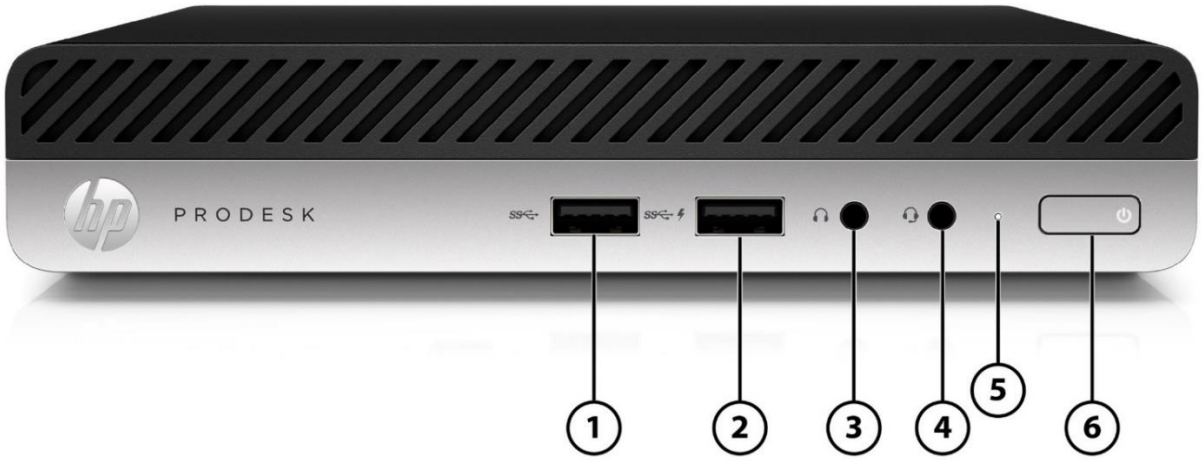
Overview

HP ProDesk 405 G4 Desktop Mini Business PC



Front

1. USB 3.1 Gen 1 port (5 Gbits/s data signaling rate[1])
2. USB 3.1 Gen 1 charging port (5 Gbits/s data signaling rate[1]; charge support up to 5V/1.5A)
3. Headphone Jack
4. Universal Audio Jack with CTIA headset support
5. Hard Drive activity light
6. Dual-state power button

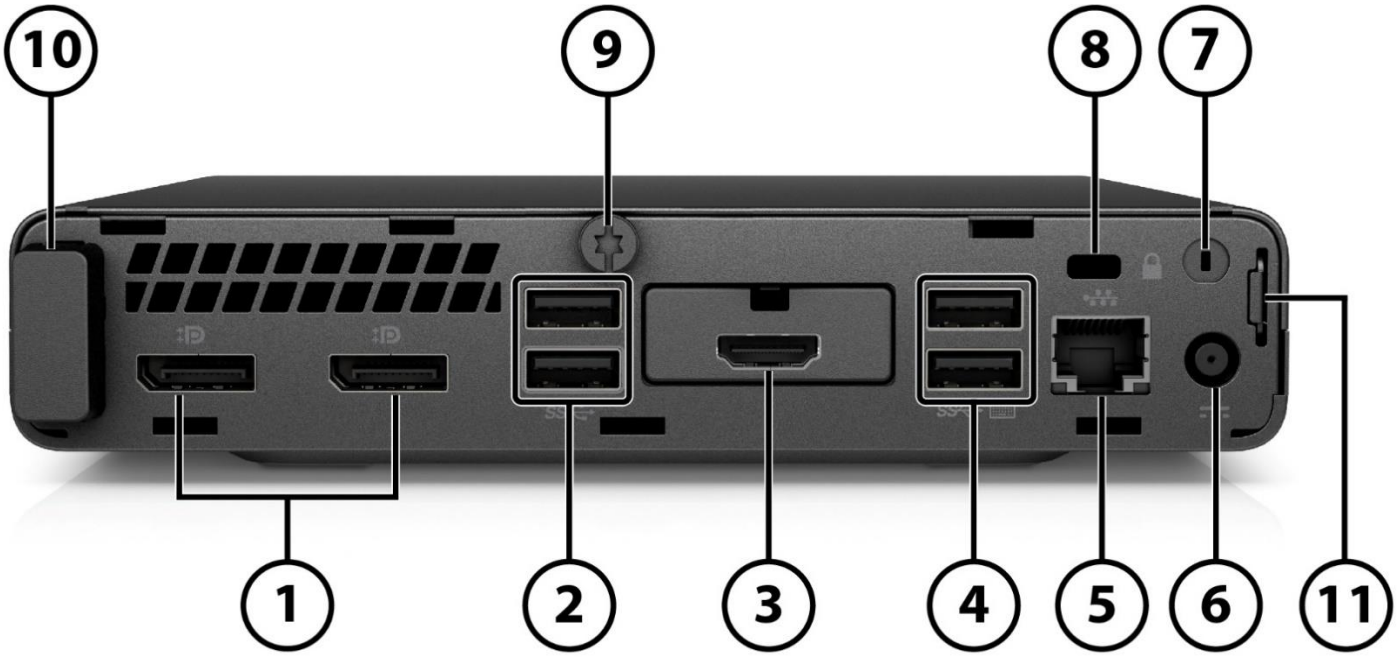
Not Shown

(2) M.2 (1 as M.2 2230 socket for WLAN/Bluetooth® and 1 as M.2 2280/2230 socket for storage)

