (availability may vary by country)

HP EliteDesk 8 Mini G1a Desktop PC

Eco-Label Certifications & declarations	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: • IT ECO declaration • US ENERGY STAR® • EPEAT® Climate+ registered in the United States. See http://www.epeat.net for registration status in your country.* • TCO Certified 9 **NOTE***: 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.		
Sustainable Impact Specifications	At least 25% ocean bound plastic-PET Bottle in the Fan and 5% ocean bound plastic-PET Bottle used in the Speaker At least 5% OP-EPS in plastic parts of Enclosure At least 55% post-consumer recycled plastic used in system 95% recycled plastic used in parts 20% recycled metal used in parts 100% recycled Aluminum used in thermal part 100% Recycled Rare Earth Elements (REE) used in speaker 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	The configuration used for the Energy Consumption and Declared Noise Emissions data for the Desktop model is based on a “Typically Configured Desktop”.		
Energy Consumption (in accordance with US ENERGY STAR® test method)	**115VAC, 60Hz**	**230VAC, 50Hz**	**100VAC, 50Hz**
Normal Operation (Short idle)	6.80W	6.88W	6.64W
Normal Operation (Long idle)	3.74W	3.82W	3.58W
Sleep	3.78W	3.81W	3.74W
Off	0.96W	0.97W	0.94W
	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.		
Heat Dissipation*	**115VAC, 60Hz**	**230VAC, 50Hz**	**100VAC, 50Hz**
Normal Operation (Short idle)	23.19 BTU/hr	23.46 BTU/hr	22.64 BTU/hr
Normal Operation (Long idle)	12.75 BTU/hr	13.03 BTU/hr	12.21 BTU/hr
Sleep	12.89 BTU/hr	12.99 BTU/hr	12.75 BTU/hr
Off	3.27 BTU/hr	3.31 BTU/hr	3.21 BTU/hr

Standard Features and Configurable Components (availability may vary by country)

	NOTE: Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.		
Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)	**Sound Power** (L_{WAd}, bels)	**Sound Pressure** (L_{pAm}, decibels)	
Typically Configured – Idle	2.7	16	
Fixed Disk – Random writes	2.8	16	
Longevity and Upgrading	This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include: Spare parts are available throughout the warranty period and or for up to "5" years after the end of production.		
Batteries	His battery(s) in this product complies with EU Directive 2006/66/EC Batteries used in the product do not contain: Mercury greater the1ppm by weight Cadmium is greater than 20ppm by weight Battery size: Not Applicable Battery type: Not Applicable		
Additional Information	• This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC. • This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC. • This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986). • This product is in compliance with the IEEE 1680.1 (EPEAT) standard at the <Gold> level, 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. • Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043. • This product contains 35.2% post-consumer recycled plastic (by wt.) • This product is 92.8% recycle-able when properly disposed of at end of life.		
Packaging Materials (Horizontal design)	**External:**	PAPER/Paper	562 g
	Internal:	PAPER/Molded Pulp	79 g
		PLASTIC/Polyethylene low density - LDPE	16 g
Packaging Materials (Vertical design)	**External:**	PAPER/Paper	405 g
	Internal:	PAPER/Molded Pulp	74 g
		PLASTIC/Polyethylene low density - LDPE	5 g
	The plastic packaging material contains at least 30% recycled content.		
	The corrugated paper packaging materials contains at least 80% recycled content.		
RoHS Compliance	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. 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.		

Standard Features and Configurable Components (availability may vary by country)

	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. To obtain a copy of the HP RoHS Compliance Statement, see HP RoHS position statement.
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 https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c05998906 • Asbestos • Certain Azo Colorants • Certain Brominated Flame Retardants – may not be used as flame retardants in plastics • Cadmium • Chlorinated Hydrocarbons • Chlorinated Paraffins • Formaldehyde • Halogenated Diphenyl Methanes • Lead carbonates and sulfates • Lead and Lead compounds • Mercuric Oxide Batteries • Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user. • Ozone Depleting Substances • Polybrominated Biphenyls (PBBs) • Polybrominated Biphenyl Ethers (PBBEs) • Polybrominated Biphenyl Oxides (PBBOs) • Polychlorinated Biphenyl (PCB) • Polychlorinated Terphenyls (PCT) • Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications. • Radioactive Substances • Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)
Packaging Usage	HP follows these guidelines to decrease the environmental impact of product packaging: • 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.
End-of-life Management and Recycling	HP Inc. offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: https://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c05403198 or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. 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.

Standard Features and Configurable Components (availability may vary by country)

HP Inc. Corporate Environmental Information	For more information about HP's commitment to the environment: Sustainable Impact Report https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c06040843 Eco-label certifications https://www.hp.com/us-en/sustainable-impact/document-reports.html#filters_documents_reports-=document_type-type_energy_star,type_epeat,type_tcoISO ISO 14001 certificates: https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c04777932
footnotes	• Percentage of ocean-bound plastic and PCR 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. • Plastic cushions are made from >90% recycled plastic. Disclaimer: recycled metal is expressed as a percentage of the total weight of the metal according to ISO 14021 definitions for metal parts over 25 grams.

HP EliteDesk 8 Mini G1a Next Gen AI PC

Eco-Label Certifications & declarations	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: • IT ECO declaration • US ENERGY STAR® • EPEAT® Climate+ registered in the United States. See http://www.epeat.net for registration status in your country.* • TCO Certified 9 **NOTE***: 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.
Sustainable Impact Specifications	At least 25% ocean bound plastic-PET Bottle in the Fan and 5% ocean bound plastic-PET Bottle used in the Speaker At least 5% OP-EPS in plastic parts of Enclosure At least 55% of post-consumer recycled plastic used in the system 95% recycled plastic used in parts 20% recycled metal used in parts 100% recycled Aluminum used in thermal part 100% Recycled Rare Earth Elements (REE) used in speaker Low 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	The configuration used for the Energy Consumption and Declared Noise Emissions data for the Desktop model is based on a "Typically Configured Desktop".

Standard Features and Configurable Components (availability may vary by country)

Energy Consumption (in accordance with US ENERGY STAR® test method)	**115VAC, 60Hz**	**230VAC, 50Hz**	**100VAC, 50Hz**
Normal Operation (Short idle)	6.80 W	6.88 W	6.64 W
Normal Operation (Long idle)	3.64 W	3.72 W	3.48 W
Sleep	3.67 W	3.70 W	3.63 W
Off	0.94 W	0.95 W	0.92 W
	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.		
Heat Dissipation*	**115VAC, 60Hz**	**230VAC, 50Hz**	**100VAC, 50Hz**
Normal Operation (Short idle)	23.19 BTU/hr	23.46 BTU/hr	22.64 BTU/hr
Normal Operation (Long idle)	12.41 BTU/hr	12.69 BTU/hr	11.87 BTU/hr
Sleep	12.51 BTU/hr	12.62 BTU/hr	12.38 BTU/hr
Off	3.21 BTU/hr	3.24 BTU/hr	3.14 BTU/hr
	NOTE: Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.		

