*Overview*
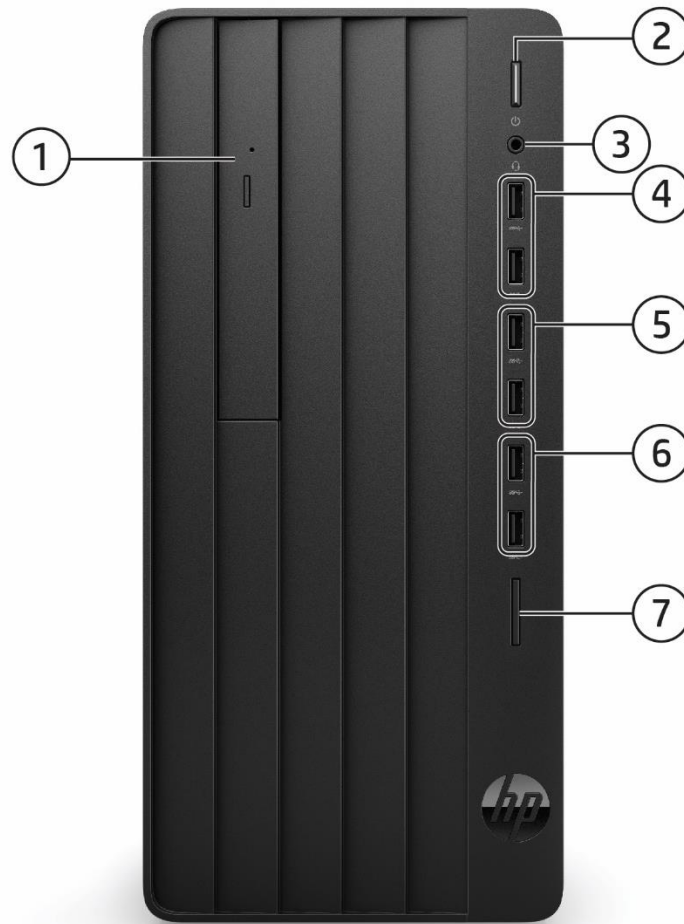
**HP Pro Tower 280 G9 PCI Desktop PC**



1.   Slim-height Bay - supporting an optical disk drive (Optional)
2.   Power Button
3.   Combo jack, Headphone/ Microphone
4.   (2) SuperSpeed USB 5Gbps signaling rate port[1]
5.   (2) SuperSpeed USB 10Gbps signaling rate port[1]
6.   (2) SuperSpeed USB 5Gbps signaling rate port[1]
7.   SD Card Reader (Optional)

**Not shown**

**Slots**
(1) PCI Express 4.0 x16[2]
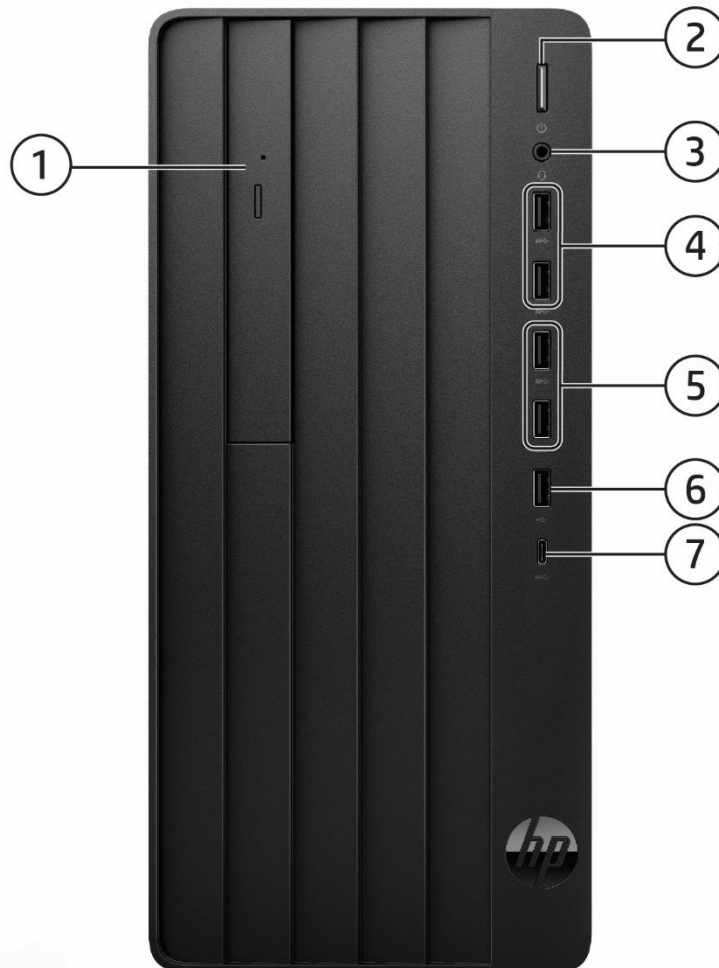(1) PCI Express 3.0 x1
(1) PCI[3]
(1) M.2 for WLAN
(1) M.2 2242/2280 storage

**Bays**
(2) 3.5"
(1) 9.5mm internal optical drive bay

1. SuperSpeed USB 10Gbps = USB 3.2 Gen2. SuperSpeed USB 5Gbps = USB 3.2 Gen1.
2. Support discrete graphic cards and storage devices only.
3. Available on select skus only.

Not all configuration components are available in all regions/countries.

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Page 1

*Overview*

**HP Pro Tower 280 G9 PCI Desktop PC (Intel 13ᵗʰ Gen)**



1. Slim-height Bay - supporting an optical disk drive (Optional)
2. Power Button
3. Combo jack, Headphone/ Microphone
4. (2) SuperSpeed USB 5Gbps signaling rate port[1]
5. (2) SuperSpeed USB 10Gbps signaling rate port[1]
6. (1) USB 2.0 port [1]
7. (1) USB-C 3.2 G1 (5G)

**Not shown**

**Slots**

(1) PCI Express 4.0 x16
(1) PCI Express 3.0 x1
(1) PCI
(1) M.2 for WLAN
(1) M.2 2242/2280 storage

**Bays**

(2) 3.5"
(1) 9.5mm internal optical drive bay

1. SuperSpeed USB 10Gbps = USB 3.2 Gen2. SuperSpeed USB 5Gbps = USB 3.2 Gen1.

Not all configuration components are available in all regions/countries.
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*Overview*

**HP Pro Tower 280 G9 PCI Desktop PC (Intel 14th Gen)**



1.  Slim-height Bay - supporting an optical disk drive (Optional)
2.  Power Button
3.  Combo jack, Headphone/ Microphone
4.  (3) SuperSpeed USB 5Gbps signaling rate port[1]
5.  (2) SuperSpeed USB 10Gbps signaling rate port[2]
6.  (1) USB-C 3.2 G1 (5G)

**<u>Not shown</u>**

**Slots**

(1) PCI Express 4.0 x16
(1) PCI Express 3.0 x1
(1) PCI
(1) M.2 for WLAN
(2) M.2 2242/2280 storage

**Bays**
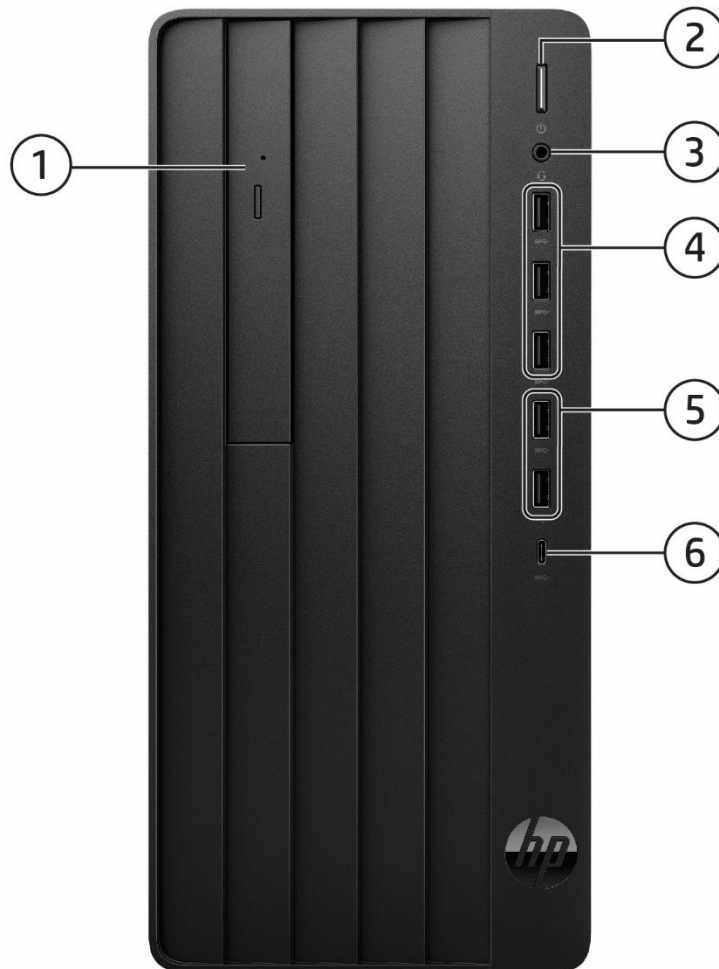
(2) 3.5"
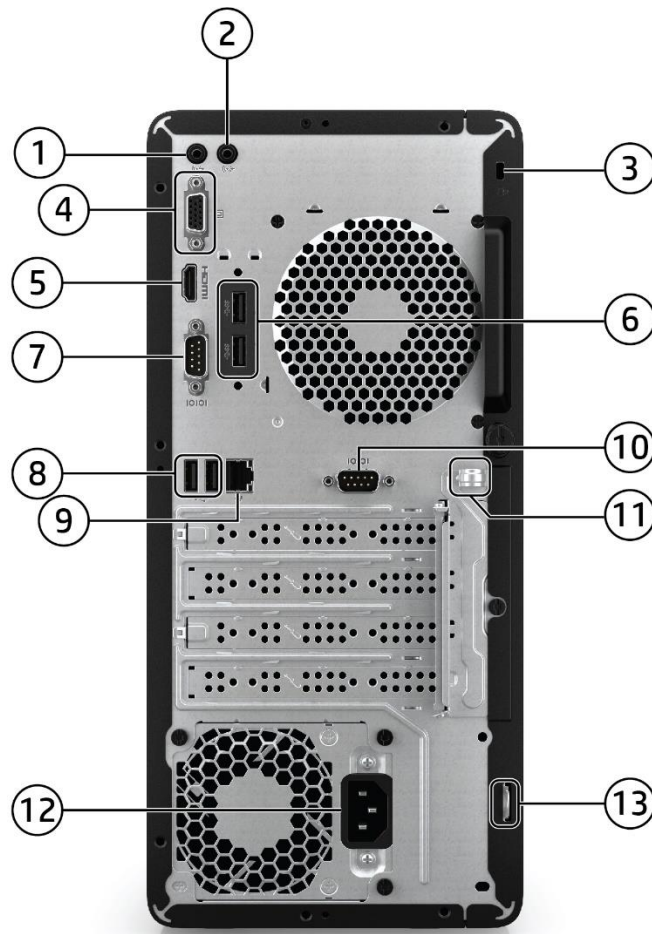(1) 9.5mm internal optical drive bay