(1) 2.5" internal storage drive bay

1. Actual throughput may vary.

Overview



Back

1. (2) Dual-Mode DisplayPort™ 1.2 (DP++)
2. (2) USB 3.1 Gen 1 ports (5 Gbits/s data signaling rate[1])
3. Configurable Option card slot (Choice of DisplayPort™ 1.2, HDMI™ 2.0, VGA, USB Type-C™ with Display Output or Serial)
4. (2) USB 3.1 Gen 1 ports (5 Gbits/s data signaling rate[1]) (Supporting wake from S4 with keyboard/mouse connected and enabled in BIOS)
5. RJ45 network connector
6. Power connector
7. External WLAN antenna opening[2]
8. Standard lock slot (10 mm)
9. Cover release thumbscrew
10. Internal WLAN antenna cover
11. Padlock loop

1. Actual throughput may vary.
2. Must be configured at time of purchase

Overview

AT A GLANCE

- Latest AMD® Ryzen™ PRO and Athlon PRO Processors[1] with Radeon™ Vega Graphics
- Choice of Windows 10 Professional, Windows 10 Home, and FreeDOS
- HP developed and engineered UEFI BIOS supporting security, manageability and software image stability
- Integrated 10/100/1000 Ethernet Controller, with optional 802.11ac Wi-Fi and/or Bluetooth® 5.0
- Up to 32GB of DDR4 Synchronous Dynamic Random Access Memory (SDRAM)
- Support for up to three video outputs via two standard video connectors and an optional third video port connector which provides the following choices: DisplayPort™ 1.2, HDMI™ 2.0, VGA, or USB Type-C™ with Display Output
- Optional Serial port available
- Optional M.2 PCIe NVMe solid state drives (SSD) enabling faster system startup and application launches
- Trusted Platform Module (TPM) 2.0[2]
- VESA mounting incorporated into chassis design
- Dust filter available for Desktop Mini
- HP BIOSphere Gen4
- HP Client Security Manager Gen4
- HP Sure Click
- HP Manageability Integration Kit Gen2
- High efficiency energy saving power supply
- ENERGY STAR® certified. EPEAT ® 2019 registered where applicable. EPEAT ® registration varies by country. See http://www.epeat.net for registration status by country.[4]
- PC chassis and all internal components and modules are manufactured with low halogen content[3]
- Protected by HP Services, including limited warranties up to 3-3-3 (terms and conditions vary by country; certain restrictions and exclusions apply); Care Packs available with up to 5 years Next Business Day Onsite Hardware Support
- Compliance with CE (Class B) / FCC (Class B) / UL (UL609501) / CSA (CSA C22.2 No.60950-1-07) / ICES-003 / CCC / VCCI (Class B) / KCC (Class B)

1. Multi core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering, branding and/or naming is not a measurement of higher performance
2. In some scenarios, machines pre-configured with Windows OS might ship with TPM turned off
3. External power supplies, power cords, cables and peripherals are not low halogen. Service parts obtained after purchase may not be low halogen.
4. Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. Status varies by country. Visit www.epeat.net for more information.

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

Technical Specifications

OPERATING SYSTEMS

Preinstalled (Windows)

Windows® 10 Pro 64 [1]
Windows® 10 Pro 64 (National Academic License) [1,2]
Windows® 10 Home 64 [1]
Windows® 10 Home Single Language 64 [1]

Pre-installed (Other)
FreeDOS

1. Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See http://www.windows.com/
2. Some devices for academic use will automatically be updated to Windows 10 Pro Education with the Windows 10 Anniversary Update. Features vary; see https://aka.ms/ProEducation for Windows 10 Pro Education feature information.
NOTE: Your product does not support Windows 8 or Windows 7. In accordance with Microsoft's support policy, HP does not support the Windows® 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows® 8 or Windows 7 drivers on http://www.support.hp.com

CHIPSET

AMD B350 FCH

PROCESSOR

AMD Ryzen™ 5 PRO 2400GE[1]
35W
3.2 GHz base clock, up to 3.8 GHz max boost clock
384 KB L1 cache, 2 MB L2 cache, 4 MB L3 cache, 4 cores
Integrated Radeon™ Vega 11 Graphics
Supports DDR4 memory up to 2933 MT/s data rate[2]

AMD Ryzen™ 3 PRO 2200GE[1]
35W
3.2 GHz base clock, up to 3.6 GHz max boost clock
384 KB L1 cache, 2 MB L2 cache, 4 MB L3 cache, 4 cores
Integrated Radeon™ Vega 8 Graphics
Supports DDR4 memory up to 2933 MT/s data rate[2]

AMD Athlon™ PRO 200GE[1]
35W
3.2 GHz base clock
192 KB L1 cache, 1 MB L2 cache, 4 MB L3 cache, 2 cores
Integrated Radeon™ Vega 3 Graphics
Supports DDR4 memory up to 2666 MT/s data rate[2]

1: Multi-core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering, branding and/or naming is not a measurement of higher performance.
2. Actual data rate is determined by both the system's configured processor and memory module installed.