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)	**Sound Power** (L_{WAd}, bels)	**Sound Pressure** (L_{pAm}, decibels)
Typically Configured – Idle	2.7	17
Fixed Disk – Random writes	2.7	17

Longevity and Upgrading	This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include: Spare parts are available throughout the warranty period and or for up to “5” years after the end of production.
Batteries	His battery(s) in this product complies with EU Directive 2006/66/EC Batteries used in the product do not contain: Mercury greater the1ppm by weight Cadmium is greater than 20ppm by weight Battery size: Not Applicable Battery type: Not Applicable

Standard Features and Configurable Components (availability may vary by country)

Additional Information	• This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC. • This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC. • This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986). • This product is in compliance with the IEEE 1680.1 (EPEAT) standard at the <Gold> level, 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. • Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043. • This product contains 35.2% post-consumer recycled plastic (by wt.) • This product is 92.8% recycle-able when properly disposed of at end of life.		
Packaging Materials (Horizontal design)	**External:**	PAPER/Paper	562 g
	Internal:	PAPER/Molded Pulp	79 g
		PLASTIC/Polyethylene low density - LDPE	16 g
Packaging Materials (Vertical design)	**External:**	PAPER/Paper	405 g
	Internal:	PAPER/Molded Pulp	74 g
		PLASTIC/Polyethylene low density - LDPE	5 g
	The plastic packaging material contains at least 30% recycled content.		
	The corrugated paper packaging materials contain at least 80% recycled content.		
RoHS Compliance	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. 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. 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. To obtain a copy of the HP RoHS Compliance Statement, see HP RoHS position statement.		
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 https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c05998906 • Asbestos • Certain Azo Colorants • Certain Brominated Flame Retardants – may not be used as flame retardants in plastics • Cadmium • Chlorinated Hydrocarbons • Chlorinated Paraffins • Formaldehyde • Halogenated Diphenyl Methanes • Lead carbonates and sulfates • Lead and Lead compounds • Mercuric Oxide Batteries • Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.		

	• Ozone Depleting Substances • Polybrominated Biphenyls (PBBs) • Polybrominated Biphenyl Ethers (PBBEs) • Polybrominated Biphenyl Oxides (PBBOs) • Polychlorinated Biphenyl (PCB) • Polychlorinated Terphenyls (PCT) • Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications. • Radioactive Substances • Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)
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End-of-life Management and Recycling	HP Inc. offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: https://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c05403198 or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. 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.
HP Inc. Corporate Environmental Information	For more information about HP's commitment to the environment: Sustainable Impact Report https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c06040843 Eco-label certifications https://www.hp.com/us-en/sustainable-impact/document-reports.html#filters_documents_reports-=document_type-type_energy_star,type_epeat,type_tcoISO ISO 14001 certificates: https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c04777932
footnotes	• Percentage of ocean-bound plastic & PCR 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. • Plastic cushions are made from >90% recycled plastic. • recycled metal is expressed as a percentage of the total weight of the metal according to ISO 14021 definitions for metal parts over 25 grams.

SERVICE AND SUPPORT

On-site Warranty[1]: One-year (1-1-1) limited warranty delivers three years of on-site, next business day[2] service for parts and labor and includes online support, includes 90 days software support. Service offers terms up to 5 years by choosing an optional HP Care Pack. To choose the right level of service for your HP product, visit HP Care Pack Central: http://www.hp.com/go/cpc.[3]

1. Terms and conditions may vary by country. Certain restrictions and exclusions apply. Other warranty variations may be offered in your region.
2. On-site service may be provided pursuant to a service contract between HP and an authorized HP third-party provider, and is not available in certain countries. Global service response times are based on commercially reasonable best effort and may vary by country.
3. Service levels and response times for HP Care Packs may vary depending on your geographic location. Service starts on date of hardware purchase. Restrictions and limitations apply. For details, visit www.hp.com/go/cpc. HP services are governed by the applicable HP terms and conditions of service provided or indicated to Customer at the time of purchase. Customer may have additional statutory rights according to applicable local laws, and such rights are not in any way affected by the HP terms and conditions of service or the HP Limited Warranty provided with your HP Product.

CERTIFICATION AND COMPLIANCE

Energy Efficiency Compliance

ENERGY STAR® certified. EPEAT® registered 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.

PROCESSORS

AMD® Ryzen™ AI PRO 300 Series Processors

Architecture: “Zen 5”
Process Node: 4nm
Neural Processing Unit (NPU)
AMD Integrated Manageability Technology (AIM-T)
AMD® PRO Technologies
AMD® Memory Guard – Helps defend against cold boot attacks with real time encryption of memory
AMD® PRO manageability – DASH including KVM Redirection Profile with hardware enforcement

AMD® Ryzen™ PRO 200 Series Processors

Architecture: “Zen 4”
Process Node: 4nm
AMD® PRO Technologies
AMD® Memory Guard – Helps defend against cold boot attacks with real time encryption of memory
AMD® PRO manageability – DASH including KVM Redirection Profile with hardware enforcement

GRAPHICS

AMD Radeon™ Graphics

Up to four simultaneous displays, 4K60Hz display concurrent with:

- Single external display up to 8K120Hz.
- Up to 4x4K60Hz External display simultaneously (Out of 4 Native video ports + 1 Flex IO option)

Multi Display Support	Maximum of 4 displays supported by the integrated graphics, support up to 4K by each display in multi display scenario.
DisplayPort	DP2.1 features including DP++, Audio Supports MST (Multi-Stream Transport) Supports up to UHBR10 Supports HDCP2.3 Ryzen AI PRO, Ryzen AI, AMD® Ryzen PRO and AMD® Ryzen™ support based on different processor
HDMI	Support HDMI 2.1 features Support HDCP2.3 Supports audio over HDMI
VGA (Optional)	VGA output
Thunderbolt 4 (Optional)	Thunderbolt 4 output
USB-C	Supports DisplayPort™ Alt Mode
Memory	Frame buffer carveout size from 512MB to 16GB.
Maximum Color Depth	Up to 10 bits
Graphics/Video API Support	Ryzen AI PRO and Ryzen AI APUs: • DirectX 12 • Vulkan 1.3 • OpenCL 2.0 • OpenGL 4.6 VP9, H264, H265 decode with 8bit and 10bit depth and up to 4K@24, 30 and 60 FPS video at Vmin. H264, H265 8bit video encode up to 4K@30 or 60fps. AMD® Ryzen™ PRO and AMD® Ryzen™ APUs: • DirectX 12 • Vulkan 1.3 • OpenCL 2.0 • OpenGL 4.6 VP9, H264, H265 decode with 8bit and 10bit depth and up to 4K@24, 30 and 60 FPS video at Vmin. H264, H265 8bit video encode up to 4K@30 or 60fps.
Max resolution (Native DisplayPort)	7680 x 2160@120Hz
Max resolution (Native HDMI)	7680 x 2160@120Hz
Max resolution (Native USB-4)	DP ALT Mode DP2.1 UHBR20 7680 x 4320@60Hz
Max resolution (Option VGA)	1920 x 1080@60Hz
Max resolution (Option DisplayPort)	7680 x 2160@120Hz
Max resolution (Option HDMI)	7680 x 2160@120Hz

Max resolution (Option Thunderbolt 4)	7680 x 2160@120Hz

STORAGE

256GB M.2 2280 PCIe NVMe Self Encrypted OPAL2 Value SSD	
Capacity	256GB
Interface	PCIE NVMe
Minimum Sequential Read	3100 MB/s ±20%
Minimum Sequential Write	1200 MB/s ±20%
Logical Blocks	500,118,192
Features	TRIM; L1.2; TCG Opal 2.0

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

512GB M.2 2280 PCIe NVMe Self Encrypted OPAL2 Three Layer Cell SSD	
Capacity	512GB
Interface	PCIE Gen4x4
Minimum Sequential Read	6400 MB/s ±20%
Minimum Sequential Write	3500 MB/s ±20%
Logical Blocks	1,000,215,216
Features	TRIM; L1.2; TCG Opal 2.0

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

512GB M.2 2280 PCIe NVMe SSD	
Capacity	512GB
Interface	PCIE Gen4x4
Minimum Sequential Read	3500 MB/s ±20%
Minimum Sequential Write	1600 MB/s ±20%
Logical Blocks	1,000,215,216
Features	TRIM; L1.2