1. SuperSpeed USB 5Gbps = USB 3.2 Gen1.
2. SuperSpeed USB 10Gbps = USB 3.2 Gen2.

Not all configuration components are available in all regions/countries.
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*Overview*

**HP Pro Tower 280 G9 PCI Desktop PC**



1. Audio Line out
2. Audio Line in
3. Standard lock slot
4. VGA Port
5. HDM Port
6. Connector (2) USB 2.0 port (Optional)[1]

7. Serial Port[1]
8. Connector (2) USB 2.0 port
9. RJ-45 Network
10. Serial Port (Optional)
11. Integrated accessories cable lock
12. Power Cord Connector[2]
13. Padlock Loop

**Not shown**

(1) PS/2 Port (Optional)

(1) Parallel Port (Optional via PCIex1 slot)

(1) 4 Serial Port (Optional via PCIex1 slot)[3]

(1) Internal Speaker (Optional)

(1) Intrusion Sensor (Optional)

1. Available on select skus only.
2. Power cord connector will be in different position, depends on which power supply configured.
3. Available in select countries only.

Not all configuration components are available in all regions/countries.

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*Overview*

**HP Pro Tower 280 G9 PCI Desktop PC (Intel 13th Gen)**



1. Audio Line out
2. Audio Line in
3. Standard lock slot
4. DisplayPort 1.4a (supports DSC)
5. HDMI 1.4b Port
6. Connector (2) USB 2.0 port (optional)[1]

7. Serial port[1]
8. Connector (2) USB 2.0 port
9. RJ-45 Network
10. Serial port (optional)
11. Integrated accessories cable lock
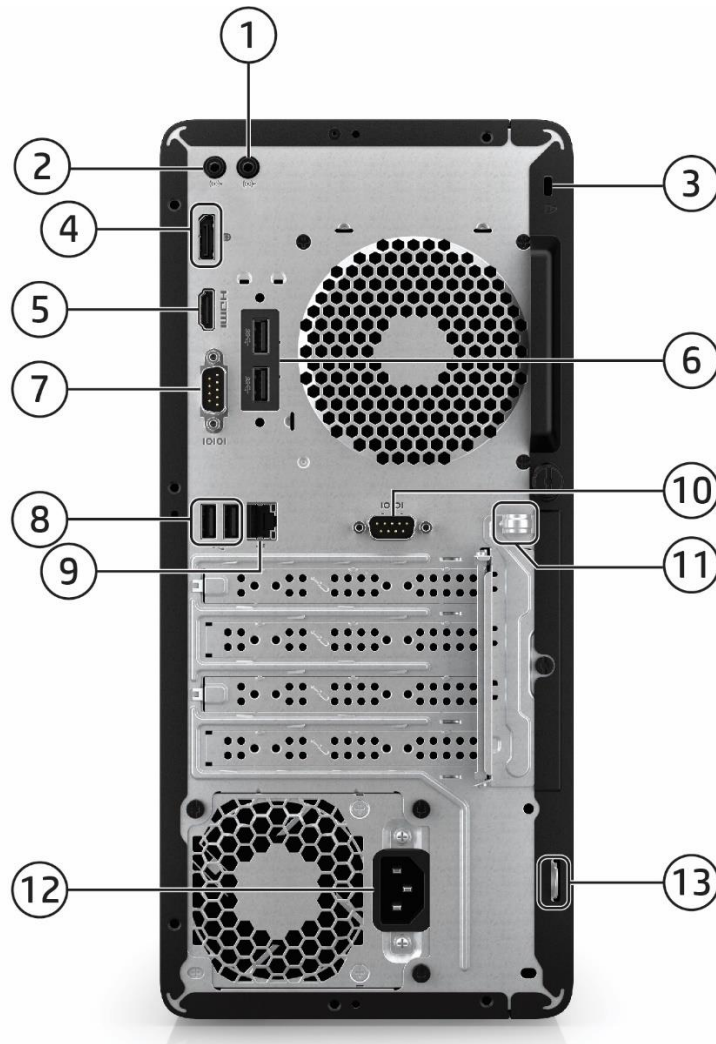12. Power cord connector
13. Padlock loop

**Not shown**

**Slots**

(1) PS/2 Port (Optional)
(1) Parallel Port (Optional via PCIex1 slot)
(1) 4 Serial Port (Optional via PCIex1 slot)[2]
(1) Internal Speaker (Optional)
(1) Intrusion Sensor (Optional)

**Bays**

(2) 3.5"
(1) 9.5mm internal optical drive bay

1. Power cord connector will be in different position, depends on which power supply configured.
2. Available in select countries only.

Not all configuration components are available in all regions/countries.

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*Overview*

## HP Pro Tower 280 G9 PCI Desktop PC (Intel 14th Gen)



1. Audio Line out/Line out
2. DisplayPort 1.4a (supports DSC)
3. Standard lock slot
4. VGA
5. HDMI 1.4b Port
6. Serial port[1]

7. Connector (2) USB 2.0 port (optional)[1]
8. Connector (2) USB 2.0 port
9. RJ-45 Network
10. Serial port (optional)
11. Integrated accessories cable lock
12. Power cord connector
13. Padlock loop

### Not shown

**Slots**

(1) PS/2 Port (Optional)
(1) Parallel Port (Optional via PCIex1 slot)
(1) 4 Serial Port (Optional via PCIex1 slot)[2]
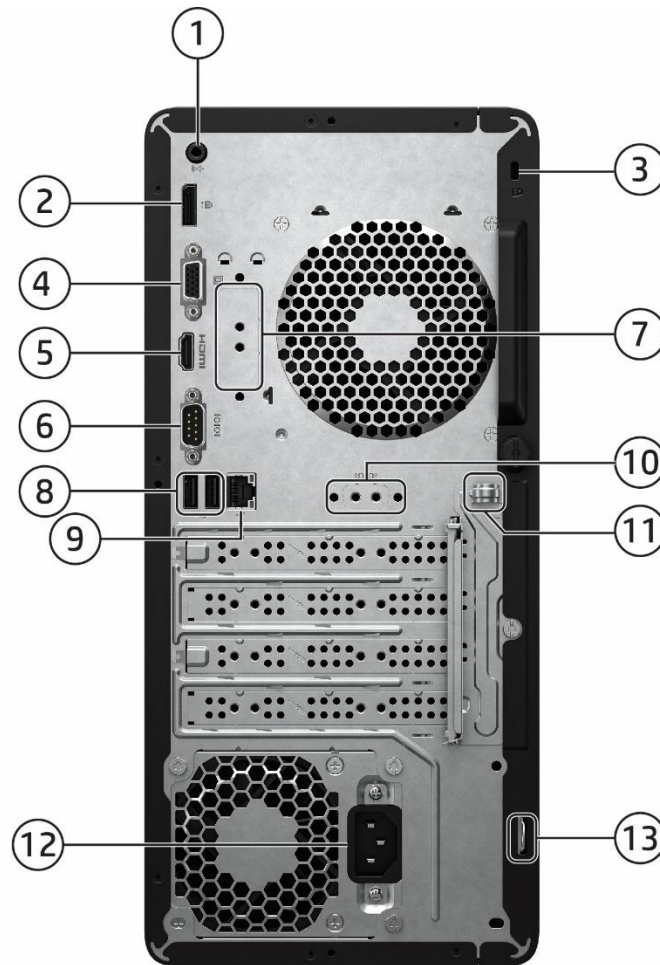(1) Internal Speaker (Optional)
(1) Intrusion Sensor (Optional)

**Bays**

(2) 3.5"
(1) 9.5mm internal optical drive bay

1. Power cord connector will be in different position, depends on which power supply configured.
2. Available in select countries only.

Not all configuration components are available in all regions/countries.

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*Overview*

## AT A GLANCE

- Windows 11 Pro 64, Win 11 Home 64, or FreeDOS.
- Intel® H770[1] chipset supporting Intel® 12th or 13th processors[1] featuring Intel® UHD Graphics.
- Supports an optional discrete graphics card.
- Integrated 10/100/1000 Ethernet Controller or Realtek RTL8821CE-CG 802.11 a/b/g/n/ac (1x1) Wi-Fi5 and Bluetooth® 4.2 Wireless Card or Realtek RTL8822CE-CG 802.11 a/b/g/n/ac (2x2) Wi-Fi5 and Bluetooth® 5.0 Wireless Card or Realtek RTL8852BE 802.11 a/b/g/n/ac/ax (2x2) Wi-Fi6 and Bluetooth® 5.3 Wireless Card.
- Up to 64GB DDR5-5600 Unbuffered Memory (UDIMM).
- Independent monitor support via VGA and HDMI interfaces.
- TPM2.0 support (PCI version support dTPM, and the non-PCI version support fTPM)[1].
- Supports both Hard Disk Drives and PCIe® NVMe™ M.2 SSD or PCIe® NVMe™ TLC M.2 SSD.
- Up to 10 USB Ports (including native 4 SuperSpeed USB 5Gbps signaling rate ports and 2 SuperSpeed USB 10Gbps signaling rate ports and 2 USB 2.0 ports).
- 180W/350W/500W 90% HE power supply and 260W 92% HE power supply.
- Security cable lock supported (sold separately).
- Intrusion sensor supported (Optional).
- Optional HP Services available[2]; terms and conditions vary by country; certain restrictions and exclusions apply.