Technical Specifications

GRAPHICS

Integrated

AMD Radeon™ Vega 11 Graphics
AMD Radeon™ Vega 8 Graphics
AMD Radeon™ Vega 3 Graphics

NOTE: AMD integrated Radeon™ varies by processor

MEMORY

Type

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

Maximum

32 GB capacity

Memory Configurations

2 SODIMMs

4 GB (4 GB x 1)

8 GB (4 GB x 2)

8 GB (8 GB x 1)

16 GB (8 GB x 2)

16 GB (16 GB x 1)

32 GB (16 GB x 2)

NOTE: For systems configured with more than 3 GB of memory and a 32-bit operating system, all memory may not be available due to system resource requirements. Addressing memory above 4 GB requires a 64-bit operating system. Memory modules support data transfer rates up to 2133 MT/s; actual data rate is determined by the system's configured processor. See processor specifications for supported memory data rate.
NOTE: All memory slots are customer accessible / upgradeable.

Technical Specifications

STORAGE AND DRIVES

2.5 inch SATA Hard Disk Drives (HDD)

500GB 7200RPM 2.5in SATA HDD

1TB 7200RPM 2.5in SATA HDD

2.5 inch Solid State Drives (SSD)

256GB 2.5in SATA Self Encrypted Federal Information Processing Standard SSD

512GB 2.5in SATA Self Encrypted Federal Information Processing Standard SSD

M.2 PCIe NMVe Solid State Drives (SSD)

256GB M.2 2280 PCIe NVMe SSD

512GB M.2 2280 PCIe NVMe SSD

128GB M.2 2280 PCIe NVMe Three Layer Cell SSD

256GB M.2 2280 PCIe NVMe Three Layer Cell SSD

512GB M.2 2280 PCIe NVMe Three Layer Cell SSD

256GB M.2 2280 PCIe NVMe Self Encrypted OPAL2 Three Layer Cell SSD

512GB M.2 2280 PCIe NVMe Self Encrypted OPAL2 Three Layer Cell SSD

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

NETWORKING/COMMUNICATIONS

Networking

Realtek RTL8111EPH-CG Gigabit Network Connection

Wireless[1]

Intel® 9260 802.11ac 2x2 with Bluetooth® M.2 Combo Card non-vPro™

Realtek RTL8821CE 802.11ac 1x1 with Bluetooth® M.2 Combo Card

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

AUDIO/MULTIMEDIA

HD audio with Conexant CX20632 Codec

1 Combo Microphone/Headphone Jack supporting CTIA style headset
1 Headphone Jack

KEYBOARDS/POINTING DEVICES/BUTTONS AND FUNCTIONS KEYS

Keyboard

HP USB Business Slim Standalone Wired Keyboard
HP USB Business Slim Wired SmartCard CCID Keyboard
HP USB & PS/2 Washable Standalone Wired Keyboard
HP Collaboration Wireless Keyboard
HP USB Collaboration Wired Keyboard
HP USB Conferencing Wired Keyboard
HP USB Wired Keyboard
HP USB Value Keyboard

Mouse

HP Optical Mouse
HP USB Hardened Mouse
HP USB 1000dpi Laser Mouse
HP USB & PS/2 Washable Wired Mouse Standalone

NOTE: Availability may vary by country

SECURITY

Trusted Platform Module (TPM) 2.0 (Infineon SLB9670). Common Criteria EAL4+ Certified. Convertible to FIPS 140-2 Certified mode.
Intrusion Sensor for DM (integrated in the mainboard, can be enabled/disabled through BIOS)
Support for chassis cable lock devices (10 mm or smaller)
Support for chassis padlocks devices
SATA port disablement (via BIOS)
Serial, USB enable/disable (via BIOS)
Removable media write/boot control
Power-on password (via BIOS)
Setup password (via BIOS)

Technical Specifications

PORTS

Internal slots and Ports

(1) M.2 PCIe x1 2230 (for WLAN)

(1) M.2 PCIe x4 2280/2230 Combo (for storage)

(1) Desktop Mini SATA storage connector

Front I/O Ports

(2) USB 3.1 Gen 1 ports

(1) Headphone Jack

(1) Microphone/Headphone Combo Jack

Rear I/O Ports

(2) DisplayPort™ 1.2

(4) USB 3.1 Gen 1 ports

(1) Optional configurable I/O PORT (Choice of DisplayPort™ 1.2, HDMI™ 2.0, VGA, USB Type-C™ with Display Output or Serial)

RJ45 network connector

BAYS

(1) 2.5" SATA Storage Drive Bay

NOTE: For Desktop Mini with M.2 Storage config, there will be no SATA drive bracket. If you plan to use or upgrade the storage with any 2.5" SATA drive, please select a DM SATA Drive Bracket (available as both factory configured and after market option).