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

256GB M.2 2280 PCIe NVMe SSD	
Capacity	256GB
Interface	PCIE Gen4x4
Minimum Sequential Read	3100 MB/s ±20%
Minimum Sequential Write	1200 MB/s ±20%
Logical Blocks	500,118,192
Features	TRIM; L1.2

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

1TB M.2 2280 PCIe NVMe SSD	
Capacity	1TB
Interface	PCIE Gen4x4
Minimum Sequential Read	3500 MB/s ±20%
Minimum Sequential Write	2700 MB/s ±20%
Logical Blocks	2,000,409,264
Features	TRIM; L1.2

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

512GB M.2 2280 PCIe NVMe Three Layer Cell SSD	
Capacity	512GB
Interface	PCIE Gen4x4
Minimum Sequential Read	6400 MB/s ±20%
Minimum Sequential Write	3500 MB/s ±20%
Logical Blocks	1,000,215,216
Features	TRIM; L1.2; Pyrite 2.0

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

1TB M.2 2280 PCIe NVMe Three Layer Cell SSD	
Capacity	1TB
Interface	PCIE Gen4x4
Minimum Sequential Read	6400 MB/s ±20%
Minimum Sequential Write	5000 MB/s ±20%
Logical Blocks	2,000,409,264
Features	TRIM; L1.2; Pyrite 2.0

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

2TB M.2 2280 PCIe NVMe Three Layer Cell SSD	
Capacity	2TB
Interface	PCIE Gen4x4
Minimum Sequential Read	6400 MB/s ±20%
Minimum Sequential Write	5000 MB/s ±20%
Logical Blocks	4,000,797,360
Features	TRIM; L1.2; Pyrite 2.0

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

NETWORKING AND COMMUNICATIONS

Realtek RTK8111EPP 10/100/1000 Integrated NIC	
Connector	RJ-45
System Interface	PCIe + SMBus + USB2
Data rates supported	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 802.3 clauses 40) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s
IEEE Compliance	IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE (Energy Efficient Ethernet) IEEE802.3 compatible Media Access Controller (MAC)
Performance	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload v1&v2 and Giant send offload Receiving Side Scaling Jumbo Frame 9K
Power consumption	Cable Disconnection: 25mW 100Mbps Full Run: 450mW 1000bp Full Run: 1000mW WoL Enable(S3/S4/S5): 50mW WoL Disable(S3/S4/S5): 25mW
Power Management	ACPI compliant – multiple power modes Situation-sensitive features reduce power consumption Advanced link down power saving for reducing link down power consumption
Management Interface	Auto MDI/MDIX Crossover cable detection
IT Manageability	Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30) Comprehensive diagnostic and configuration software suite Virtual Cable Doctor for Ethernet cable status
Security & Manageability	Support DASH 1.1 compliant / software KVM ASF 2.0

Intel® I226V 2.5 Gigabit Network Connection LOM (non-vPro)	
Connector	RJ-45
System Interface	PCI (Intel proprietary) + SMBus
Data rates supported	1. 10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 2. 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 3. 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 802.3 clauses 40) 4. 2.5 Gbit/s operation (2.5GBASE-T; IEEE 802.3bz Clause 126) 5. Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10& 100 Mbit/s
IEEE Compliance	IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3i 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3ab 1000BAE-T IEEE 802.3bz 2.5GBASE-T
Performance	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload and Giant send offload Receiving Side Scaling (Hash Mode Only) Jumbo Frame 9K
Power consumption	Cable Disconnection: 25mW 100Mbps Full Run: 450mW 1000Mbp Full Run: 1000mW 2500Mbp Full Run: 4500mW WoL Enable(S3/S4/S5): 50mW WoL Disable(S3/S4/S5): 25mW
Power Management	ACPI compliant – multiple power modes Situation-sensitive features reduce power consumption Advanced link down power saving for reducing link down power consumption
Management Interface	Auto MDI/MDIX Crossover cable detection
IT Manageability	Wake-on-LAN from modern standby or sleep state (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite Virtual Cable Doctor for Ethernet cable status
Security & Manageability	Intel® non-vPro™ support with appropriate Intel® chipset components

MediaTek MT7925 Wi-Fi7 + Bluetooth® 5.4 Wireless Card (802.11be 2x2, AMD AIM-T)[1]	
Wireless LAN Standards+F13:G46	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac IEEE 802.11ax IEEE 802.11d IEEE 802.11e IEEE 802.11h IEEE 802.11i IEEE 802.11k IEEE 802.11r IEEE 802.11v
Interoperability	Wi-Fi CERTIFIED™ modules
Frequency Band	802.11b/g/n/ax/be •2.402 – 2.482 GHz 802.11a/n/ac/ax/be •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 •5.955 – 6.415 GHz •6.435 – 6.515 GHz •6.535 – 6.875 GHz •6.895 – 7.115 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: max 300Mbps •802.11ac: max 1733Mbps • 802.11ax: max 2.4Gbps • 802.11be: max 2.8Gbps (160MHz)
Modulation	Direct Sequence Spread Spectrum OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM, 4096QAM
Security[2]	•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
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points

Technical Specifications – Networking and Communications

Output Power[3]	• 802.11b, 1Mbps: +17dBm minimum • 802.11g, 6Mpbs: +16dBm minimum • 802.11a, 6Mbps: +17dBm minimum • 802.11n, MCS7(HT20): +14dBm minimum • 802.11n, MCS7(HT40): +13.5dBm minimu • 802.11ac MCS9(VHT20): 13.5dBm minimum • 802.11ac MCS9(VHT40): +13.5dBm minimum • 802.11ac MCS9(VHT80): +12.5dBm minimum • 802.11ac MCS9(VHT160): +10.5dBm minimum • 802.11ax MCS11(HE20)(6GHz): +11.5dBm minimum • 802.11ax MCS11(HE40)(6GHz): +7.5dBm minimum • 802.11ax MCS11(HE80)(6GHz): +7.5dBm minimum • 802.11ax MCS11(HE160)(6GHz): +7.5dBm minimum • 802.11be MCS13(EHT20)(6GHz): +11.5dBm • 802.11be MCS13(EHT40)(6GHz): +7.5dBm • 802.11be MCS13(EHT80)(6GHz): +7.5dBm • 802.11be MCS13(EHT160)(6GHz): +6.5dBm
Power Consumption	• Transmit mode 2.7 W • Receive mode 1.8 W • Idle mode (PSP) 180 mW (WLAN Associated) • Idle mode 50 mW (WLAN unassociated) • Connected Standby 10mW • Radio disabled 8 mW
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity[4]	• 802.11b, 1Mbps: -93.5dBm maximum • 802.11b, 11Mbps: -85dBm maximum • 802.11a/g, 6Mbps: -90.5dBm maximum • 802.11a/g, 54Mbps: -72.5dBm maximum • 802.11n, MCS0(HT20): -90dBm maximum • 802.11n, MCS7(HT20): -71.5dBm maximum • 802.11n, MCS0(HT40): -88.5dBm maximum • 802.11n, MCS7(HT40): -68.5dBm maximum • 802.11ac, MCS9(VHT20): -88.5dBm maximum • 802.11ac, MCS9(VHT40): -65.5dBm maximum • 802.11ac, MCS9(VHT80): -60.5dBm maximum • 802.11ac, MCS9(VHT160): -58.5dBm maximum • 802.11ax, MCS11(HE20)(6GHz): -59.5dBm maximum • 802.11ax, MCS11(HE40)(6GHz): -56.5dBm maximum • 802.11ax, MCS11(HE80)(6GHz): -53.5dBm maximum • 802.11ax, MCS11(HE160)(6GHz): -51.5dBm maximum • 802.11be, MCS13(EHT20)(6GHz): -55.5dBm maximum • 802.11be, MCS13(EHT40)(6GHz): -53.5dBm maximum • 802.11be, MCS13(EHT80)(6GHz): -51.5dBm maximum • 802.11be, MCS13(EHT160)(6GHz): -48.5dBm maximum
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications
Form Factor	PCI-Express M.2 MiniCard
Dimensions	1. Type 2230: 2.3 x 22.0 x 30.0 mm

