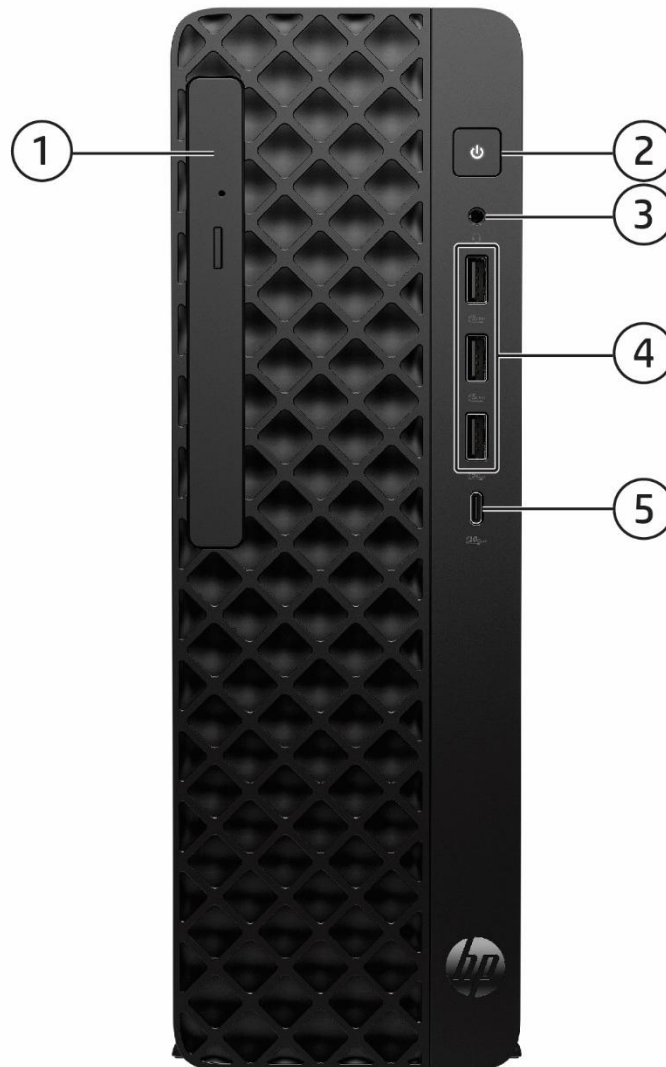


### Overview

#### HP ProDesk 2 SFF G1i E Desktop PC



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 Ports<sup>1</sup>
5. (1) USB-C 3.2 G2 (10G)

#### **Not shown**

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

#### **Bays**

- (1) 3.5 internal HDD + bay (optional)<sup>2,3</sup>
- (1) 9.5mm internal optical drive bay (optional)<sup>2,3</sup>