Technical Specifications

SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS

Preinstalled Software

HP BIOSphere Gen4[1]
HP DriveLock & Automatic DriveLock
BIOS Update via Network
Master Boot Record Security
Power On Authentication
Absolute Persistence Module[2]
Pre-boot Authentication

Software

HP Native Miracast Support[3]
HP Hotkey Support
HP Recovery Manager
HP JumpStarts
HP Privacy Settings
HP Setup Integrated OOBE
HP Support Assistant[4]
Buy Office (sold separately)
Manageability Features
HP Driver Packs[5]
HP System Software Manager (SSM)
HP BIOS Config Utility (BCU)
HP Client Catalog
HP Manageability Integration Kit Gen2[6]
Ivanti Management Suite[7]
HP Cloud Recovery[13]

Client Security Software

HP Client Security Manager Gen4[8] including:
HP Security Manager[9] (including Credential Manager, HP Password Manager)
HP Power On Authentication
Microsoft Defender[10]

Security Management

HP Secure Erase[11]
USB enable/disable (via BIOS)
Power-on password (via BIOS)
Setup password (via BIOS)
HP Sure Click[12]

1. HP BIOSphere Gen4 requires Intel® or AMD® 8th Gen processors. Features may vary depending on the platform and configurations.

Technical Specifications

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

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

4. HP Support Assistant requires Windows and Internet access.

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

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

7. Ivanti Management Suite subscription required.

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

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

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

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

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

13. HP Cloud Recovery is available for 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://support.hp.com/us-en/document/c05115630

POWER

Power Supply

External 65-watt power adapter

WEIGHT AND DIMENSIONS[1]

System	
Dimensions	6.97 x 6.89 x 1.35 in (177 x 175 x 34.2 mm)
Weight[2]	2.74 lbs (1.25 kg)
Volume	64 cu in 1.05 L
Packaging dimensions and weight	
Dimensions	19.57 x 5.04 x 8.78 in (497 x 128 x 223 mm)
Weight	7.36 lbs (3.34 kg)
Palletization and Container	
Type	Air Shipment
Pallet Size	47.24 x 39.37 x 4.96 in 1200 x 1000 x 126 mm
Pallet Profile	1 unit/carton 18 cartons/layer

Technical Specifications

	5 or 6 layers per pallet max depending on details of air freight 90 or 108 units per pallet depending on details of air freight
Pallet Size Loaded	47.24 x 39.37 x 57.64 in 1200 x 1000 x 1464 mm

Technical Specifications

Packaging dimensions and weight (MPP)	
Dimensions	19.61 x 9.25 x 5.20 in (498 x 235 x 132 mm)
Weight	7.50 lbs (3.40 kg)
Palletization and Container (MPP)	
Pallet Size	47.24 x 39.37 x 4.96 in 1200 x 1000 x 126 mm
Pallet Profile	1 unit/carton 10 cartons/layer 10 to 19 layers per pallet max depending on details of freight 100 to 190 units per pallet depending on details of freight
Pallet Size Loaded	47.24 x 39.37 x 103.74 in 1200 x 1000 x 2635 mm

1. Packaging material used will vary by country
2. Configured with 1 SATA Drive

UNIT ENVIRONMENT AND OPERATING CONDITIONS

Environmental and Industry

• 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)[1]
	Non-operating:	-22° to 140° F(-30° to 60° C)
Relative Humidity	**Operating:**	10% to 90% (non-condensing at ambient)
	Non-operating:	0% to 95% (non-condensing at ambient)
Maximum Altitude (unpressurized)	**Operating:**	10,000 ft (3048 m)
	Non-operating:	30,000 ft (9144 m)

1. 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.

Technical Specifications

CERTIFICATIONS

EPEAT ® 2019 registered where applicable. EPEAT ® registration varies by country. See http://www.epeat.net for registration status by country.[1]
WEEE (Waste, Electric and electronic equipment)
ENERGY STAR®
CEL
FCC
UL
RoHS

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

SERVICE AND SUPPORT

On-site Warranty[1]: Available three-year (3-3-3) or one-year (1-1-1) limited warranty (varies by country) delivers on-site, next business day[2] service for parts and labor and complimentary limited technical support[3]. Three-year onsite and labor are not available in all countries. Service offers terms up to 5 years by choosing an optional HP Care Pack[4]. To choose the right level of service for your HP product, visit HP Care Pack Central: http://www.hp.com/go/cpc.

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. Technical telephone support applies only to HP-configured and third-party HP qualified hardware and software. Toll-free calling and 24 x 7 support may not be available in some countries.