Technical Specifications – Networking and Communications

Weight	1. Type 2230: 2.8g	
Operating Voltage	3.3v +/- 9%	
Temperature	Operating Non-operating	14° to 158° F (–10° to 70° C) –40° to 176° F (–40° to 80° C)
Humidity	Operating Non-operating	10% to 90% (non-condensing) 5% to 95% (non-condensing)
Altitude	Operating Non-operating	0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)
LED Activity	LED Amber – Radio OFF; LED Off – Radio ON	
HP Integrated Module with Bluetooth® 4.0/4.1/4.2/5.0/5.1/5.2/5.3/5.4 Wireless Card Technology		
Bluetooth® Specification	4.0/4.1/4.2/5.0/5.1 /5.2/5.3/5.4 Wireless Card 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 +15.5 dBm for BR and +13dBm for EDR.	
Power Consumption	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW	
Bluetooth® Software Supported Link Topology	Microsoft Windows Bluetooth® Software	
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode ETS 300 328, ETS 300 826	
Certifications	FCC (47 CFR) Part 15C/E, Section 15.247, 15.249 Low Voltage Directive IEC950 UL, CSA, and CE Mark	
Bluetooth® Profiles Supported	Bluetooth 4.1-ESR 5/6/7 Compliance LE Link Layer Ping LE Dual Mode LE Link Layer LE Low Duty Cycle Directed Advertising LE L2CAP Connection Oriented Channels Train Nudging & Interlaced Scan Bluetooth 4.2 ESR08 Compliance LE Secure Connection- Basic/Full	

	LE Privacy 1.2 –Link Layer Privacy LE Privacy 1.2 –Extended Scanner Filter Policies LE Data Packet Length Extension FAX Profile (FAX) Basic Imaging Profile (BIP)2 Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP) Bluetooth 5.2 ESR9/10 Compliance LE Advertisement Extensions Channel Selection Algo Limited High Duty Cycle Non-Connectable Advertising 2Mbps LE LE Long Range Bluetooth 5.3 Host to Controller Encryption Key Control Enahancements Compliance to the latest Errata Sectipn 12.3 of Bluetooth 5.3 specification

1. Wi-Fi 7 requires a Wi-Fi 7 router, sold separately, to function in the 6GHz band. Availability of public wireless access points limited. Wi-Fi 7 is backwards compatible with prior 802.11 specs. And available in countries where Wi-Fi 7 is supported. Wi-Fi 7 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. 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).

MediaTek RZ616 Wi-Fi 6E + Bluetooth 5.3 Wireless Card (802.11ax 2x2, AMD AIM-T)[1]	
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 802.11j IEEE 802.11k IEEE 802.11mc IEEE 802.11r IEEE 802.11v IEEE 802.11w
Interoperability	Wi-Fi CERTIFIED™
Frequency Band	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
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, (20MHz, 40MHz, ,80MHz & 160MHz) • 802.11ax: MCS0 ~ MCS11, (20MHz, 40MHz, ,80MHz & 160MHz)
Modulation	Direct Sequence Spread Spectrum OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM
Security[2]	•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 (personal) 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 Power[3]	2.4GHz (MIMO, typical): • 802.11b: +18dBm • 802.11g: +16.5dBm • 802.11n/ac/ax (HT20/VHT20/HE20): +16dBm • 802.11n/ac/ax (HT40/VHT40/HE40): +12.5dBm 5GHz (MIMO, typical): • 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): • 802.11a: 0dBm • 802.11ax HE20: +1dBm • 802.11ax HE40: +4dBm • 802.11ax HE80: +7dBm • 802.11ax HE160: +7.5dBm
Power Consumption	• 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 Sensitivity[4]	2.4GHz (SISO): •802.11b, 11Mbps: -82dBm maximum • 802.11g, 54Mbps: -71dBm maximum • 802.11n, MCS7: -64dBm maximum • 802.11ac, MCS9: -52dBm maximum •802.11ax, MCS11(HT40): -49dBm maximum 5GHz (SISO): • 802.11a, 54Mbps: -71dBm maximum • 802.11n, MCS07: -64dBm maximum • 802.11ac, MCS9: -52dBm maximum •802.11ax, MCS11(HE80/HE160): -46dBm maximum 6GHz (SISO): • 802.11a, 54Mbps: -71dBm 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 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	
Weight	1. Type 2230: 2.8g	
Operating Voltage	3.3v +/- 9%	
Temperature	Operating Non-operating	14° to 158° F (–10° to 70° C) –40° to 176° F (–40° to 80° C)
Humidity	Operating Non-operating	10% to 90% (non-condensing) 5% to 95% (non-condensing)
Altitude	Operating Non-operating	0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)
LED Activity	LED Amber – Radio OFF; LED Off – Radio ON	
HP Integrated Module with Bluetooth® 4.0/4.1/4.2/5.0/5.1/5.2/5.3 Wireless Card Technology		
Bluetooth® Specification	4.0/4.1/4.2/5.0/5.1 /5.2/5.3 Wireless Card 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)	

Technical Specifications – Networking and Communications

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.
Power Consumption	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW
Bluetooth® Software Supported Link Topology	Microsoft Windows Bluetooth® Software
Power Management	Microsoft Windows ACPI, and USB Bus Support
Certifications	F FCC (47 CFR) Part 15C, Section 15.247 & 15.407 ETS 300 328 Low Voltage Directive CE Mark CC (47 CFR) Part 15C/E, Section 15.247, 15.249 Low Voltage Directive IEC950 UL, CSA, and CE Mark
Bluetooth® Profiles Supported	Bluetooth 4.1-ESR 5/6/7 Compliance LE Link Layer Ping LE Dual Mode LE Link Layer LE Low Duty Cycle Directed Advertising LE L2CAP Connection Oriented Channels Train Nudging & Interlaced Scan Bluetooth 4.2 ESR08 Compliance LE Secure Connection- Basic/Full LE Privacy 1.2 –Link Layer Privacy LE Privacy 1.2 –Extended Scanner Filter Policies LE Data Packet Length Extension FAX Profile (FAX) Basic Imaging Profile (BIP)2 Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP) Bluetooth 5.2 ESR9/10 Compliance LE Advertisement Extensions Channel Selection Algo Limited High Duty Cycle Non-Connectable Advertising 2Mbps LE LE Long Range Windows Bluetooth profiles support Bluetooth 5.3 Periodic Advertisement interval Encryption key size control enhancements

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. 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).