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

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

## PRODUCT NAME

HP Pro Tower 280 G9/G9 PCI/G9 E PCI Desktop PC

## OPERATING SYSTEM

**Preinstalled**     Windows 11 Pro[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. Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows is automatically updated and enabled. High speed internet and Microsoft account required. ISP fees may apply and additional requirements may apply over time for updates. See http://www.windows.com.

Not all configuration components are available in all regions/countries.
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*Standard Features and Configurable Modules*

## PROCESSORS

|  | 13th Gen PCI | 14th Gen PCI | 12th Gen Non-PCI | 13th /14th Gen Non-PCI |
|---|---|---|---|---|
| 12th Gen Processor | X | X | X |  |
| 13th Gen Processor | X | X |  | X |
| 14th Gen Processor |  | X |  | X |

**Intel® Celeron® Processors[1,2]**
CPU Intel Celeron G6900 Dual Core 3.4GHz 3200MHz 46W (3.4GHz, 4MB cache, 2 cores).
Intel® Core™ 300 with Intel UHD Graphics 710 (3.9 GHz P-core base frequency, 6 MB L3 cache, 2 P-cores, 4 threads).

**Intel® Pentium® Processors[1,2]**
CPU Intel Pentium Gold G7400 Dual Core 3.7GHz 3200MHz 46W (3.7GHz, 6MB cache, 2 cores).

**Intel 12th Processors**
**Intel® Core™ i3[1]**
CPU Intel Core i3-12100 4C 3.3GHz 3200MHz 60W (3.3GHz, turbo up to 4.3GHz, 12MB cache, 4 cores).

**Intel® Core™ i5[1]**
CPU Intel Core i5-12400 6C 2.5GHz 3200MHz 65W (2.5GHz, turbo up to 4.4GHz, 18MB cache, 6 cores).
CPU Intel Core i5-12500 6C 3.0GHz 3200MHz 65W (3.0GHz, turbo up to 4.6GHz, 18MB cache, 6 cores).

**Intel® Core™ i7[1]**
CPU Intel Core i7-12700 12C 2.1GHz 3200MHz 65W (2.1GHz, Up to 4.8GHz with Intel® Turbo Boost[2], 25MB cache, 12 cores).

**Intel 13th Processors**
**Intel® Core™ i3[1]**
CPU Intel Core i3-13100 4C 3.4GHz 3200MHz 60W (3.4GHz, turbo up to 4.5GHz, 12MB cache, 4 cores).

**Intel® Core™ i5[1]**
CPU Intel Core i5-13400 10C 2.5GHz 3200MHz 65W (2.5GHz, turbo up to 4.6GHz, 20MB cache, 10 cores).
CPU Intel Core i5-13500 14C 2.5GHz 3200MHz 65W (2.5GHz, turbo up to 4.8GHz, 24MB cache, 14 cores).

**Intel® Core™ i7[1]**
CPU Intel Core i7-13700 16C 2.1GHz 3200MHz 65W (2.1GHz, Up to 5.2GHz with Intel® Turbo Boost[2], 30MB cache, 16 cores).

Not all configuration components are available in all regions/countries.
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*Standard Features and Configurable Modules*

**Intel 14th Processors**
**Intel® Core™ i3[1]**
Intel® Core™ i3-14100 with Intel UHD Graphics 730 (3.5 GHz P-core base frequency, up to 4.7 GHz P-core Max Turbo frequency, 12 MB L3 cache, 4 P-cores, 8 threads).

**Intel® Core™ i5[1]**
Intel® Core™ i5-14600 with Intel UHD Graphics 770 (2.0 GHz E-core base frequency, 2.7 GHz P-core base frequency, up to 3.9 GHz E-core Max Turbo frequency, up to 5.2 GHz P-core Max Turbo frequency, 24 MB L3 cache, 6 P-cores and 8 E-cores, 20 threads), supports Intel® vPro® Technology.
Intel® Core™ i5-14500 with Intel UHD Graphics 770 (1.9 GHz E-core base frequency, 2.6 GHz P-core base frequency, up to 3.7 GHz E-core Max Turbo frequency, up to 5.0 GHz P-core Max Turbo frequency, 24 MB L3 cache, 6 P-cores and 8 E-cores, 20 threads), supports Intel® vPro® Technology.
Intel® Core™ i5-14400 with Intel UHD Graphics 730 (1.8 GHz E-core base frequency, 2.5 GHz P-core base frequency, up to 3.5 GHz E-core Max Turbo frequency, up to 4.7 GHz P-core Max Turbo frequency, 20 MB L3 cache, 6 P-cores and 4 E-cores, 16 threads).

**Intel® Core™ i7[1]**
Intel® Core™ i7-14700 with Intel UHD Graphics 770 (1.5 GHz E-core base frequency, 2.1 GHz P-core base frequency, up to 4.2 GHz E-core Max Turbo frequency, up to 5.3 GHz P-core Max Turbo frequency, 33 MB L3 cache, 8 P-cores and 12 E-cores, 28 threads), supports Intel® vPro® Technology.

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. 64-bit computing system required. 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. Intel® Turbo Boost technology requires a PC with a processor with Intel Turbo Boost capability. Intel Turbo Boost performance varies depending on hardware, software and overall system. See http://www.intel.com/technology/turboboost for more information.

Not all configuration components are available in all regions/countries.
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*Standard Features and Configurable Modules*

## CHIPSET

Intel® H770 Chipset

## GRAPHICS

|  | 13th Gen PCI | 14th Gen PCI | 12th Gen Non-PCI | 13th /14th Gen Non-PCI |
|---|---|---|---|---|
| Intel Arc A380 6GB GDDR6 GFX | X | X |  | X |
| NVIDIA GeForce RTX 4060 8GB GDDR6 GFX | X | X |  | X |
| AMD Radeon RX 6300 2GB GDDR6 GFX | X | X | X | X |

**Integrated[1,2]**

Intel® UHD
Graphics 770
Graphics 730
Graphics 710

**Discrete Graphics**

Intel Arc A380 graphic (6GB GDDR6)
AMD Radeon™ RX 6300 Graphics (2GB GDDR6)
NVIDIA® GeForce RTX 4060 Graphics (8GB GDDR6)

1. HD content required to view HD images.
2. Integrated Intel software is available on select models only and requires separately purchased projector, tv or computer monitor with an integrated or external receiver. External receivers connect to the projector, tv or computer monitor via a standard VGA, HDMI cable, also sold separately**.**
**\*NOTE:** Available in select countries only.

*Standard Features and Configurable Modules*

## MEMORY

| | 13th Gen PCI | 14th Gen PCI | 12th Gen Non-PCI | 13th /14th Gen Non-PCI |
|---|---|---|---|---|
| DDR4 3200 | X | | X | X |
| DDR5 4800 | | X | | |
| DDR5 5600 | | X | | |

| Form Factor | Type | Maximum | # of Slots |
|---|---|---|---|
| Tower | DDR4 3200 | 64 GB capacity | 2 DIMM[1] |

4GB DDR4-3200 UDIMM NECC (1x4GB)

8GB DDR4-3200 UDIMM NECC (1x8GB)

8GB DDR4-3200 UDIMM NECC (2x4GB)[2]

16GB DDR4-3200 UDIMM NECC (1x16GB)

16GB DDR4-3200 UDIMM NECC (2x8GB)[2]

32GB DDR4-3200 UDIMM NECC (1x32GB)

32GB DDR4-3200 UDIMM NECC (2x16GB)[2]

64GB DDR4-3200 UDIMM NECC (2x32GB)[2]

1. Memory modules support data transfer rates up to 2933 MT/s; actual data rate is determined by the system's configured processor. See processor specifications for supported memory data rate.
2. Memory speed 3200 MT/s can be achieved via two UDIMMs per channel (2DPC) when populated with the same part number.
**NOTE:** DDR4-2933 UDIMM is only available for 10th Gen i7 processor.

| Form Factor | Type | Maximum | # of Slots |
|---|---|---|---|
| Tower | DDR5 5600/4800 | 64 GB capacity | 2 DIMM[1] |

8GB DDR5-5600 UDIMM NECC (1x8GB)

8GB DDR5-4800 UDIMM NECC (1x8GB)[2]

16GB DDR5-5600 UDIMM NECC (1x16GB)

16GB DDR5-4800 UDIMM NECC (1x16GB)

16GB DDR5-5600 UDIMM NECC (2x8GB)[2]

16GB DDR5-4800 UDIMM NECC (2x8GB)[2]

32GB DDR5-5600 UDIMM NECC (1x32GB)

32GB DDR5-4800 UDIMM NECC (1x32GB)

32GB DDR5-5600 UDIMM NECC (2x16GB)[2]

32GB DDR5-4800 UDIMM NECC (2x16GB)[2]

64GB DDR5-5600 UDIMM NECC (2x32GB)[2]

64GB DDR5-4800 UDIMM NECC (2x32GB)[2]

1. Memory modules supporting data transfer rates up to 5600/MTs requires Intel® Core™ i5-1x600 or i7 CPUs, with other CPUs, memory supports data transfer rates up to 4800 MT/s. When select the WLAN card, the memory modules support data transfer rates up to 4400/MTs
2. Memory speed 5200 MT/s can be achieved when dual-rank (2R) memory UDIMMs when populated with the same part number.

Not all configuration components are available in all regions/countries.

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*Standard Features and Configurable Modules*

## STORAGE

**NOTE:** Starting from November 1st, 2023, all shipments will require Windows to be installed when selecting a SSD. HDD can only be configured as additional data drives and not as the boot drive.

### SATA3 - 3.5" or 2.5" 6Gb/s HDDs

2TB 7200 RPM SATA Hard Disk Drive

1TB 7200 RPM SATA Hard Disk Drive

500GB 7200 RPM SATA Hard Disk Drive

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

### Solid State Drives

256GB* M.2 NVMe

512GB* M.2 NVMe

1TB* M.2 NVMe

128GB* M.2 2230 PCIe NVMe*

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

1TB* M.2 2280 PCIe NVMe 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 36GB (for Windows) of system disk is reserved for the system recovery software.

**\*NOTE**: Available in select countries only.

### SD Card Reader[1]

SD/SDHC/SDXC SD Card Reader

1. Optional per configuration and available in select countries only.

## OPTICAL DISC DRIVES

DVD-ROM 9.5mm

DVD-Writer[1] 9.5mm

1. HD-DVD disks cannot be played on this drive. No support for DVD-RAM. Actual speeds may vary. Don't copy copyright-protected materials. Double Layer discs can store more data than single layer discs. Discs burned with this drive may not be compatible with many existing single-layer DVD drives and players.