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

Technical Specifications

GRAPHICS

AMD Radeon™ Vega Graphics (integrated)[1]

Graphics Controller	Integrated
Multi Display Support	Maximum of 3 displays supported by the integrated graphics
DisplayPort	DisplayPort 1.2 features include DP++, audio over DisplayPort, MST, HBR2, HDCP1.4
HDMI (Optional)	AMD Athlon™ PRO APUs support HDMI 2.0 features AMD Ryzen™ PRO APUs support HDMI 2.0a features. All support audio over HDMI and HDCP1.4
VGA (Optional)	VGA output
USB-C™ DP Alt Mode	DisplayPort™ over the USB-C™ module
Graphics Memory	512MB when less than 8GB of system memory is installed 1GB when 8GB or more of system memory is installed
Maximum Color Depth	32 bits/pixel, 8-bits per color component
Graphics/Video API Support	DirectX 12 OpenGL 4.4 AMD Athlon™ PRO APUs: DirectX 12 OpenCL 1.2 OpenGL 4.1 Dedicated decoding of the H.264 format at up to 4K and 60Hz. Encoding H.264 video supported at 1080p120, 1440p60, and 2160p60 AMD Ryzen™ PRO APUs: DirectX 12 Vulkan 1.0 OpenCL 2.0 OpenGL 4.5 Hardware-based decode of HEVC/H.265 main10 profile videos at resolutions up to 3840x2160 at 60Hz with 10-bit color for HDR content. Dedicated decoding of the H.264 format at up to 4K and 60Hz. Decoding the VP9 format at resolutions up to 3840x2160 using a hybrid approach where the video and shader engines collaborate to offload work from the CPU. Encode HEVC/H.265 at 1080p240, 1440p120, and 2160p60. Encoding H.264 video is also supported at 1080p120, 1440p60, and 2160p60
Max. Resolution (DisplayPort)	4096 x 2160@60Hz
Max. Resolution (HDMI)	4096 x 2160@60Hz
Max. Resolution (VGA)	2048 x 1536@60Hz

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

STORAGE

500GB 7200RPM 2.5in SATA HDD

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

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

1TB 7200RPM 2.5in SATA HDD

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

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

256 GB 2.5in SATA Self Encrypted Federal Information Processing Standard SSD

Drive Weight	<40g
Capacity	256 GB
Height	7mm
Length	100.45mm
Width	69.85mm
Interface	SATA 3.0 (6Gb/s)
Performance	Up to Random Read/Write = 55K/83K IOPS
Maximum Sequential Read	Up to 530MB/s
Maximum Sequential Write	Up to 500MB/s
Logical Blocks	500,118,192
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	DIPM; TRIM; FIPS 140-2 security

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

512 GB 2.5in SATA Self Encrypted Federal Information Processing Standard SSD

Drive Weight	<45g
Capacity	512 GB
Height	7mm
Length	100.45mm
Width	69.85mm
Interface	SATA 3.0 (6Gb/s)
Performance	Up to Random Read/Write = 92K/83K IOPS
Maximum Sequential Read	Up to 530MB/s
Maximum Sequential Write	Up to 500MB/s
Logical Blocks	1,000,215,216
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	DIPM; TRIM; FIPS 140-2 security

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

256GB M.2 2280 PCIe NVMe SSD

Drive Weight	< 10g
Capacity	256GB
Height	2.38mm
Length	80mm
Width	22mm
Interface	PCIE Gen3
Performance	Up to Random Read/Write = 120K/170K IOPS
Maximum Sequential Read	Up to 1600MB/s
Maximum Sequential Write	Up to 780MB/s
Logical Blocks	500,118,192
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	APST; ASPM L1.2; NVME spec 1.2

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

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512 GB M.2 2280 PCIe NVMe SSD

Drive Weight	< 10g
Capacity	512 GB
Height	2.38mm
Length	80mm
Width	22mm
Interface	PCIE Gen3
Performance	Up to Random Read/Write = 200K/180K IOPS
Maximum Sequential Read	Up to 1600MB/s
Maximum Sequential Write	Up to 860MB/s
Logical Blocks	1,000,215,216
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	APST; ASPM L1.2; NVME spec 1.2

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

Technical Specifications

128GB M.2 2280 PCIe NVMe Three Layer Cell SSD

Drive Weight	< 10g
Capacity	128GB
Height	2.38mm
Length	80mm
Width	22mm
Interface	PCIE Gen3
Performance	Up to Random Read/Write = 140K/40K IOPS
Maximum Sequential Read	Up to 2800MB/s
Maximum Sequential Write	Up to 600MB/s
Logical Blocks	250,069,680
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	APST; ASPM L1.2; NVME spec 1.2

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

256GB M.2 2280 PCIe NVMe Three Layer Cell SSD

Drive Weight	< 10g
Capacity	256GB
Height	2.38mm
Length	80mm
Width	22mm
Interface	PCIE Gen3
Performance	Up to Random Read/Write = 150K/180K IOPS
Maximum Sequential Read	Up to 2700MB/s
Maximum Sequential Write	Up to 1000MB/s
Logical Blocks	500,118,192
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	APST; ASPM L1.2; NVME spec 1.2

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

Technical Specifications

512 GB M.2 2280 PCIe NVMe Three Layer Cell SSD

Drive Weight	< 10g
Capacity	512 GB
Height	2.38mm
Length	80mm
Width	22mm
Interface	PCIE Gen3
Performance	Up to Random Read/Write = 270K/235K IOPS
Maximum Sequential Read	Up to 2900MB/s
Maximum Sequential Write	Up to 1100MB/s
Logical Blocks	1,000,215,216
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	APST; ASPM L1.2; NVME spec 1.2; TCG-OPAL2 security