Realtek RTL8852BE-VT 802.11ax 2x2 Wi-Fi™ + Bluetooth® 5.4 Wireless Card (802.11ax 2x2, supporting gigabit data rate)[1]	
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	Wi-Fi certified modules
Frequency Band	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	•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
Modulation	Direct Sequence Spread Spectrum, OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM
Security[2]	•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
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points

Technical Specifications – Networking and Communications

Output Power[3]	• 802.11b: +18.5dBm minimum • 802.11g: +17.5dBm minimum • 802.11a: +18.5dBm minimum • 802.11n HT20(2.4GHz): +15.5dBm minimum • 802.11n HT40(2.4GHz): +14.5dBm minimum • 802.11n HT20(5GHz): +15.5dBm minimum • 802.11n HT40(5GHz): +14.5dBm minimum • 802.11ac VHT80(5GHz): +11.5dBm minimum • 802.11ax HE40(2.4GHz): +10dBm minimum • 802.11ax HE80(5GHz): +10dBm minimum
Power Consumption	•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
hahahPower Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity[4]	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. 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: 2.4 x 22.0 x 30.0 mm
Weight	1. Type 2230: 2.8g
Operating Voltage	3.3v +/- 9%
Temperature	Operating: 14° to 158° F (–10° to 70° C) Non-operating: –40° to 176° F (–40° to 80° C)
Humidity	Operating: 10% to 90% (non-condensing) Non-operating: 5% to 95% (non-condensing)
Altitude	Operating: 0 to 10,000 ft (3,048 m) Non-operating: 0 to 50,000 ft (15,240 m)
LED Activity	LED Amber – Radio OFF; LED OFF – Radio ON

HP Integrated Module with Bluetooth® 4.0/4.1/4.2/5.0/5.1/5.2/5.3/5.4 Wireless Card Technology	
Bluetooth® Specification	4.0/4.1/4.2/5.0/5.1/5.2/5.3/5.4 wireless card compliant
Frequency Band	2402 to 2480 MHz
Number of Available Channels	Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH)
Data Rates and Throughput	Legacy: 3 Mbps data rate; throughput up to 2.17 Mbps BLE: 1 Mbps data rate; throughput up to 0.2 Mbps Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)
Transmit Power	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR.
Power Consumption	Peak (Tx): 330 mW Peak (Rx): 230 mW Selective Suspend: 17 mW
Bluetooth® Software Supported Link Topology	Microsoft Windows Bluetooth Software
Power Management	Microsoft Windows ACPI, and USB Bus Support
Certifications	FCC (47 CFR) Part 15C/E, Section 15.247, 15.249 ETSI 300 328, ETSI 301 893
Bluetooth® Profiles Supported	Bluetooth 4.1-ESR 5/6/7 Compliance LE Link Layer Ping LE Dual Mode LE Link Layer LE Low Duty Cycle Directed Advertising LE L2CAP Connection Oriented Channels Train Nudging & Interlaced Scan Bluetooth 4.2 ESR08 Compliance LE Secure Connection- Basic/Full LE Privacy 1.2 –Link Layer Privacy LE Privacy 1.2 –Extended Scanner Filter Policies LE Data Packet Length Extension FAX Profile (FAX) Basic Imaging Profile (BIP)2 Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP) Bluetooth 5.1 ESR9/10 Compliance LE Advertisement Extensions Channel Selection Algo Limited High Duty Cycle Non-Connectable Advertising 2Mbps LE LE Long Range

1. 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.
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. 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. 1. 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).

I/O DEVICES

HP 125 v2 Wired Keyboard / HP 125 v2 Antimicrobial Wired Keyboard (China only)		
Physical Characteristics	Keys	104/105/107/109 layout (depending upon country)
	Dimensions (LxWxH)	436 x 138 x20.7 mm
	Weight	471g
Electrical	Operating voltage	5V +- 5%
	Power consumption	50mA
	System Interface	USB Type A plug connector
	ESD	Contact Discharge: 8 KV Air Discharge: 12.5 KV
	EMI - RFI	Conforms to FCC rules for a Class B computing device
Mechanical	Keycaps	Low-profile design
	Switch actuation	55±10g nominal peak force with tactile feedback
	Switch life	10 million keystrokes (Life tester)
	Switch type	Contamination-resistant switch membrane
	Key-leveling mechanisms	For all double-wide and greater-length keys
	Cable length	1.8 m
Environmental	Acoustics	43-dBA maximum sound pressure level
	Operating temperature	50° to 122° F (10° to 50° C)
	Non-operating temperature	-4° to 149° F (-20° to 65° C)
	Operating humidity	10% to 95% (non-condensing at ambient)
	Non-operating humidity	0% to 95% (non-condensing at ambient)
	Operating shock	40 g, six surfaces
	Non-operating shock	80 g, six surfaces
	Operating vibration	2-g peak acceleration
	Non-operating vibration	4-g peak acceleration
	Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
	Drop (in box)	30 in (76.2 cm) on concrete, 16-drop sequence
Approvals	UL, cUL, FCC, CE, TUV GS, VCCI, BSMI, RCM, KCC, USB-IF, WHQL, EN/IEC 60601-1	
Ergonomic compliance	ANSI HFS 100, ISO 9241-4, and TUVGS	

HP Wired Desktop 320K Keyboard				
Physical Characteristics	Keys	104, 105, 107,109 layouts		
	Dimensions(LxWxH)	18.86*4.55*0.66 in (426.2 x 110.9 x 16.7 mm)		
	Weight	1.00 lb(452g)		
Electrical	Operating voltage	5 VDC, +/-5%		
	Power consumption	50 mA Max (All LED on)		
	System Interface	USB Port		
	ESD	Contact Discharge: 8 KV Air Discharge: 15 KV (Class B)		
	EMI - RFI	European Standard EN 55022: 2006+A1: 2007, Class B. FCC/CFR 47: Part 15 Class B		
Mechanical	Keycaps	2.0mm +/-0.2mm at 120gf Key travel		
Environmental	Operating temperature	10° C to 90° C		
	Non-operating temperature	-30° C to 95° C		
	Operating humidity	N/A		
	Non-operating humidity	10% to 90% (non-condensing at ambient)		
	Operating shock	N/A		
	Non-operating shock	i. Half-Sine Shock – End-Use Handling, Non-Operational Sample size: 5pcs. Condition: Sample power off. Axis: X, Y, Z axis (all 6 faces) – sample normal mode of operation. Number of shocks: 1 shock/face. Pulse duration: < 3 ms Velocity change: 50lps (inch-per-second)- 65lps desired. ii. Trapezoidal Shock- Transportation Environment, Non-Operational Sample size: 5pcs. Condition: Sample power off. Orientation: All six faces: Front, Rear, Left, Right, Bottom, and Top. Configuration: As intended for shipment Number of shocks: 1 shock/face. Minimum faired acceleration: 30G's. Test also at 40 and 50G's to find margin. Velocity change: 266lps (inch-per-second) for product mass (m) 20<m<40lb		
	Operating vibration	**Frequency (Hz)**	**Slope (dB/oct)**	**PSD (g^2/Hz)**
		5-350	0	0.0001
		350-500	-6	-
		500	-	0.00005
		(~0.21G_{nms})		
		Total Test time: 10 minutes		
	Non-operating vibration	**Frequency (Hz)**	**Slope (dB/oct)**	**PSD (g^2/Hz)**
		5.100	0	0.015
		100-137	-6	-
		137-350	0	0.008
		350-500	-6	-

		500	-	0.0039
	Drop (out of box)	76cm on carpet, six-drop sequence		
	Drop (in box)	10 times drop including 6 faces, one corner and 3 edges on rigid surface. Drop Height: 91cm		
Approvals	CB, CE, FCC, ICES, EAC, NOM-NYCE SCT, RCM, BIS, VCCI, KC, BSMI			
Ergonomic compliance	TUVGS			