Not all configuration components are available in all regions/countries.

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## Standard Features and Configurable Modules

### NETWORKING[1]

#### Ethernet (RJ-45)
Integrated 10/100/1000M GbE LAN
Network Adapter Intel FoxPond1 I225-T1 2.5GbE

#### Wi-Fi® and Bluetooth®
Realtek RTL8852BE 802.11 a/b/g/n/ac/ax (2x2) Wi-Fi6 and Bluetooth® 5.3 Wireless Card
Realtek RTL8822CE-CG 802.11 a/b/g/n/ac (2x2) Wi-Fi5 and Bluetooth® 5.0 Wireless Card
Realtek RTL8821CE-CG 802.11 a/b/g/n/ac (1x1) Wi-Fi5 and Bluetooth® 4.2 Wireless Card

1. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 5 (802.11 ac) is backwards compatible with prior 802.11 specs.
**NOTE:** Wireless cards are optional or add-on features and requires separately purchased wireless access point and internet service. Availability of public wireless access points limited.

### AUDIO / MULTIMEDIA

Realtek ALC3867-CG
Integrated Hi-Definition Audio
Combo Jack, Headphone / Microphone
Line-in / Line-out (3.5mm)

### KEYBOARDS AND POINTING DEVICES[1]

#### Keyboard
HP USB 320K Keyboard
HP 125 BLK Wired Keyboard
HP 125 Antimicrobial Wired Keyboard (china only)
HP PS/2 Business Slim Keyboard (for machine configured with PS/2 port)

#### Mouse
HP PS/2 mouse (for machine configured with PS/2 port)
HP Wired Desktop 320M mouse
HP 125 Wired Mouse
HP 128 Laser Wired Mouse
HP 125 Antimicrobial Wired Mouse (china only)

1. Keyboards and mouse are optional or add-on features. A keyboard and mouse are required for this device. If you do not already have a keyboard and mouse, please refer to a list of compatible keyboards on the "Recommended Accessories" page.

Not all configuration components are available in all regions/countries.
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*Standard Features and Configurable Modules*

## PORTS

| Front I/O | 13th Gen PCI | 14th Gen PCI | 12th Gen Non-PCI | 13th /14th Gen Non-PCI |
|---|:---:|:---:|:---:|:---:|
| ODD (option) | X | X | X | X |
| Power Button | X | X | X | X |
| Combo jack, Headphone/ Microphone | X | X | X | X |
| SD card reader (option) | | | | |
| SuperSpeed USB 5Gbps signaling rate port | (2) | (3) | (4) | (4) |
| SuperSpeed USB 10Gbps signaling rate port | (2) | (2) | | |
| USB 2.0 port | (1) | | | |
| USB-C 3.2 G1 (5G) | (1) | (1) | | |

**Intel 13th Gen PCI**
**Front**

Slim-height Bay - supporting an optical disk drive (Optional)

Power Button

Combo jack, Headphone / Microphone

(2) SuperSpeed USB 10Gbps signaling rate port*

(2) SuperSpeed USB 5Gbps signaling rate port*

**Intel 14th Gen PCI**
**Front**

Slim-height Bay - supporting an optical disk drive (Optional)

Power Button

Combo jack, Headphone / Microphone

(2) SuperSpeed USB 10Gbps signaling rate port*

(3) SuperSpeed USB 5Gbps signaling rate port*

(1) USB-C©*

**Intel 12th, 13th, 14th Gen**
**Front**

Slim-height Bay - supporting an optical disk drive (Optional)

Power Button

Combo jack, Headphone / Microphone

(4) SuperSpeed USB 5Gbps signaling rate port*

**Not shown**

(1) PCI Express 4.0 x16

(1) PCI Express 3.0 x1

(1) Full-height PCI (Available on selected sku)

(1) M.2 for WLAN

(1) M.2 2230/2280 storage

Not all configuration components are available in all regions/countries.

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*Standard Features and Configurable Modules*

**Rear**
Audio Line out
Audio Line in
HDMI 1.4b Port
VGA Port
DisplayPort 1.4a (supports DSC)*
Serial Port (Optional on selected sku)
2$^{nd}$ Serial Port (Optional)
Standard Lock Slot
(4) USB 2.0 port (Optional on selected sku)
(2) USB 2.0 port (Optional on selected sku)
RJ-45 Network connector
Power cord connector
Padlock loop
Integrated accessories cable lock

**Not shown**
(1) PS/2 Port (Optional on selected sku)
(1) Parallel Port (Optional via PCIex1 slot)
(1) 4x Serial port (Optional via PCIex1 slot)*
(1) Internal Speaker (Optional)
(1) Intrusion Sensor (Optional)

**NOTE*:** Available in select countries only
**NOTE*:** SuperSpeed USB 10Gbps = USB 3.2 Gen2. SuperSpeed USB 5Gbps = USB 3.2 Gen1

## BAYS

(1) 9.5mm external slimline ODD bay (Optional)
(1) 3.5" internal HDD or bay
(1) 3.5" internal HDD bay (share bay with caddy)

*Standard Features and Configurable Modules*

## SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS

**Security and Protection**
McAfee* LiveSafe™[1]

**Productivity**
Microsoft 365[2]
Xerox® DocuShare® (90 days free trial offer)[3]

**ODD Playback**
sMedio True DVD for HP

**Movies**
Netflix[4]

**App Stores and Content Purchasing**
Amazon[4]

**HP Utilities and Support**
HP Documentation
HP Audio Switch[5]
HP Support Assistant
myHP

**BTB**
HP Setup Integrated OOBE

**Hardware Enabling Drivers or software utility**
HP System Event Utility

1. Free 1-year subscription of McAfee LiveSafe service included. Internet access required and not included. Subscription required after expiration
2. Sold separately and requires Internet access for activation.
3. Simply sign up and start using Xerox® DocuShare® Go. No credit card. No obligation. Data will become unavailable unless a subscription is entered before the end of the 90 day free trial period. See visit https://http://www.xerox.com/docusharego for details.
4. Internet access required and not included.
5. Easily switch between speaker and microphone sources with intuitive controls and a consistent app experience.
**\*NOTE**: Available in Latin America countries only.

## POWER SUPPLY[1]

180 W
EPA90 (Gold) +12V
260W
EPA92 +12V
350 W
EPA90 (Gold) Power Supply
500 W
EPA90 (Gold) Full range 115V/230V

1. All power supplies are not available in every region.

*Standard Features and Configurable Modules*

## DIMENSIONS AND WEIGHT

### Dimensions
6.12 x 11.93 x 13.28 in
(155 x 303 x 337 mm)

### Weight
10.4 lbs / 4.7 kg

## 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: 5° to 35° C[1]<br>Non-operating: -30° to 60° C[1] |
| Relative Humidity | Operating: 5% to 90% (non-condensing at ambient)<br>Non-operating: 5% to 90% (non-condensing at ambient) |
| Maximum Altitude (unpressurized) | Operating: 5000 m<br>Non-operating: 50000ft (15240 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.

| | |
|---|---|
| **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:<br>• IT ECO declaration<br>• US ENERGY STAR®<br>• US Federal Energy Management Program (FEMP)<br>• EPEAT Gold* or EPEAT Silver** registered in the United States. See http://www.epeat.net for registration status in your country.<br>• China Energy Conservation Program (CECP)<br>• China State Environmental Protection Administration (SEPA)<br>• Taiwan Green Mark<br>• Commission Regulation (EC) No 617/2013 (ErP Lot 3)<br><br>**Note***: Only available on 13th Gen CPU Legacy SKU, except Japan.<br>**Note****: Available on all 12th Gen CPU SKUs, 13th Gen non-legacy SKUs, and 13th Gen legacy SKUs for Japan. |
| **Sustainable Impact Specifications** | • Product Carbon Footprint (hp.com)<br>• 29.8% post-consumer recycled plastic<br>• Low halogen<br>• Outside Box and corrugated cushions are 100% sustainably sourced and recyclable<br>• Molded Paper Pulp Cushion inside box is 100% sustainably sourced and recyclable. |

Not all configuration components are available in all regions/countries.

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# QuickSpecs

*Standard Features and Configurable Modules*

| | | | |
|---|---|---|---|
| | • 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) | 16.34 W | 17.06 W | 16.41 W |
| Normal Operation (Long idle) | 16.31 W | 16.04 W | 16.15 W |
| Sleep | 1.74 W | 1.73 W | 1.76 W |
| Off | 0.32 W | 0.33 W | 0.32 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) | 55.72 BTU/hr | 58.17 BTU/hr | 55.96 BTU/hr |
| Normal Operation (Long idle) | 55.62 BTU/hr | 54.70 BTU/hr | 55.07 BTU/hr |
| Sleep | 5.93 BTU/hr | 5.90 BTU/hr | 6.00 BTU/hr |
| Off | 1.09 BTU/hr | 1.13 BTU/hr | 1.09 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 | 3.6 | | 25 |
| Fixed Disk – Random writes | 3.7 | | 26 |
| Optical Drive – Sequential reads | 3.8 | | 26 |
| 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:<br><br>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<br><br>Batteries used in the product do not contain:<br>Mercury greater the1ppm by weight<br>Cadmium greater than 20ppm by weight<br><br>Battery size: CR2032 (coin cell)<br>Battery type: Lithium | | |

# QuickSpecs

HP Pro Tower 280 G9 PCI Desktop PC

*Standard Features and Configurable Modules*

| Additional Information | • This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.<br>• This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.<br>• This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).<br>• This product is in compliance with the IEEE 1680.1 (EPEAT) standard at the Gold level, see http://www.epeat.net.<br>• Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.<br>• This product contains 28.2% post-consumer recycled plastic (by wt.)<br>• This product is 92.9% recycle-able when properly disposed of at end of life. | | |
|---|---|---|---|
| **Packaging Materials** | **External:** | PAPER/Paperboard | 1220 g |
| | **Internal:** | PAPER/Molded Pulp | 580 g |
| | | PLASTIC/Polyethylene low density - LDPE | 40 g |
| | The plastic packaging material contains at least 0.0% recycled content. | | |
| | The corrugated paper packaging materials contains at least 35.0% 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.<br><br>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.<br><br>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.<br><br>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 http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf):<br>• Asbestos<br>• Certain Azo Colorants<br>• Certain Brominated Flame Retardants – may not be used as flame retardants in plastics<br>• Cadmium<br>• Chlorinated Hydrocarbons<br>• Chlorinated Paraffins<br>• Formaldehyde<br>• Halogenated Diphenyl Methanes<br>• Lead carbonates and sulfates<br>• Lead and Lead compounds<br>• Mercuric Oxide Batteries<br>• Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.<br>• Ozone Depleting Substances<br>• Polybrominated Biphenyls (PBBs)<br>• Polybrominated Biphenyl Ethers (PBBEs)<br>• Polybrominated Biphenyl Oxides (PBBOs)<br>• Polychlorinated Biphenyl (PCB)<br>• Polychlorinated Terphenyls (PCT) | | |