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

256GB M.2 2280 PCIe NVMe Self Encrypted OPAL2 Three Layer Cell SSD

Drive Weight	< 10g
Capacity	256 GB
Height	2.38mm
Length	80mm
Width	22mm
Interface	PCIE Gen3
Performance	Up to Random Read/Write = 150K/180K IOPS
Maximum Sequential Read	Up to 2700MB/s
Maximum Sequential Write	Up to 1000MB/s
Logical Blocks	500,118,192
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	APST; ASPM L1.2; NVME spec 1.2; TCG-OPAL2 security

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

512 GB M.2 2280 PCIe NVMe Self Encrypted OPAL2 Three Layer Cell SSD

Drive Weight	< 10g
Capacity	512 GB
Height	2.38mm
Length	80mm
Width	22mm
Interface	PCIE Gen3
Performance	Up to Random Read/Write = 270K/235K IOPS
Maximum Sequential Read	Up to 2900MB/s
Maximum Sequential Write	Up to 1100MB/s
Logical Blocks	1,000,215,216
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	APST; ASPM L1.2; NVME spec 1.2; TCG-OPAL2 security

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

HIGH DEFINITION AUDIO

Type	Integrated
HD Stereo Codec	Conexant CX20632
Audio I/O Ports	1 Combo Microphone/Headphone Jack supporting CTIA style headset 1 Headphone Jack
Internal Speaker Amplifier	2W class D mono amplifier for the internal speaker only. External speakers must be powered externally
Multi-streaming Capable	Playback multi-streaming allows independent audio streams to be sent to/from the front jacks and 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 Syntheses	Yes - Uses OS soft wavetable
Analog Audio	Yes
# of Channels on Line-Out	Stereo (Left & Right channels)
Internal Speaker	Yes

POWER SUPPLY

Operating Voltage Range	90Vac~264Vac
Rated Voltage Range	100Vac~240Vac
Rated Line Frequency	50Hz~60Hz
Operating Line Frequency	47Hz~63Hz
Rated Input Current	65W≦1.7A
Rated Input Current with Energy Efficient* Power Supply	65W≦ 1.7A Average efficiency 88% at 115V Average efficiency 89% at 230V
DC Output	+19.5V
Current Leakage (NFPA 99: 2102)	Less than 500 microamps of leakage current at 264 Vac with the ground wire disconnected, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1. Less than 100 microamps of leakage current at 264 Vac with the ground wire intact with normal polarity, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1.
Power cord length	6.0 ft. (1.83 m)

NETWORKING

Realtek RTL8111EPH-CG Gigabit Network Connection

Connector	RJ-45
System Interface	PCIe + SMBus
Data rates supported	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023 clauses 40) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s
IEEE Compliance	IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE (Energy Efficient Ethernet)
Performance	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload and Giant send offload Receiving Side Scaling Jumbo Frame 9K
Power consumption	Cable Disconnetion: 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
MAC/PHY Interconnect	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

Intel® 9260 802.11ac 2x2 with Bluetooth® M.2 Combo Card non-vPro™

Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac	
Interoperability	Wi-Fi certified	
Frequency Bands	802.11b/g/n	• 2.402 – 2.482 GHz Note: The FCC has declared as of January 1, 2015 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.
	802.11a/n/ac	• 4.9 – 4.95 GHz (Japan) • 5.15 – 5.25 GHz • 5.25 – 5.35 GHz • 5.47 – 5.725 GHz • 5.825 – 5.850
Data Rates	• 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) • 802.11ac : MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, 80MHz, & 160 MHz)	
Modulation	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM	
Security[3]	• IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware • 802.1x authentication • WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification • IEEE 802.11i • Cisco Certified Extensions, all versions through CCX4 and CCX Lite • WAPI	
	1 Check latest software/driver release for updates on supported security features.	
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)	

Technical Specifications

Roaming[2]	IEEE 802.11 compliant roaming between access points	
Output Power[2]	• 802.11b : +18.5dBm minimum • 802.11g : +17.5dBm minimum • 802.11a : +18.5dBm minimum • 802.11n HT20(2.4GHz) : +15.5dBm minimum • 802.11n HT40(2.4GHz) : +14.5dBm minimum • 802.11n HT20(5GHz) : +15.5dBm minimum • 802.11n HT40(5GHz) : +14.5dBm minimum • 802.11ac VHT80(5GHz) : +11.5dBm minimum • 802.11ac VHT160(5GHz) : +11.5dBm minimum	
Power Consumption	• Transmit mode2.0 W • Receive mode1.6 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[3]	• 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	
	3 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).	
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications	
Form Factor	PCI-Express M.2 MiniCard	
Dimensions	Type 2230 : 2.3 x 22.0 x 30.0 mm	
Weight	Type 2230 : 2.8g	
Operating Voltage	3.3v +/- 9%	
Temperature	**Operating:** **Non-operating:**	14° to 158° F (-10° to 70° C) -40° to 176° F (-40° to 80° C)