HP 725 Multi-Device Rechargeable Wireless Keyboard		
Physical Characteristics	Keys	US-109 Keys POD-110 Keys JP-114 Keys LA-110 Keys
	Dimensions (LxWxH)	420.47 x 120.7 x 17.66 (mm); 16.56 x 4.75 x 0.7 (in)
	Weight	1.1lb; 499g
Electrical	Operating voltage	2.5V~3.8V
	Power consumption	2.4G Active=0.833mA Idle=0.065mA Sleep=0.03mA Power off=0.006mA BLE Active=0.414mA Idle=0.048 Sleep=0.03mA Power off=0.006mA
	System Interface	2.4GHz Wireless +Bluetooth 5.3
	ESD	4kV, Contact Discharge 8kV, Air Discharge
	EMI - RFI	-3dB
Mechanical	Key Structure (Switch type and feeling) (Plunger, Scissor, Mechanical)	Scissor, 2.0mm ± 0.3mm low profile key travel
	Key actuation	Contact Point: 1.1±0.4mm
	Key life	10 million keystrokes (Life tester)
	Key structure type	Scissor
	Key-leveling mechanisms	balance bar
Environmental	Operating temperature	-29°C ~ 60°C
	Non-operating temperature	-20°C ~ 65°C
	Operating humidity	N/A
	Non-operating humidity	0-95%RH
	Operating shock	40G, 2ms, 1 impact on the ± X, ± Y, and + Z axes, with a total of 6 impacts
	Non-operating shock	240G, 2ms, 1 impact on the ± X, ± Y, and + Z axes, with a total of 6 impacts
	Operating vibration	N/A
	Non-operating vibration	Frequency: 5-55-5 (Hz), Amplitude: 2mm, Vibration direction: X, Y, Z, three axes in total, Cycle time: 3 minutes/CYCLE, Number of cycles: 10 times, Test time: 30 minutes/axis, total 90 minutes
	Drop (out of box)	6 faces & 4 corners, 76cm
	Drop (in box)	1 corner, 3 edge, 6 flat
Approvals	CB; FCC; IC; RCM; WPC; NTC; IMDA; BSMI; NCC; SRRC; SIRIM; TRA; EAC; ICASA; UKCA; KCC; TUV; RATEL; IFETEL; BIS; MOICT; iCTqatar; RoHS; Subtel; NKRZI	

HP Business Slim v2 Smart Card CCID USB Keyboard		
Physical Characteristics	Keys	104, 105, 107, 109 layout (depending upon country)
	Dimensions (LxWxH)	17.34 x 5.68 x 0.78 in (440.6 x 144.5 x 1.98 cm)
	Weight	1.32 lb (598g)
Electrical	Operating voltage	5 VDC, +/-5%
	Power consumption	100mA (All LED on)
	System Interface	USB Type A plug connector
	ESD	Contact Discharge: 8 KV Air Discharge: 12.5 KV
	EMI - RFI	Conforms to FCC rules for a Class B computing device
Mechanical	Keycaps	Low-profile design
	Switch actuation	60±10g nominal peak force with tactile feedback
	Switch life	10 million keystrokes (Life tester)
	Switch type	Contamination-resistant switch membrane
	Key-leveling mechanisms	For all double-wide and greater-length keys
	Cable length	6 ft (1.8 m)
Environmental	Acoustics	43-dBA maximum sound pressure level
	Operating temperature	50° to 122° F (10° to 50° C)
	Non-operating temperature	-22° to 140° F (-30° to 60° C)
	Operating humidity	10% to 90% (non-condensing at ambient)
	Non-operating humidity	20% to 80% (non-condensing at ambient)
	Operating shock	40 g, six surfaces
	Non-operating shock	80 g, six surfaces
	Operating vibration	2-g peak acceleration
	Non-operating vibration	4-g peak acceleration
	Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
	Drop (in box)	30 in (76.2 cm) on concrete, 16-drop sequence
Approvals	CE Marking, TUV, EAC, FCC, cULus/CSAus, ICES, RCM, VCCI, KCC, BSMI	
Ergonomic compliance	ISO 9241-4, TUVGS	

HP Wired Desktop 320M Mouse				
Physical Characteristics	Keys	Left/right key		
	Dimensions(LxWxH)	4.09 x2.50 x 1.40 in (103.8x 63.4 x 35.5 mm)		
	Weight	0.16 lb (72g)		
Electrical	Operating voltage	5 VDC, +/-0.25V		
	Power consumption	100 mA Max		
	System Interface	USB Port		
	ESD	Contact Discharge: 8 KV Air Discharge: 15 KV (Class B)		
	EMI - RFI	European Standard EN 55022: 2006+A1: 2007, Class B. FCC/CFR 47: Part 15 Class B		
Mechanical	Keycaps	0.3mm key travel		
	Key actuation	75±20g		
	Key life	1million cycles		
	Key structure type	Tact Switch		
	Key-leveling mechanisms	N/A		
Environmental	Operating temperature	10° to 90° C		
	Non-operating temperature	-30° C to 95° C		
	Operating humidity	N/A		
	Non-operating humidity	10% to 90% (non-condensing at ambient)		
	Operating shock	N/A		
	Non-operating shock	i. Half-Sine Shock – End-Use Handling, Non-Operational Sample size: 5pcs. Condition: Sample power off. Axis: X, Y, Z axis (all 6 faces) – sample normal mode of operation. Number of shocks: 1 shock/face. Pulse duration: < 3 ms Velocity change: 50lps (inch-per-second)- 65lps desired. ii. Trapezoidal Shock- Transportation Environment, Non-Operational Sample size: 5pcs. Condition: Sample power off. Orientation: All six faces: Front, Rear, Left, Right, Bottom, and Top. Configuration: As intended for shipment Number of shocks: 1 shock/face. Minimum faired acceleration: 30G's. Test also at 40 and 50G's to find margin. Velocity change: 266lps (inch-per-second) for product mass (m) 20<m<40lb		
	Operating vibration	**Frequency (Hz)**	**Slope (dB/oct)**	**PSD (g^2/Hz)**
		5-350	0	0.0001
		350-500	-6	-
		500	-	0.00005
		(~0.21G_{nms})		
		Total Test time: 10 minutes		
	Non-operating vibration	**Frequency (Hz)**	**Slope (dB/oct)**	**PSD (g^2/Hz)**

		5.100	0	0.015
		100-137	-6	-
		137-350	0	0.008
		350-500	-6	-
		500	-	0.0039
	Drop (out of box)	76cm on carpet, six-drop sequence		
	Drop (in box)	N/A		
Approvals	CB, CE, FCC, cULus, ICES, EAC, NOM-NYCE SCT, RCM, VCCI, KC, BSMI			
Ergonomic compliance	TUVGS			

HP USB 125 / 128 Laser Mouse		
Dimensions (HxLxW)	112 x 63 x 36.2 mm	
Weight	85 g	
Environmental	Operating temperature	50° to 122° F (10° to 50° C)
	Non-operating temperature	-22° to 140° F (-30° to 60° C)
	Operating humidity	10% to 90% (non-condensing at ambient)
	Non-operating humidity	20% to 80% (non-condensing at ambient)
	Operating shock	40 g, six surfaces
	Non-operating shock	80 g, six surfaces
	Operating vibration	2-g peak acceleration
	Non-operating vibration	4-g peak acceleration
Electrical	Operating voltage	5 VDC, +/-5%
	Power consumption (typical)	100mA
	Resolution	1,200 DPI
	Sensor	Optical/ Laser USB mouse sensor
	Tracking speed	30 inch/sec (max)
	Tracking acceleration	8G(max), 1G=9.8m/s2
Mechanical	Connector	USB
	Cable length	6 ft (1.8 m)
	Color	Jack Black
Regulatory approvals	Compliant	UL, FCC, CE Mark, TUV GS, VCCI, BSMI, RCM, KCC, EAC