Not all configuration components are available in all regions/countries.
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*Standard Features and Configurable Modules*

| | |
|---|---|
| | • Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.<br>• Radioactive Substances<br>• Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO) |
| **Packaging Usage** | HP follows these guidelines to decrease the environmental impact of product packaging:<br><br>• Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.<br><br>• Eliminate the use of ozone-depleting substances (ODS) in packaging materials.<br><br>• Design packaging materials for ease of disassembly.<br><br>• Maximize the use of post-consumer recycled content materials in packaging materials.<br><br>• Use readily recyclable packaging materials such as paper and corrugated materials.<br><br>• Reduce size and weight of packages to improve transportation fuel efficiency.<br>• 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.<br><br>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.<br>Global Citizenship Report<br>http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html<br><br>Eco-label certifications<br>http://www8.hp.com/us/en/hp-information/environment/ecolabels.html<br><br>ISO 14001 certificates:<br>http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c04755842<br><br>and<br>http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf |

## 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 support applies only to HP-configured and third-party HP qualified hardware and software.
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 http://www.hp.com/go/cpc. HP services are governed by the applicable HP terms and conditions of service provided or indicated to Customer at the time of purchase. Customer may have additional statutory rights according to applicable local laws, and such rights are not in any way affected by the HP terms and conditions of service or the HP Limited Warranty provided with your HP Product.

Not all configuration components are available in all regions/countries.

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*Technical Specifications - Graphics*

## GRAPHICS

| Intel® UHD Graphics (integrated) | |
| --- | --- |
| **Graphics Controller** | Integrated |
| **DisplayPort™** | Multimode capable; supports HDCP, Display Port Audio, HBR2 link rates and Multi-Stream Technology for a maximum of 3 displays connected to any output controlled by Intel® Graphics. |
| **HDMI (on board/optional)** | Supports HDMI 1.4 features<br>Supports HDCP 2.3<br>Supports audio over HDMI |
| **Memory** | The actual amount of maximum graphics memory can be >4GB. System memory is allocated for graphics as needed using Intel's Dynamic Video Memory Technology (DVMT), to provide an optimal balance between graphics and system memory use. |
| **Maximum Color Depth** | up to 16 bits/color |
| **Graphics/Video API Support** | HEVC 10b Enc/12b Dec HW<br>VP9 10b Dec HW<br>HDR<br>Rec. 2020<br>DX12 |
| **Max. Resolution (HDMI)** | 4096 x 2160@30Hz |
| **Max. Resolution (DP)** | 4096 x 2304@30Hz |

**Note:** The actual amount of maximum graphics memory can be less than the amounts listed above depending upon your computer's configuration.
Note: other resolutions may be available but are not recommended as they may not have been tested and qualified by HP
Only supported on displays connected to the external DisplayPort™ connector.

### AMD Radeon™ RX 6300 2GB GDDR6 Graphics card

| | |
| --- | --- |
| **Engine Clock** | Base: 1512 Mhz Boost: 2040 Mhz |
| **Memory Size / Width** | 2GB / 32bits |
| **Graphic Memory Type / Clock** | 512Mx 32 GDDR6, 1 pcs / 16Gbs |
| **Max. Resolution (HDMI)** | 7680x4320@60Hz |
| **Max. Resolution (DP)** | 7680x4320@120Hz |
| **Multi Display Support** | 2 displays |
| **HDCP Compliance** | Yes |
| **Rear I/O connectors (bracket)** | HDMIx1+DPx1 (LP) |
| **Cooling (active/passive)** | Active |
| **Total power consumption (W)** | 57W |
| **Form-factor** | X:160.2mm/Y:68.9mm/Z: 22.6mm PCB with single slot |

Not all configuration components are available in all regions/countries.
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# QuickSpecs

HP Pro Tower 280 G9 PCI Desktop PC

*Technical Specifications - Graphics*

## Intel® Arc A380 6 GB Graphics Card

| | |
|---|---|
| **Engine Clock** | 2150MHz |
| **Frame Buffer Size / Width** | 6GB/96bit |
| **Graphic Memory Type / Clock** | GDDR6 ,3 pcs/15.5Gbps |
| **Memory Type** | 512M x 32 GDDR6 |
| **Max. Resolution (HDMI)** | 4090x2160 @ 60Hz |
| **Max. Resolution (DP)** | 7680x4300 @60Hz |
| **Multi Display Support** | 4 displays |
| **HDCP Compliance** | Yes |
| **Rear I/O connectors (bracket)** | HDMI x3 +DPx3 |
| **Cooling (active/passive)** | Active |
| **Total power consumption (W)** | 75W |

## NVIDIA® GeForce RTX 4060 8GB Graphics Card

| | |
|---|---|
| **Engine Clock** | 1830Mhz |
| **Memory Clock** | 17Gbps |
| **Memory Size (width)** | 8GB (128-bit) |
| **Memory Type** | 512M x 32 GDDR6 |
| **Max. Resolution (DP)** | 7680 x 4320@60Hz |
| **Multi Display Support** | 7680 x 4320@60Hz |
| **HDCP Compliance** | Up to 4 displays |
| **Rear I/O connectors (bracket)** | Yes |
| **Cooling (active/passive)** | DPx3+ HDMIx1 |
| **Total power consumption (W)** | Active fansink |
| **PCB form-factor with bracket** | 115W |

Not all configuration components are available in all regions/countries.

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*Technical Specifications – Optical Drives*

## STORAGE*

**NOTE:** Starting from November 1st, 2023, all shipments will require Windows to be installed when selecting a SSD.
HDD can only be configured as additional data drives and not as the boot drive.

### HP 2TB 7.2K rpm SATA 6.0Gb/s 3.5" Hard Disk Drive

| | |
|---|---|
| **Capacity** | 2TB |
| **Rotational Speed** | 7,200 rpm |
| **Interface** | SATA 6Gb/s NCQ |
| **Buffer Size** | 64MB |
| **Logical Blocks** | 3,907,029,168 |
| **Seek Time** | Read: <8.5 ms<br>Write: <9.5 ms |
| **Height** | 1.028 in/26.11 mm |
| **Width** | 4.0 in/101.6 mm |
| **Operating Temperature** | 32° to 140° F (0° to 60° C) |

**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 7.2K rpm SATA 6.0Gb/s 3.5" Hard Disk Drive

| | |
|---|---|
| **Capacity** | 1TB |
| **Rotational Speed** | 7,200 rpm |
| **Interface** | Serial ATA 3.0 (6.0 Gb/s) |
| **Buffer Size** | 64MB |
| **Logical Blocks** | 1,953,525,168 |
| **Seek Time** | Single Track: 2.0 ms<br>Average: 11 ms<br>Full-Stroke: 21 ms |
| **Height** | 1 in/2.54 cm |
| **Width** | Media diameter: 3.5 in/8.89 cm<br>Physical size: 4 in/10.2 cm |
| **Operating Temperature** | 41° to 131° F (5° to 55° C) |

**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.

### 500GB 7.2K rpm SATA 6.0Gb/s 3.5" Hard Disk Drive

| | |
|---|---|
| **Capacity** | 500GB |
| **Rotational Speed** | 7,200 rpm |
| **Interface** | Serial ATA 3.0 (6.0 Gb/s) |
| **Buffer Size** | 32MB |
| **Logical Blocks** | 1,953,525,168 |
| **Seek Time** | Single Track: 2.0 ms<br>Average: 11 ms<br>Full-Stroke: 21 ms |

Not all configuration components are available in all regions/countries.
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## Technical Specifications – Optical Drives

| | |
|---|---|
| **Height** | 1 in/2.54 cm |
| **Width** | Media diameter: 3.5 in/8.89 cm |
| | Physical size: 4 in/10.2 cm |
| **Operating Temperature** | 41° to 131° F (5° to 55° C) |

**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.

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

| | |
|---|---|
| **Drive Weight** | < 10g |
| **Capacity** | 128GB |
| **Height** | 2.38mm |
| **Length** | 80mm |
| **Width** | 22mm |
| **Interface** | PCIE Gen4x4 |
| **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 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 Three Layer Cell SSD

| | |
|---|---|
| **Drive Weight** | < 10g |
| **Capacity** | 256GB |
| **Height** | 2.38mm |
| **Length** | 80mm |
| **Width** | 22mm |
| **Interface** | PCIE Gen4x4 |
| **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 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.

Not all configuration components are available in all regions/countries.
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*Technical Specifications – Optical Drives*

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

| | |
|---|---|
| **Drive Weight** | < 10g |
| **Capacity** | 512GB |
| **Height** | 2.38mm |
| **Length** | 80mm |
| **Width** | 22mm |
| **Interface** | PCIE Gen4x4 |
| **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 |

**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

| | |
|---|---|
| **Drive Weight** | < 10g |
| **Capacity** | 256GB |
| **Height** | 2.38mm |
| **Length** | 80mm |
| **Width** | 22mm |
| **Interface** | PCIE Gen4x4 |
| **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 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

| | |
|---|---|
| **Drive Weight** | < 10g |
| **Capacity** | 512GB |
| **Height** | 2.38mm |
| **Length** | 80mm |
| **Width** | 22mm |
| **Interface** | PCIE Gen4x4 |
| **Maximum Sequential Read** | Up to 2200MB/s ±10% |
| **Maximum Sequential Write** | Up to 860MB/s |
| **Logical Blocks** | 1,000,215,216 |

Not all configuration components are available in all regions/countries.