Technical Specifications

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)
HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0 Wireless Technology		
Bluetooth Specification	4.0/4.1/4.2/5.0 Compliant	
Frequency Band	2402 to 2480 MHz	
Number of Available Channels	Legacy : 0~79 (1 MHz/CH) BLE : 0~39 (2 MHz/CH)	
Data Rates and Throughput	Legacy : 3 Mbps data rate; throughput up to 2.17 Mbps BLE : 1 Mbps data rate; throughput up to 0.2 Mbps Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)	
Transmit Power	The Bluetooth® component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR.	
Receiver Sensitivity Legacy		
Power Consumption	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW	
Electrical Interface	USB 2.0 compliant	
Bluetooth Software Supported Link Topology	Microsoft Windows Bluetooth Software	
Power Management	Microsoft Windows ACPI, and USB Bus Support	
Certifications	FCC (47 CFR) Part 15C, Section 15.247 & 15.249	
Power Management Certifications	ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark	
Bluetooth Profiles Supported	BT4.1-ESR 5/6/7 Compliance LE Link Layer Ping LE Dual Mode LE Link Layer LE Low Duty Cycle Directed Advertising LE L2CAP Connection Oriented Channels Train Nudging & Interlaced Scan BT4.2 ESR08 Compliance LE Secure Connection- Basic/Full	

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

Realtek RTL8821CE 802.11ac 1x1 with Bluetooth® M.2 Combo Card

Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac	
Interoperability	Wi-Fi certified	
Frequency Band	802.11b/g/n	• 2.402 – 2.482 GHz **NOTE:** The FCC has declared as of January 1, 2015 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.
	802.11a/n	• 4.9 – 4.95 GHz (Japan) • 5.15 – 5.25 GHz • 5.25 – 5.35 GHz • 5.47 – 5.725 GHz • 5.825 – 5.850
Data Rates	• 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) • 802.11ac : MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz)	
Modulation	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM	
Security[3]	• IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware • 802.1x authentication	

Technical Specifications

	• WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification • IEEE 802.11i • Cisco Certified Extensions, all versions through CCX4 and CCX Lite • WAPI
	1 Check latest software/driver release for updates on supported security features.
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming[2]	IEEE 802.11 compliant roaming between access points
Output Power[2]	• 802.11b : +14dBm minimum • 802.11g : +12dBm minimum • 802.11a : +12dBm minimum • 802.11n HT20(2.4GHz) : +12dBm minimum • 802.11n HT40(2.4GHz) : +12dBm minimum • 802.11n HT20(5GHz) : +10dBm minimum • 802.11n HT40(5GHz) : +10dBm minimum • 802.11ac VHT80(5GHz) : +10dBm minimum
Power Consumption	• Transmit mode2.0 W • Receive mode1.6 W • Idle mode (PSP)180 mW(WLAN Associated) • Idle mode50 mW(WLAN unassociated) • Connected Standby 10mW • Radio disabled8 mW
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity[3]	• 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
	3. 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).
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

Technical Specifications

Form Factor	PCI-Express M.2 MiniCard	
Dimensions	Type 2230 : 2.3 x 22.0 x 30.0 mm	
Weight	Type 2230 : 2.8g	
Operating Voltage	3.3v +/- 9%	
Temperature	**Operating:** **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)
HP Integrated Module with Bluetooth 4.0/4.1/4.2 Wireless Technology		
Bluetooth Specification	4.0/4.1/4.2 Compliant	
Frequency Band	2402 to 2480 MHz	
Number of Available Channels	Legacy : 0~79 (1 MHz/CH) BLE : 0~39 (2 MHz/CH)	
Data Rates and Throughput	Legacy : 3 Mbps data rate; throughput up to 2.17 Mbps BLE : 1 Mbps data rate; throughput up to 0.2 Mbps Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)	
Transmit Power	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR.	
Receiver Sensitivity Legacy		
Power Consumption	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW	
Electrical Interface	USB 2.0 compliant	
Bluetooth Software Supported Link Topology	Microsoft Windows Bluetooth Software	
Power Management	Microsoft Windows ACPI, and USB Bus Support	
Certifications	FCC (47 CFR) Part 15C, Section 15.247 & 15.249	
Power Management Certifications	ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark	

Technical Specifications

Bluetooth Profiles Supported	BT4.1-ESR 5/6/7 Compliance LE Link Layer Ping LE Dual Mode LE Link Layer LE Low Duty Cycle Directed Advertising LE L2CAP Connection Oriented Channels Train Nudging & Interlaced Scan BT4.2 ESR08 Compliance LE Secure Connection- Basic/Full LE Privacy 1.2 –Link Layer Privacy LE Privacy 1.2 –Extended Scanner Filter Policies LE Data Packet Length Extension FAX Profile (FAX) Basic Imaging Profile (BIP)2 Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP)

ENVIRONMENTAL

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® 2019 registered where applicable. EPEAT® registration varies by country. See http://www.epeat.net for registration status in your country*. Search keyword generator on HP's 3rd party option store for solar generator accessories at http://www.hp.com/go/options.
- TCO Certified