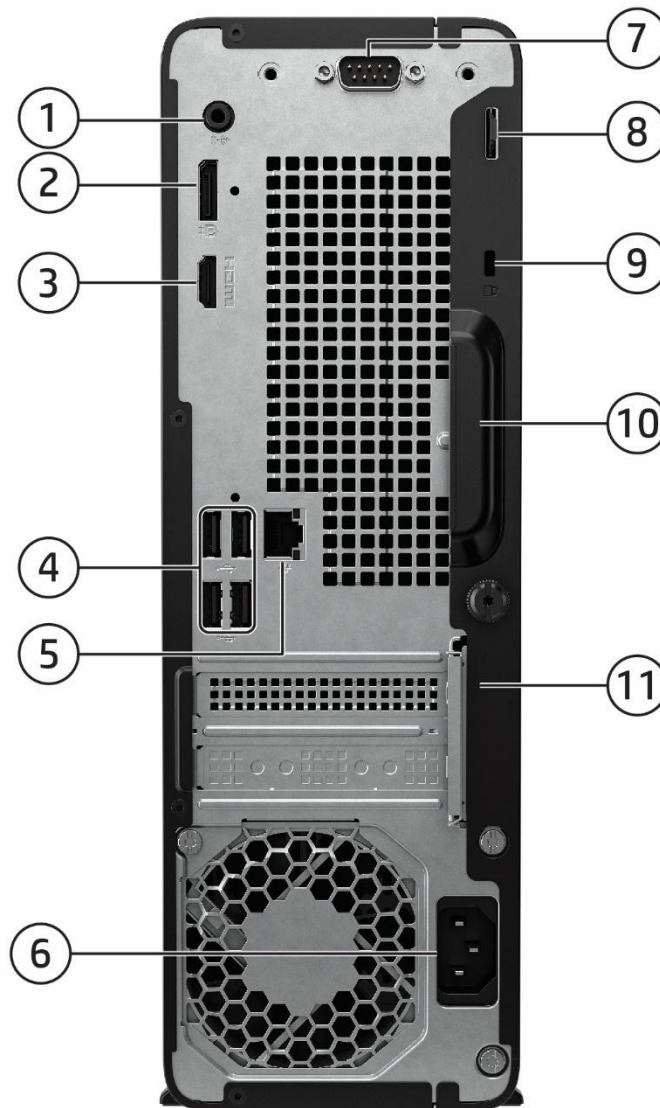
1. SuperSpeed USB 5Gbps = USB3.2 Gen1

2. The system does not come with HDD bay when the hard drive/ODD is not configured.

3. For Future HDD/ODD installation, the HDD expansion module must be added to support a single 3.5" HDD.

### Overview

#### HP ProDesk 2 SFF G1i E Desktop PC



- 1. Audio Line-out- retask as Line-in
- 2. DisplayPort 1.4a
- 3. HDMI 1.4b
- 4. (4) USB 2.0 ports
- 5. RJ-45 Network Connector

- 6. Power Cord Connector
- 7. Serial port (option)
- 8. Padlock loop
- 9. Security cable lock slot
- 10. Integrated accessories cable lock
- 11. PCIe lock for Graphic Card

#### **Not Shown**

Parallel Port (Optional via PClex1 slot)  
4 Serial Port (Optional via PCIe slot)

### Overview

#### AT A GLANCE

- Windows 11 Pro 64, Win 11 Home 64, Windows 11 Home Single Language, or FreeDOS.
- Intel® H770 chipset supporting Intel® 13<sup>th</sup> or 14<sup>th</sup> processors<sup>1</sup> featuring Intel® UHD Graphics.
- Supports an optional discrete graphics card.
- Integrated 10/100/1000 Ethernet Controller or Realtek RTL8852BE-VT 802.11ax 2x2 Wi-Fi 6 + Bluetooth® 5.4 Wireless Card (802.11ax 2x2, supporting gigabit data rate), or Realtek RTL8852CE 802.11ax 2x2 Wi-Fi 6E + Bluetooth® 5.3 Wireless Card (802.11ax 2x2, supporting gigabit data rate).
- Up to 64GB DDR5-5600 Unbuffered Memory (UDIMM).
- Independent monitor support via DP and HDMI interfaces.
- TPM 2.0 support (firmware).
- Supports both Hard Disk Drives and SATA TLC / PCIe® NVMe™ M.2 SSD or PCIe® NVMe™ TLC M.2 SSD.
- 8 USB Ports (including 3 SuperSpeed USB 5Gbps ports, 1 USB-C 3.2 G2 (10G), and 4 USB 2.0 ports).
- 180W 90% HE power supply and 280W 92% HE power supply.
- Security cable lock supported (sold separately).
- Optional HP Care Packs available; terms and conditions vary by country; certain restrictions and exclusions apply<sup>1</sup>.

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

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

## Standard Features and Configurable Modules

### OPERATING SYSTEMS

#### Preinstalled

Windows 11 Pro<sup>1</sup>  
Windows 11 Home - HP recommends Windows 11 Pro for Business<sup>1</sup>  
Windows 11 Home Single Language - HP recommends Windows 11 Pro for Business<sup>1</sup>  
FreeDOS

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

2. This system is preinstalled with Windows 10 Pro software and also comes with a license for Windows 11 Pro software and provision for recovery software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.