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*Technical Specifications – Optical Drives*

| | |
|---|---|
| **Operating Temperature** | 0° to 70°C (32° to 158°F) [ambient temp] |
| **Features** | APST; ASPM L1.2; NVME spec 1.2 |

**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.

**128GB M.2 2230 PCIe NVMe SSD**

| | |
|---|---|
| **Drive Weight** | < 10g |
| **Capacity** | 128GB |
| **Height** | 2.3mm |
| **Length** | 30mm |
| **Width** | 22mm |
| **Interface** | PCIE NVMe |
| **Maximum Sequential Read** | Up to 1600MB/s |
| **Maximum Sequential Write** | Up to 780MB/s |
| **Logical Blocks** | 290,069,680 |
| **Operating Temperature** | 0° to 70°C (32° to 158°F) [ambient temp] |
| **Features** | Pyrite |

**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.

Not all configuration components are available in all regions/countries.

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*Technical Specifications – Optical Drives*

## OPTICAL DISC DRIVES

### HP 9.5mm Desktop G2 Slim DVD Writer Drive

| | |
|---|---|
| **Height** | 9.5 mm height |
| **Orientation** | Either horizontal or vertical |
| **Interface type** | SATA/ATAPI |
| **Disc recording capacity** | Up to 8.5 GB DL or 4.7 GB standard |
| **Dimensions (W x H x D)** | 5.04 x 0.37 x 5.0 in (128 x 9.5 x 127 mm) without bezel |
| **Weight (max)** | 0.31 lb (140 g) |

| **Read Speeds** | | |
|---|---|---|
| | DVD-R DL | Up to 6X |
| | DVD+R | Up to 8X |
| | DVD+RW | Up to 8X |
| | DVD+R DL | Up to 6X |
| | DVD-R | Up to 8X |
| | DVD-RW | Up to 6X |
| | CD-R | Up to 24X |
| | CD-RW | Up to 10X |
| | DVD-RW, DVD+RW | Up to 8X |
| | DVD-R DL, DVD+R DL | Up to 8X |
| | DVD+R, DVD-R | Up to 8X |
| | DVD-ROM DL, DVD-ROM | Up to 8X |
| | CD-ROM, CD-R | Up to 24X |
| | CD-RW | Up to 24X |

| | |
|---|---|
| **Access time (typical reads, including settling)** | Random DVD-ROM: 170 ms (typical), CD-ROM: 170 ms (typical)<br>Full Stroke DVD-ROM: 320 ms (typical), CD-ROM: 320 ms (typical)<br>Stop Time 6 seconds (typical) |
| **Power** | Source Slimline SATA DC power receptacle<br>DC Power Requirement 5 VDC ± 5%-100 mV ripple p-p<br>DC Current 5 VDC (< 1000 mA typical, 1600 mA maximum) |
| **Environmental conditions (operating - non-condensing)** | Temperature 41° to 122° F (5° to 50° C)<br>Relative Humidity 10% to 80%<br>Maximum Wet Bulb Temperature 84° F (29° C) |

Not all configuration components are available in all regions/countries.
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*Technical Specifications – Optical Drives*

**HP 9.5mm Desktop G2 Slim DVD-ROM Drive**

| | |
|---|---|
| **Height** | 9.5 mm height |
| **Orientation** | Either horizontal or vertical |
| **Interface type** | SATA/ATAPI |
| **Disc recording capacity** | Up to 8.5 GB DL or 4.7 GB standard |
| **Dimensions (W x H x D)** | 5.04 x 0.37 x 5.0 in (128 x 9.5 x 127 mm) without bezel |
| **Weight (max)** | 0.31 lb (140 g) |

| **Read Speeds** | | |
|---|---|---|
| | DVD-R DL | Up to 6X |
| | DVD+R | Up to 8X |
| | DVD+RW | Up to 8X |
| | DVD+R DL | Up to 6X |
| | DVD-R | Up to 8X |
| | DVD-RW | Up to 6X |
| | CD-R | Up to 24X |
| | CD-RW | Up to 10X |
| | DVD-RW, DVD+RW | Up to 8X |
| | DVD-R DL, DVD+R DL | Up to 8X |
| | DVD+R, DVD-R | Up to 8X |
| | DVD-ROM DL, DVD-ROM | Up to 8X |
| | CD-ROM, CD-R | Up to 24X |
| | CD-RW | Up to 24X |

| | |
|---|---|
| **Access time**<br>**(typical reads, including settling)** | Random DVD-ROM: 170 ms (typical), CD-ROM: 170 ms (typical)<br>Full Stroke DVD-ROM: 320 ms (typical), CD-ROM: 320 ms (typical)<br>Stop Time 6 seconds (typical) |
| **Power** | Source Slimline SATA DC power receptacle<br>DC Power Requirement 5 VDC ± 5%-100 mV ripple p-p<br>DC Current 5 VDC (< 1000 mA typical, 1600 mA maximum) |
| **Environmental conditions**<br>**(operating - non-condensing)** | Temperature 41° to 122° F (5° to 50° C)<br>Relative Humidity 10% to 80%<br>Maximum Wet Bulb Temperature 84° F (29° C) |

Not all configuration components are available in all regions/countries.
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## NETWORKING

| 10/100/1000 NIC | Ethernet Features | 10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14)<br>100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30)<br>1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023 clauses 40)<br>Auto-Negotiation (Automatic Speed Selection)<br>Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s |
|---|---|---|
| | Power Management | ACPI compliant – multiple power modes<br>Situation-sensitive features reduce power consumption<br>Advanced link down power saving for reducing link down power consumption |
| | Performance Features | TCP/IP/UDP Checksum Offload (configurable)<br>Protocol Offload (ARP & NS)<br>Large send offload and Giant send offload<br>Receiving Side Scaling<br>Jumbo Frame 9K |
| | Manageability | Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only)<br>PXE 2.1 Remote Boot<br>Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)<br>Comprehensive diagnostic and configuration software suite<br>Virtual Cable Doctor for Ethernet cable status |
| | Interface | PCIe + SMBus |
| | NIC Device Driver Name | PCIe GBE Ethernet Family Controller |

| **Realtek RTL8821CE-CG 802.11 a/b/g/n/ac (1x1) Wi-Fi5 and Bluetooth® 4.2 Wireless Card** | | |
|---|---|---|
| Wireless LAN Standards[1] | IEEE 802.11a<br>IEEE 802.11b<br>IEEE 802.11g<br>IEEE 802.11n<br>IEEE 802.11ac<br><br>1. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 5 (802.11 ac) is backwards compatible with prior 802.11 specs. | |
| Interoperability | Wi-Fi® certified modules | |
| Frequency Bands | 802.11b/g/n | 2.402 – 2.482 GHz<br><br>**NOTE:** The FCC has declared products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 & 15.249 or otherwise disable those channels. |
| | 802.11a/n | 4.9 – 4.95 GHz (Japan)<br>5.15 – 5.25 GHz<br>5.25 – 5.35 GHz<br>5.47 – 5.725 GHz<br>5.825 – 5.850 GHz |

# QuickSpecs

*Technical Specifications – Networking*

| | |
|---|---|
| **Data Rates** | 802.11b: 1, 2, 5.5, 11 Mbps<br>802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)<br><br>802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz) |
| **Modulation** | Direct Sequence Spread Spectrum<br>BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM |
| **Security[2]** | IEEE and 64 / 128 bit WEP encryption for a/b/g mode only<br>AES-CCMP: 128 bit in hardware<br>802.1x authentication<br>WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.<br>WPA2 certification<br>IEEE 802.11i<br>Cisco Certified Extensions, all versions through CCX4 and CCX Lite<br>WAPI<br><br>2 Check latest software/driver release for updates on supported security features. |
| **Network Architecture Models** | Ad-hoc (Peer to Peer)<br>Infrastructure (Access Point Required) |
| **Roaming** | IEEE 802.11 compliant roaming between access points |
| **Output Power[3]** | 802.11b: +14dBm minimum<br>802.11g: +12dBm minimum<br>802.11a: +12dBm minimum<br>802.11n HT20(2.4GHz): +12dBm minimum<br>802.11n HT40(2.4GHz): +12dBm minimum<br>802.11n HT20(5GHz): +10dBm minimum<br>802.11n HT40(5GHz): +10dBm minimum<br>802.11ac VHT80(5GHz): +10dBm minimum<br><br>3. Maximum output power may vary by country according to local regulations. |
| **Power Consumption** | •Transmit mode2.0 W<br>•Receive mode1.6 W<br>•Idle mode (PSP)180 mW(WLAN Associated)<br>•Idle mode50 mW(WLAN unassociated)<br>•Connected Standby   10mW<br>•Radio disabled8 mW |
| **Power Management** | ACPI and PCI Express compliant power management<br>802.11 compliant power saving mode |

*Technical Specifications – Networking*

| | |
|---|---|
| **Receiver Sensitivity[4]** | 802.11b, 1Mbps: -93.5dBm maximum<br>802.11b, 11Mbps: -84dBm maximum<br>802.11a/g, 6Mbps: -86dBm maximum<br>802.11a/g, 54Mbps: -72dBm maximum<br>802.11n, MCS07: -67dBm maximum<br>802.11n, MCS15: -64dBm maximum<br>802.11ac, MCS0: -84dBm maximum<br>802.11ac, MCS9: -59dBm maximum<br><br>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). |
| **Antenna type** | High efficiency antenna with spatial diversity, mounted in the display enclosure<br>Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth[a] communications |
| **Form Factors** | 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:**<br>**Non-operating:** | 14° to 158° F (-10° to 70° C)<br>-40° to 176° F (-40° to 80° C) |
| **Humidity** | **Operating:**<br>**Non-operating:** | 10% to 90% (non-condensing)<br>5% to 95% (non-condensing) |
| **Altitude** | **Operating:**<br>**Non-operating:** | 0 to 10,000 ft (3,048 m)<br>0 to 50,000 ft (15,240 m) |
| **LED Activity** | LED Amber – Radio OFF; LED White – Radio ON | |

| **HP Integrated Module with Bluetooth® 4.0/4.1/4.2 Wireless Card Technology** | |
|---|---|
| **Bluetooth® Specification** | 4.0/4.1/4.2 Wireless Card Compliant |
| **Frequency Band** | 2402 to 2480 MHz |
| **Number of Available Channels** | Legacy: 0~79 (1 MHz/CH)<br>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<br>Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels |
| | Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5) |
| **Transmit Power** | The Bluetooth® component shall operate as a Class II Bluetooth® device with a maximum transmit power of + 4 dBm for BR and EDR. |