HP 725 Multi-Device Rechargeable Wireless Mouse		
Dimensions (HxLxW)	114.89 x 73.26 x 39.86(mm); 4.52 x 2.88 x 1.57(in)	
Weight	90.1(g); 0.2(lb)	
Environmental	Operating temperature	-29°C ~ 60°C
	Non-operating temperature	-20°C ~ 65°C
	Operating humidity	N/A
	Non-operating humidity	0-95%RH
	Operating shock	40G, 2ms, 1 impact on the ± X, ± Y, and + Z axes, with a total of 6 impacts
	Non-operating shock	240G, 2ms, 1 impact on the ± X, ± Y, and + Z axes, with a total of 6 impacts
	Operating vibration	N/A
	Non-operating vibration	Frequency: 5-55-5 (Hz), Amplitude: 2mm, Vibration direction: X, Y, Z, three axes in total, Cycle time: 3 minutes/CYCLE, Number of cycles: 10 times, Test time: 30 minutes/axis, total 90 minutes
Electrical	Operating voltage	2.5V~3.8V
	Power consumption (typical)	2.4G Active=1.126mA Idle=0.108mA Sleep=0.042mA Power off=0.007mA BLE Active=1.057mA Idle=0.102mA Sleep=0.044mA Power off=0.005mA
	Resolution	1,200 DPI (Default) Range: 800->1200 (default)->1600->2400->3600->4000 DPI Adjustable by HPX (or HPAC) from 800 to 4000, every 50 dpi per step
	Sensor	PAW3220DB
	Tracking speed (Report rate)	125Hz
	Tracking acceleration	2.4GHz Wireless and Bluetooth
Mechanical	Color	Black
Regulatory approvals	Compliant	CB; FCC; IC; RCM; WPC; NTC; IMDA; BSMI; NCC; SRRC; SIRIM; TRA; EAC; ICASA; UKCA; KCC; TUV; RATEL; IFETEL; BIS; MOICT; iCTqatar; RoHS; Subtel; NKRZI

AUDIO/MULTIMEDIA

Type	Integrated
HD Stereo Codec	Realtek ALC3252
Audio I/O Ports	Front: 1 - Headset connector supports a CTIA style headset and is re-taskable as a Line-in, Line-out, Microphone-in or Headphone-out port 1 - Headphone port All ports are 3.5mm and support stereo
Internal Speaker Amplifier	2W class D mono amplifier for the internal speaker only. External speakers must be powered
Multi-streaming Capable	Playback multi-streaming allows for independent audio streams to be sent to/from the front and rear jacks or integrated speaker
Sampling	Independent sampling rates for DAC's and ADC's; supports resolutions from 16 to 24-bit; 44.1 kHz to 192 kHz for DAC and 44.1 kHz to 96 kHz for ADC
Wavetable Synthesis	Yes - Uses OS soft wavetable
Analog Audio	Yes
# of Channels on Line-Out	Stereo (Left & Right channels)
Internal Speaker	Yes

POWER

UNIT ENVIRONMENT AND OPERATING CONDITIONS

Temperature Range	Operating: 5°C ~35°C Non-Operating: -40°C ~66°C
Relative Humidity	Operating 5% to 90% relative humidity at max inlet temperature Non-Operating 5% to 90% relative humidity at max inlet temperature
Maximum Altitude (unpressurized)	Operating: 5000m Non-operating: 50,000 ft (15240 m)

External Power Adapter	65W EPS, 88% average efficiency at 115V & 89% at 230Vac 90W EPS, 88% average efficiency at 115V & 89% at 230Vac 100W EPS Type-C[1], active PFC, 88% average efficiency at 115V & 89% at 230Vac 120W EPS, active PFC, 88% average efficiency at 115V & 89% at 230Vac
Operating Voltage Range	90Vac~264Vac
Rated Voltage Range	100Vac~240Vac
Rated Line Frequency	50HZ~60HZ
Operating Line Frequency	47HZ~63HZ
Rated Input Current with Energy Efficient* Power Supply	65W≦1.6A 90W≦1.7A 100W≦1.6A 120W≦1.7A
DC Output	+19.5V
Current Leakage (NFPA 99: 2012)	Less than 40 microamps of leakage current at 250 Vac with the ground wire disconnected, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1. Less than 40 microamps of leakage current at 250 Vac with the ground wire intact with normal polarity, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1.
Power cord length	1m, 6.0 ft. (1.83 m)
Dimensions	65W: 90 x 51 x 285 mm, 102 x 55 x 30 mm 90W: 126 x 50 x 30 mm 100W: 136x60x22 mm 120W: 138 x 68.5 x 25.4 mm

1. The 100W USB Type-C power adapter is not certified for medical use. For medical environments, customers should use the conventional(barrel type) power adapter.

NOTE: Power cord length will be varied from different type of cords start from 1.8m.

The harmonic input current requirements must be met under the following operating conditions:
Load Requirements: 50% and 100%
Input Voltage: 230Vac/50Hz.
For active power factor correction the power factor at 50% &100% loads shall be greater than 0.9 over the entire nominal input voltage range (100-127VAC and 200-240VAC).

Condition	Standard Efficiency	82/85/82%	85/88/85%	87/90/87%	90/92/89%	Input Voltage
10% of Rated Load	-	75%	81%	84%	86%	115Vac/60HZ
20% of Rated Load	-	82%	85%	87%	90%	115Vac/60HZ
50% of Rated Load	-	85%	88%	90%	92%	115Vac/60HZ
	PF>0.9	PF>0.9	PF>0.9	PF>0.9	PF>0.95	
100% of Rated Load	70%	82%	85%	87%	89%	115Vac/60HZ
	PF>0.9	PF>0.9	PF>0.9	PF>0.9	PF>0.9	230Vac/50HZ

WEIGHTS & DIMENSIONS

Chassis (WxDxH)	6.97 x 7.13 x 1.35 in 177 x 181 x 34 mm
System Volume	66.86 cu in 1.09 L
Max System Weight	None AI: 2.64 lb (1.2 kg) NGAI: 2.97 lb (1.35 kg)
Max Supported Weight (desktop orientation)	N/A
Stand Dimensions (WxDxH)	117 x 160 x 20 mm
Packaging (WxDxH)	Packaging 1: 18.9 x 4.1 x 9.4 in (481 x105 x 240 mm) Packaging 2[1]: 19.6 x 5.2 x 9.3 in (498 x x132 x 235 mm)
Shipping Weight	2.95 kg 6.49 lb
Shipping Weight (Molded Pulp)	3.05 kg 6.72 lb
Multipack Packaging (10 units)	20.28x16.54x25 in 515x420x636 mm
Palletization Profile (Molded Pulp)	Palletization 1: 22-units per layer 8 layers max 176 units per pallet 46.14 x 37.87 x 81.5 in (1172 x 962 x 2070 mm) (including pallet) Palletization 2: 10-units per layer 10 to 19 layers max depending on details of freight 100 or 190 units per pallet depending on details of freight 46.26 x 39.21 x 103.74 in, (1175 x 996 x 2635 mm) (including pallet)

1. Only available on selected US & Brazil SKU.

Note:

1. Packaging material used will vary by country
2. The palletization is for single pack
3. Palletization options depend on the factories
4. Actual weight depends on configuration

MISCELLANEOUS FEATURES

Management Features

- Advanced Configuration and Power Management Interface (ACPI). Allows the system to wake from a low power mode. Controls system power consumption, making it possible to place individual cards and peripherals in a low-power or powered-off state without affecting other elements of the system.
- Dual State Power Button; acts as both an on/off button and a suspend-to-sleep button