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

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, 60Hz**
Normal Operation (Short idle)	11.37	11.62	11.34
Normal Operation (Long idle)	11.26	11.31	11.14
Sleep	0.60	0.66	0.60
Off	0.58	0.63	0.58

NOTE: Energy efficiency data listed is for an ENERGY STAR® certified 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® certified 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. Search keyword generator on HP's 3rd party option store for solar generator accessories at www.hp.com/go/options

Heat Dissipation*	**115VAC, 60Hz**	**230VAC, 50Hz**	**100VAC, 60Hz**
Normal Operation (Short idle)	38.77	39.63	38.66
Normal Operation (Long idle)	38.39	38.58	37.97
Sleep	2.05	2.24	2.04
Off	1.98	2.15	1.97

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	3.0	19.4
Fixed Disk – Random writes	3.0	19.5

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:

Technical Specifications

	Spare parts are available throughout the warranty period and or for up to 5 years after the end of production.
Batteries	This battery(s) in this product comply with EU Directive 2006/66/EC Batteries used in the product do not contain: Mercury greater the1ppm by weight Cadmium greater than 20ppm by weight Battery size: CR2032 (coin cell) Battery type: Lithium
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 1680.1-2018 EPEAT®. Status varies by country. Visit 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 0% post-consumer recycled plastic (by wt.) • This product is 95.1% recycle-able when properly disposed of at end of life.
Packaging Materials	**External:** PAPER/Corrugated **Internal:** PLASTIC/Expanded Polyethylene - EPE PLASTIC/Polyethylene low density - LDPE The plastic packaging material contains at least 50% recycled content. The corrugated paper packaging materials contains at least 70% recycled content.
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 http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf): • 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)

Technical Specifications

	• 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: http://www.hp.com/go/reuse-recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. 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: Global Citizenship Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html Eco-label certifications http://www8.hp.com/us/en/hp-information/environment/ecolabels.html ISO 14001 certificates: http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c04755842 and http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf

After-Market Options (availability may vary by region)

Type	Description	Part Number
Display Bracket	HP B300 PC Mounting Bracket	2DW53A
	HP B500 PC Mounting Bracket	2DW52A
	HP Flat Panel Monitor Quick Release	EM870AA
	HP Quick Release Bracket 2	6KD15AA
Desktop Mini Accessories	HP Desktop Mini 65W Power Supply Kit	L2X04AA
	HP Desktop Mini DVD-Writer ODD Expansion Module	K9Q83AA
	HP Desktop Mini G3/G4 Port Cover Kit	1ZE52AA
	HP Desktop Mini I/O Expansion Module	K9Q84AA
	HP Desktop Mini LockBox V2	3EJ57AA
	HP Desktop Mini Security/Dual VESA Sleeve v2	2JA32AA
	HP Desktop Mini Vertical Chassis Stand	G1K23AA
	HP DM VESA Power Supply Holder Kit	1RL87AA
	HP G4 Mini 2.5-inch SATA Drive Bay Kit	3TK91AT
Graphics Options	HP HDMI Standard Cable Kit	T6F94AA
	HP DisplayPort Cable Kit	VN567AA
	HP DisplayPort To VGA Adapter	AS615AA
	HP DisplayPort To DVI-D Adapter	FH973AA
Security Hardware	HP Dual Head Keyed Cable Lock	T1A64AA
	HP Keyed Cable Lock 10mm	T1A62AA
Data Storage Drives	HP PCIe NVME TLC 256GB SSD M.2 Drive	1CA51AA
	HP PCIe NVME TLC 512GB SSD PCIe Drive	Z4L70AA
Input Devices	HP USB Conferencing Keyboard	K8P74AA
	HP USB Business Slim Keyboard	N3R87AA
	HP USB Collaboration Keyboard	Z9N38AA
	HP USB Hardened Mouse	P1N77AA
	HP USB Mouse	QY777AA
Adapter	HP USB to Serial Port Adapter	J7B60AA
System Memory	HP 4GB DDR4-2666 SODIMM	3TK86AA
	HP 8GB DDR4-2666 SODIMM	3TK88AA
	HP 16GB DDR4-2666 SODIMM	3TK84AA
Multimedia Devices	HP Business Headset v2	T4E61AA
	HP USB Business Speakers v2	N3R89AA

After-Market Options (availability may vary by region)

I/O Devices	HP DisplayPort Port Flex IO	3TK72AA
	HP HDMI Port Flex IO (405/705)	3TK75AA
	HP Type-C USB 3.1 Gen2 Port Flex IO	3TK78AA
	HP VGA Port Flex IO	3TK80AA
	HP Serial Port Flex IO	3TK76AA

Change Log

Date of change:	Version History:		Description of change:
April 29, 2019	From v1	Launch	Launch
July 11, 2019	From v1 to v2	Update	HP Cloud recovery and its footnote added to software section
August 16, 2019	From v2 to v3	Update	Cable lock slot upgraded to Standard
November 10, 2019	From v3 to v4	Update	EPEAT references updated