*Technical Specifications – Networking*

| Receiver Sensitivity Legacy | |
|---|---|
| **Power Consumption** | Peak (Tx) 330 mW<br>Peak (Rx) 230 mW<br>Selective Suspend 17 mW |
| **Range** | Legacy: 0~79 (1 MHz/CH)<br>BLE: 0~39 (2 MHz/CH) |
| **Electrical Interface** | USB 2.0 compliant |
| **Bluetooth® Software Supported Link Topology** | Microsoft Windows Bluetooth® Software |
| **Power Management Certifications** | ETS 300 328, ETS 300 826<br>Low Voltage Directive IEC950<br>UL, CSA, and CE Mark |
| **Certifications Bluetoothª Profiles Supported** | FCC (47 CFR) Part 15C, Section 15.247 & 15.249 |
| **Power Management Certifications** | Microsoft Windows ACPI, and USB Bus Support |
| **Certifications Bluetooth® Profiles Supported** | Bluetooth 4.1-ESR 5/6/7 Compliance<br>LE Link Layer Ping<br>LE Dual Mode<br>LE Link Layer<br>LE Low Duty Cycle Directed Advertising<br>LE L2CAP Connection Oriented Channels<br>Train Nudging & Interlaced Scan<br>Bluetooth 4.2 ESR08 Compliance<br>LE Secure Connection- Basic/Full<br>LE Privacy 1.2 –Link Layer Privacy<br>LE Privacy 1.2 –Extended Scanner Filter Policies<br>LE Data Packet Length Extension<br>FAX Profile (FAX)<br>Basic Imaging Profile (BIP)2<br>Headset Profile (HSP)<br>Hands Free Profile (HFP)<br>Advanced Audio Distribution Profile (A2DP) |

*Technical Specifications – Networking*

| Realtek RTL8822CE-CG 802.11 a/b/g/n/ac (2x2) Wi-Fi 5 and Bluetooth® 5.0 Wireless Card | |
|---|---|
| **Wireless LAN Standards** | IEEE 802.11a<br>IEEE 802.11b<br>IEEE 802.11g<br>IEEE 802.11n<br>IEEE 802.11ac<br>IEEE 802.11d<br>IEEE 802.11e<br>IEEE 802.11h<br>IEEE 802.11i<br>IEEE 802.11k<br>IEEE 802.11r<br>IEEE 802.11v |
| **Interoperability** | Wi-Fi® certified |
| **Frequency Band** | 802.11b/g/n<br>• 2.402 – 2.482 GHz<br>802.11a/n/ac<br>• 4.9 – 4.95 GHz (Japan)<br>• 5.15 – 5.25 GHz<br>• 5.25 – 5.35 GHz<br>• 5.47 – 5.725 GHz<br>• 5.825 – 5.850 GHz |
| **Data Rates** | • 802.11b: 1, 2, 5.5, 11 Mbps<br>• 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>• 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>• 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)<br>• 802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz & 80MHz) |
| **Modulation** | Direct Sequence Spread Spectrum<br>BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM |
| **Security[1]** | • IEEE and Wi-Fi® compliant 64 / 128 bit WEP encryption for a/b/g mode only<br>• AES-CCMP: 128 bit in hardware<br>• 802.1x authentication<br>• WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.<br>• WPA2 certification<br>• IEEE 802.11i<br>• WAPI<br><br>1 Check latest software/driver release for updates on supported security features. |
| **Network Architecture Models** | Ad-hoc (Peer to Peer)<br>Infrastructure (Access Point Required) |
| **Roaming** | IEEE 802.11 compliant roaming between access points |

*Technical Specifications – Networking*

| | |
|---|---|
| **Output Power²** | • 802.11b: +18.5dBm minimum<br>• 802.11g: +17.5dBm minimum<br>• 802.11a: +18.5dBm minimum<br>• 802.11n HT20(2.4GHz): +15.5dBm minimum<br>• 802.11n HT40(2.4GHz): +14.5dBm minimum<br>• 802.11n HT20(5GHz): +15.5dBm minimum<br>• 802.11n HT40(5GHz): +14.5dBm minimum<br>• 802.11ac VHT80(5GHz): +11.5dBm minimum<br>• 802.11ac VHT160(5GHz): +11.5dBm minimum<br><br>2. Maximum output power may vary by country according to local regulations. |
| **Power Consumption** | • Transmit mode:2.0 W<br>• Receive mode:1.6 W<br>• Idle mode (PSP) 180 mW (WLAN Associated)<br>• Idle mode:50 mW (WLAN unassociated)<br>• Connected Standby/Modern Standby: 10mW<br>• Radio disabled: 8 mW |
| **Power Management** | ACPI and PCI Express compliant power management<br>802.11 compliant power saving mode |
| **Receiver Sensitivity³** | 802.11b, 1Mbps: –93.5dBm maximum<br>802.11b, 11Mbps: –84dBm maximum<br>802.11a/g, 6Mbps: –86dBm maximum<br>802.11a/g, 54Mbps: –72dBm maximum<br>802.11n, MCS07: –67dBm maximum<br>802.11n, MCS15: –64dBm maximum<br>802.11ac, MCS0: –84dBm maximum<br>802.11ac, MCS9: –59dBm maximum<br><br>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<br><br>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 with CNVi Interface |
| **Dimensions** | 1. Type 2230: 2.3 x 22.0 x 30.0 mm<br>2. Type 1216: 1.67 x 12.0 x 16.0 mm |
| **Weight** | 1. Type 2230: 2.8g<br>2. Type 126: 1.3g |
| **Operating Voltage** | 3.3v +/- 9% |
| **Temperature** | **Operating:** 14° to 158° F (–10° to 70° C)<br>**Non-operating:** –40° to 176° F (–40° to 80° C) |
| **Humidity** | **Operating:** 10% to 90% (non-condensing)<br>**Non-operating:** 5% to 95% (non-condensing) |
| **Altitude** | **Operating:** 0 to 10,000 ft (3,048 m)<br>**Non-operating:** 0 to 50,000 ft (15,240 m) |
| **LED Activity** | LED Amber – Radio OFF;<br>LED OFF – Radio ON |

*Technical Specifications – Networking*

| HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0 Wireless Card Technology | |
|---|---|
| **Bluetooth Specification** | 4.0/4.1/4.2/5.0 Wireless Card Compliant |
| **Frequency Band** | 2402 to 2480 MHz |
| **Number of Available Channels** | Legacy: 0~79 (1 MHz/CH)<br>BLE: 0~39 (2 MHz/CH) |
| **Data Rates and Throughput** | Legacy: 3 Mbps data rate; throughput up to 2.17 Mbps<br>BLE: 1 Mbps data rate; throughput up to 0.2 Mbps<br>Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels<br>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<br>Peak (Rx): 230 mW<br>Selective Suspend: 17 mW |
| **Bluetooth Software Supported**<br><br>**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**<br><br>**Certifications** | ETS 300 328, ETS 300 826<br>Low Voltage Directive IEC60950-1/IEC62368-1<br>UL, CSA, and CE Mark |
| **Bluetooth® Profiles Supported** | Bluetooth 4.1-ESR 5/6/7 Compliance<br>LE Link Layer Ping<br>LE Dual Mode<br>LE Link Layer<br>LE Low Duty Cycle Directed Advertising<br>LE L2CAP Connection Oriented Channels<br>Train Nudging & Interlaced Scan<br>Bluetooth 4.2 ESR08 Compliance<br>LE Secure Connection- Basic/Full<br>LE Privacy 1.2 –Link Layer Privacy<br>LE Privacy 1.2 –Extended Scanner Filter Policies<br>LE Data Packet Length Extension<br>FAX Profile (FAX)<br>Basic Imaging Profile (BIP)2<br>Headset Profile (HSP)<br>Hands Free Profile (HFP)<br>Advanced Audio Distribution Profile (A2DP) |

# QuickSpecs

*Technical Specifications – Networking*

| Realtek RTL8852BE 802.11 a/b/g/n/ax (2x2) Wi-Fi 6 and Bluetooth® 5.3 Wireless Card | |
|---|---|
| **Wireless LAN Standards** | IEEE 802.11a<br>IEEE 802.11b<br>IEEE 802.11g<br>IEEE 802.11n<br>IEEE 802.11ac<br>IEEE 802.11d<br>IEEE 802.11e<br>IEEE 802.11h<br>IEEE 802.11i<br>IEEE 802.11k<br>IEEE 802.11r<br>IEEE 802.11v |
| **Interoperability** | Wi-Fi certified |
| **Frequency Band** | 802.11b/g/n<br>• 2.402 – 2.482 GHz<br>802.11a/n/ac<br>• 4.9 – 4.95 GHz (Japan)<br>• 5.15 – 5.25 GHz<br>• 5.25 – 5.35 GHz<br>• 5.47 – 5.725 GHz<br>• 5.825 – 5.850 GHz |
| **Data Rates** | • 802.11b: 1, 2, 5.5, 11 Mbps<br>• 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>• 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>• 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)<br>• 802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz & 80MHz) |
| **Modulation** | Direct Sequence Spread Spectrum<br>BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM |
| **Security[1]** | • IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only<br>• AES-CCMP: 128 bit in hardware<br>• 802.1x authentication<br>• WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.<br>• WPA2 certification<br>• IEEE 802.11i<br>• WAPI<br><br>1 Check latest software/driver release for updates on supported security features. |
| **Network Architecture Models** | Ad-hoc (Peer to Peer)<br>Infrastructure (Access Point Required) |
| **Roaming** | IEEE 802.11 compliant roaming between access points |

Not all configuration components are available in all regions/countries.<br>c07933724 — DA 17051 — APJ — Version 5 — January 8, 2025