Serviceability Features

- Dual colored power LED on front of computer to indicate either normal or fault condition
- Diagnostic LED Explanation Table:
  - Power LED will blink red 2 to 5 times, then blink white 2 or more times, then repeat (with beep tones for each blink initially):
    - 2 red + 2 white User must provide file for BIOS recovery (USB storage typically)
    - 2 red + 3 white User must enter a key sequence to proceed with recovery by policy
    - 2 red + 4 white BIOS recovery is in progress
    - 3 red + 2 white Memory could not be initialized
    - 3 red + 3 white Graphics adaptor could not be found
    - 3 red + 4 white Power supply failure / not connected
    - 3 red + 5 white Processor not installed
    - 3 red + 6 white Current processor does not support an enabled feature
    - 4 red + 2 white Processor has exceeded its temperature threshold / system thermal shutdown
    - 4 red + 3 white System internal temperature has exceeded its threshold
    - 5 red + 2 white System controller firmware is not valid
    - 5 red + 3 white System controller detected BIOS is not executing
    - 5 red + 4 white BIOS could not complete initialization / mainboard failure
    - 5 red + 5 white System controller rebooted the system after a health or recovery timer triggered
- HP PC Hardware Diagnostics UEFI:
  - This utility enables hardware level testing outside the operating system on many components. The diagnostics can be invoked by pressing F2 at POST, and is available as a download from HP Support
  - System/Emergency ROM
  - Flash ROM
  - RTC Battery Holder for easy replacement
  - Flash Recovery with Video Configuration Record Software
  - 1 Aux Power LED on System PCA
  - Over-Temp Warning on Screen (Requires IM Agents)
  - DIMM Connectors for easy Upgrade
  - Clear CMOS Button
  - NIC LEDs (integrated) (Green & Amber)
  - Dual Color Power button LED - To Indicate Normal Operations and Fault Conditions
  - Tool-less Hood Removal
  - Front power switch
  - System memory can be upgraded without removing the system board or any internal components
  - Tool-less Hard Drive, memory & optical drive Removal (For MT, SFF, and DM only)
  - Blue Pull Tabs, and Quick Release Latches for easy Identification

Additional Features	Description
Tower Orientation	Product can be oriented as either a desktop (horizontal) or a tower (vertical) for MT, and DM only. DM requires optional stand.
Drive Lock	Implementation of the industry standard ATA Security feature set. When enabled, it prevents software access to user data on the drive until one or two user-defined passwords are provided.
Boot Sectors Protection	MBR and GPT sectors of the hard drive are critical to booting the operating system. By saving the MBR or GPT data (depending on the how the OS was installed), the BIOS will be able to monitor for changes and allow the user to override them with the backup copy at boot-up.
Drive Protection System	DPS Access through F10 Setup during Boot (for SATA hard drive only) A diagnostic hard drive self- test. It scans critical physical components and every sector of the hard drive for physical faults and then reports any faults to the user Running independently of the operating system, it can be accessed through a Windows-based diagnostics utility or through the computer's setup procedure. It produces an evaluation on whether the hard drive is the source of the problem and needs to be replaced The system expands on the Self-Monitoring, Analysis, and Reporting Technology (SMART), a continuously running systems diagnostic that alerts the user to certain types of failures
SMART Technology (Self-Monitoring, Analysis and Reporting Technology)	Allows hard drives to monitor their own health and to raise flags if imminent failures were predicted
SMART I - Drive Failure Prediction	Predicts failures before they occur. Tracks fault prediction and failure indication parameters such as re-allocated sector count, spin retry count, calibration retry count
SMART II - Off-Line Data Collection	By avoiding actual hard drive failures, SMART hard drives act as "insurance" against unplanned user downtime and potential data loss from hard drive failure
SMART III - Off-Line Read Scanning with Defect Reallocation	IOEDC: I/O Error Detection Circuitry
SMART IV - End-to-End CRC for hard drives	Detects errors in Read/Write buffers on HDD cache RAM

NOTE: Storage Drive lock does not work with Self Encrypting storage

AFTER MARKET OPTIONS

Desktop Mini Accessories	Part Number
HP Desktop Mini 65W Power Supply Kit	L2X04AA
HP Desktop Mini 90W Power Supply Kit	L4R65AA
HP Desktop Mini Security/Dual VESA Sleeve v4+	99T54AA
HP Desktop Mini v4+ VESA Sleeve with Power Supply Holder	99T55AA
HP B250 PC Mounting Bracket	8RA46AA
HP B300 PC Mounting Bracket	2DW53AA
HP B300 PC Mounting Bracket with Power Supply Holder	7DB37AA
HP B550 PC Mounting Bracket	16U00AA
HP Desktop Mini Vertical Chassis Stand	G1K23AA
HP B560 PC Mounting Bracket	763U8AA
HP Quick Release Bracket 2	6KD15AA
HP B200 PC Mounting Bracket (Mark I)	762T5AA

Data Storage Drives	Part Number
HP PCIe Gen 4 NVME TLC M.2 512GB SSD	406L8AA
HP PCIe Gen 4 NVME TLC M.2 1TB SSD	406L7AA

Input Devices	Part Number
HP 125 G2 Wired USB Keyboard	AY2Y7AA
HP 320K G2 Wired USB Keyboard	9SR37UT
HP Wired Desktop 320MK Mouse and Keyboard G2	9SR36UT
HP Business Slim v2 Smart Card USB Keyboard	A71J9AA
HP Desktop Wired 320M Mouse	9VA80AA
HP 125 Wired Mouse	265A9AA
HP 128 Laser Wired Mouse	265D9AA
HP 455 Wireless Programmable USB Keyboard	4R177AA
HP 655 Wireless Keyboard and Mouse Combo G2	4R009UT
HP 405 Multi-Device Wired Backlit Keyboard	7N7C1AA
HP 680 Comfort Dual-Mode Keyboard	8T6L8AA
HP 725 Multi-Device Rechargeable Wireless Keyboard	9T5B2AA
HP 725 Multi-Device Rechargeable Wireless Keyboard and Mouse Combo	9T5B0UT
HP 515 Ultra-Fast Rechargeable Wireless Mouse	9C2F7AA

After Market Options

System Memory	Part Number
HP 8GB DDR5-5600 SODIMM	79U70AA
HP 16GB DDR5-5600 SODIMM	79U71AA
HP 32GB DDR5-5600 SODIMM	79U72AA

Multimedia Devices	Part Number
HP S101 Speaker Bar	5UU40AA
HP Z G3 Conf Sp Bar with Stand	647Y2AA

Security Devices	Part Number
HP Keyed Cable Lock 10mm	T1A62AA
HP Master Keyed Cable Lock 10mm	T1A63AA
HP Combination Standard Cable Lock	T0Y15AA
HP Essential Combination Lock	T0Y16AA

I/O Devices	Part Number
HP DisplayPort 2.1 Flex IO v3	TBD
HP VGA Flex IO v3	TBD
HP USB-C 3.1 Gen2 15W Out Flex IO v3	TBD
HP Dual Type-C 3.2 Gen2 15W Out Flex IO v3	TBD
HP USB 3.1 Gen1 x2 Module Flex IO v2	13L58AA
HP Serial Port v3 Flex IO	5B895AA
HP USB to Serial Port Adapter	J7B60AA
HP DisplayPort To HDMI True 4k Adapter	2JA63AA
HP HDMI Standard Cable Kit	T6F94AA
HP DisplayPort Cable Kit	VN567AA
HP DisplayPort To DVI-D Adapter	FH973AA
HP DisplayPort To VGA Adapter	AS615AA
HP HDMI 2.1 Flex IO v3	TBD
HP 2.5GbE LAN Flex Port	169K0AA
HP USB External DVDRW Drive	F2B56AA

NOTE: For more detail on HP I/O Devices please refer to the HP FLEX IO v3 Option Cards QuickSpecs:
https://www8.hp.com/h20195/v2/GetDocument.aspx?docname=c06712909

Change Log

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Date	Version History	Action	Description of Change
June 25, 2025	From v1 to v2	Correction	Post-consumer recycled plastic used in system percentage corrected / External power adapter table corrected
July 24, 2025	From v2 to v3	Correction	All M.2 2280 PCIe NVMe SSD´s interface corrected to PCIE Gen4x4
	From v3 to v4		
	From v4 to v5		
	From v5 to v6		
	From v6 to v7		
	From v7 to v8		