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*Technical Specifications – Networking*

| | |
|---|---|
| **Output Power[2]** | • 802.11b: +18.5dBm minimum<br>• 802.11g: +17.5dBm minimum<br>• 802.11a: +18.5dBm minimum<br>• 802.11n HT20(2.4GHz): +15.5dBm minimum<br>• 802.11n HT40(2.4GHz): +14.5dBm minimum<br>• 802.11n HT20(5GHz): +15.5dBm minimum<br>• 802.11n HT40(5GHz): +14.5dBm minimum<br>• 802.11ac VHT80(5GHz): +11.5dBm minimum<br>• 802.11ac VHT160(5GHz): +11.5dBm minimum<br><br>2. Maximum output power may vary by country according to local regulations. |
| **Power Consumption** | • Transmit mode:2.0 W<br>• Receive mode:1.6 W<br>• Idle mode (PSP) 180 mW (WLAN Associated)<br>• Idle mode:50 mW (WLAN unassociated)<br>• Connected Standby/Modern Standby: 10mW<br>• Radio disabled: 8 mW |
| **Power Management** | ACPI and PCI Express compliant power management<br>802.11 compliant power saving mode |
| **Receiver Sensitivity[3]** | 802.11b, 1Mbps: -93.5dBm maximum<br>802.11b, 11Mbps: -84dBm maximum<br>802.11a/g, 6Mbps: -86dBm maximum<br>802.11a/g, 54Mbps: -72dBm maximum<br>802.11n, MCS07: -67dBm maximum<br>802.11n, MCS15: -64dBm maximum<br>802.11ac, MCS0: -84dBm maximum<br>802.11ac, MCS9: -59dBm maximum<br><br>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<br><br>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 with CNVi Interface |
| **Dimensions** | 1. Type 2230: 2.3 x 22.0 x 30.0 mm<br>2. Type 1216: 1.67 x 12.0 x 16.0 mm |
| **Weight** | 1. Type 2230: 2.8g<br>2. Type 126: 1.3g |
| **Operating Voltage** | 3.3v +/- 9% |
| **Temperature** | **Operating:** 14° to 158° F (−10° to 70° C)<br>**Non-operating:** −40° to 176° F (−40° to 80° C) |
| **Humidity** | **Operating:** 10% to 90% (non-condensing)<br>**Non-operating:** 5% to 95% (non-condensing) |
| **Altitude** | **Operating:** 0 to 10,000 ft (3,048 m)<br>**Non-operating:** 0 to 50,000 ft (15,240 m) |
| **LED Activity** | LED Amber  − Radio OFF;<br>LED OFF − Radio ON |

Not all configuration components are available in all regions/countries.

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*Technical Specifications – Networking*

| HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0 Wireless Card Technology | |
|---|---|
| **Bluetooth Specification** | 4.0/4.1/4.2/5.0 Wireless Card Compliant |
| **Frequency Band** | 2402 to 2480 MHz |
| **Number of Available Channels** | Legacy: 0~79 (1 MHz/CH)<br>BLE: 0~39 (2 MHz/CH) |
| **Data Rates and Throughput** | Legacy: 3 Mbps data rate; throughput up to 2.17 Mbps<br>BLE: 1 Mbps data rate; throughput up to 0.2 Mbps<br>Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels<br>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<br>Peak (Rx): 230 mW<br>Selective Suspend: 17 mW |
| **Bluetooth Software Supported**<br><br>**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**<br><br>**Certifications** | ETS 300 328, ETS 300 826<br>Low Voltage Directive IEC60950-1/IEC62368-1<br>UL, CSA, and CE Mark |
| **Bluetooth® Profiles Supported** | Bluetooth 4.1-ESR 5/6/7 Compliance<br>LE Link Layer Ping<br>LE Dual Mode<br>LE Link Layer<br>LE Low Duty Cycle Directed Advertising<br>LE L2CAP Connection Oriented Channels<br>Train Nudging & Interlaced Scan<br>Bluetooth 4.2 ESR08 Compliance<br>LE Secure Connection- Basic/Full<br>LE Privacy 1.2 –Link Layer Privacy<br>LE Privacy 1.2 –Extended Scanner Filter Policies<br>LE Data Packet Length Extension<br>FAX Profile (FAX)<br>Basic Imaging Profile (BIP)2<br>Headset Profile (HSP)<br>Hands Free Profile (HFP)<br>Advanced Audio Distribution Profile (A2DP) |

*Technical Specifications - Audio*

## HIGH DEFINITION AUDIO

| | |
|---|---|
| **Type** | Integrated |
| **HD Stereo Codec** | Realtek ALC3867-CG |
| **Audio I/O Ports** | Front side Combo jack for supporting CTIA, Rear side Line-in/ Line-out/ Mic-in jacks |
| **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 can be enabled in the audio control panel to allow independent audio streams to be sent to/from the front and rear jacks or integrated speaker. |
| **HD Audio Codec** | Realtek ALC3601 |
| **Sampling** | Independent sampling rates for DAC's and ADC's; supports resolutions from 16 to 24-bit; 44.1K/ 48 K/96K / 192K Hz for DAC and 44.1K/ 48K/ 96K/ 192K Hz Hz for ADC |
| **Wavetable Syntheses** | Yes |
| **Analog Audio** | Yes |
| **# of Channels on Line-Out** | Stereo |
| **Internal Speaker** | Yes |
| **External Speaker Jack*** | 2W class D mono amplifier for the internal speaker only. External speakers must be powered externally. |

**NOTE*:** Optional

Not all configuration components are available in all regions/countries.

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*Technical Specifications - Power*

## POWER SUPPLY

| | |
|---|---|
| **Operating Voltage Range** | 90 – 264 VAC |
| **Rated Voltage Range** | 100-240V AC |
| **Rated Line Frequency** | 50/60 HZ |
| **Operating Line Frequency** | 47 – 63 Hz |
| **Rated Input Current** | 180 W: <2.3A<br>260 W: ≦ 3.1A<br>350 W: <4A<br>500 W: <6A |
| **Rated Input Current with Energy Efficient\* Power Supply** | 180 W active PFC<br>87/90/87% efficient at 20/50/100% load (115 V)<br>88/92/88% efficient at 20/50/100% load (230 V);<br>350 W active PFC<br>87/90/87% efficient at 20/50/100% load (115 V)<br>88/92/88% efficient at 20/50/100% load (230 V)<br>500W active PFC<br>87/90/87% efficient at 20/50/100% load (115 V)<br>88/92/88% efficient at 20/50/100% load (230 V) |
| **DC Output** | +12 V |
| **Current Leakage (NFPA 99: 2102)** | Less than 500 microamps of leakage current at 120 Vac with the ground wire disconnected, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1.<br>Less than 100 microamps of leakage current at 120 Vac with the ground wire intact with normal polarity, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1. |
| **Power Supply Fan** | 180 W/350 W: 70\*25mm (linear type)<br>500 W: 70x25mm (PWM type) |

Not all configuration components are available in all regions/countries.
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*Technical Specifications – Weights and Dimensions*

## WEIGHT AND DIMENSIONS

| | |
|---|---|
| **Chassis (W x D x H)** | 6.12 x 11.93 x 13.28 in (155 x 303 x 337 mm) (w/ bezel) |
| **System Volume** | 15.1 L |
| **System Weight*** | 10.4 lb / 4.7 kg |
| **Packaged** (H x W x D) | 11.3 x 15.75 x 19.65 in<br>287 x 400 x 499 mm |
| **Shipping Weight** | 17.64lb / 8 kg |
| **Palletization Profile** | 6 units per layer<br>7layer max<br>42 per pallet<br>Footprint<br>-85.31x39.37x47.24 in (2167 x 1000 x1200 mm) |

Not all configuration components are available in all regions/countries.
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# QuickSpecs

*After-Market Options (availability may vary by region)*

## AFTERMARKET OPTIONS

| Type | Description | Part # |
|---|---|---|
| **Memory** | HP 4GB DDR4-3200 DIMM | 13L78AA |
| | HP 8GB DDR4-3200 DIMM | 13L76AA |
| | HP 16GB DDR4-3200 DIMM | 13L74AA |
| | HP 32GB DDR4-3200 DIMM | 13L72AA |
| | | |
| **Storage** | HP PCIe NVME TLC 256GB SSD M.2 Drive | 1CA51AA |
| | HP PCIe NVME TLC 512GB SSD M.2 Drive | X8U75AA |
| | HP PCIe Gen 4 NVME TLC M.2 512GB SSD | 406L8AA |
| | HP PCIe Gen 4 NVME TLC M.2 1TB SSD | 406L7AA |
| | HP 500GB 7200PRM SATA 6.0Gb/s 3.5" Hard Drive | QK554AA |
| | HP 1TB 7200rpm SATA 6Gb/s 3.5" Hard Drive | QK555AA |
| | | |
| **Graphics** | NVIDIA T400 4GB GDDR6 3mDP | 5Z7E0AA |
| | | |
| **Security** | HP Business PC Security Lock V3 Kit | 3XJ17AA |
| | HP Keyed Cable Lock 10mm kit | T1A62AA |
| | | |
| **Cables/Adapters** | HP HDMI Standard Cable Kit | T6F94AA |
| | HP USB to Serial Port Adapter | J7B60AA |
| | HP PCIe x1 Parallel Port Card | N1M40AA |
| | | |
| **Networking** | Intel Ethernet I225-T1 GbE NIC Card | 406L9AA |
| | | |
| **Input** | HP Wired Desktop 320K Keyboard | 9SR37AA |
| | HP Wired Desktop 320M Mouse | 9VA80AA |
| | HP 125 Wired Keyboard | 266C9AA |
| | HP 125 Wired Mouse | 265A9AA |
| | HP 128 Laser Wired Mouse | 265D9AA |
| | HP Wired Desktop 320MK Mouse and Keyboard Combo | 9SR36AA |
| | HP 225 Wired Mouse and Keyboard Combo | 286J4AA |
| | HP 225 Antimicrobial Wired Mouse and Keyboard Combo | 286K3AA |
| | | |
| **Others** | HP S101 Speaker bar | 5UU40AA |

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*Change Log*

| Date of change: | Version History: | Change | Description of change: |
|---|---|---|---|
| September 13, 2024 | From v1 to v2 | Correction | Sustainable impact specifications recycled plastic % corrected |
| September 18, 2024 | From V2 to V3 | Update | Footnotes on back call outs images updated (Pages 4, 5 and 6) |
| November 1, 2024 | From V3 to V4 | Update | Display and HDMI ports / Intel® UHD Graphics (integrated) and RX 6300 graphic card tables updated |
| January 8, 2025 | From V4 to V5 | Update | Update to *2* M.2 2242/2280 storage for PCI Desktop PC (Intel 14th Gen) |
| | From V5 to V6 | | |
| | From V6 to V7 | | |
| | From V7 to V8 | | |
| | From V8 to V9 | | |
| | From V9 to V10 | | |
| | From v10 to v11 | | |
| | From v11 to v12 | | |
| | From v12 to v13 | | |
| | From v13 to v14 | | |
| | | | |
| | | | |
| | | | |

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