### PROCESSORS\*

#### Intel 13<sup>th</sup> Processors

##### Intel® Core™ i3<sup>1</sup>

CPU Intel Core i3-13100 4C 3.4GHz 3200MHz 60W (3.4GHz, turbo up to 4.5GHz, 12MB cache, 4 cores).

##### Intel® Core™ i5<sup>1</sup>

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<sup>1</sup>

CPU Intel Core i7-13700 16C 2.1GHz 3200MHz 65W (2.1GHz, Up to 5.2GHz with Intel® Turbo Boost<sup>2</sup>, 30MB cache, 16 cores).

#### Intel 14<sup>th</sup> Processors

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® Core™ i3<sup>1</sup>

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<sup>1</sup>

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™ 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™ i7<sup>1</sup>

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. 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 8th generation and forward processors or provide any Windows® 8 or Windows 7 drivers on <http://www.support.hp.com>.

**\*NOTE:** Not all processors are available; it varies by version.

Standard Features and Configurable Modules

CHIPSET

Intel® H770 Chipset

GRAPHICS

Integrated<sup>1,2</sup>

Intel® UHD  
Graphics 770  
Graphics 730  
Graphics 710

Discrete Graphics

AMD Radeon™ RX 6300 Graphics (2 GB 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:** HEVC (H.265) video driver is not available by default, and the HEVC (H.265) driver option can be configured at the time of purchase.

MEMORY

Both slots are customer accessible / upgradeable, Supports Dual Channel Memory

| Form Factor                                | Type           | Maximum        | # of Slots          |
|--------------------------------------------|----------------|----------------|---------------------|
| Small Form Factor                          | DDR5 4800/5600 | 64 GB capacity | 2 DIMM <sup>1</sup> |
| 8GB DDR5-5600 UDIMM (1x8GB)                |                |                |                     |
| 8GB DDR5-4800 UDIMM (1x8GB) <sup>1</sup>   |                |                |                     |
| 16GB DDR5-5600 UDIMM (1x16GB)              |                |                |                     |
| 16GB DDR5-4800 UDIMM (1x16GB) <sup>1</sup> |                |                |                     |
| 16GB DDR5-5600 UDIMM (2x8GB)               |                |                |                     |
| 16GB DDR5-4800 UDIMM (2x8GB) <sup>1</sup>  |                |                |                     |
| 24GB DDR5-5600 UDINN NECC(1x24GB)          |                |                |                     |
| 24GB DDR5-4800 UDINN NECC(1x24GB)          |                |                |                     |
| 48GB DDR5-5600 UDINN NECC(2x24GB)          |                |                |                     |
| 48GB DDR5-4800 UDINN NECC(2x24GB)          |                |                |                     |
| 32GB DDR5-5600 UDIMM (1x32GB)              |                |                |                     |
| 32GB DDR5-4800 UDIMM (1x32GB) <sup>1</sup> |                |                |                     |
| 32GB DDR5-5600 UDIMM (2x16GB)              |                |                |                     |
| 32GB DDR5-4800 UDIMM (2x16GB) <sup>1</sup> |                |                |                     |
| 64GB DDR5-5600 UDIMM (2x32GB)              |                |                |                     |
| 64GB DDR5-4800 UDIMM (2x32GB) <sup>1</sup> |                |                |                     |

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.

### Standard Features and Configurable Modules

#### STORAGE AND DRIVES

**NOTE:** Starting from November 1<sup>st</sup>, 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"

2TB 7200 RPM SATA Hard Disk Drive

1TB 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.

##### M.2 Solid State Drives

256GB M.2 2280 PCIe NVMe SSD

512GB M.2 2280 PCIe NVMe SSD

1TB M.2 2280 PCIe NVMe SSD

2TB M.2 2280 PCIe NVMe SSD

256GB M.2 2280 PCIe NVMe Three Layer Cell SSD<sup>1</sup>

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

1TB M.2 2280 PCIe NVMe Three Layer Cell SSD

2TB M.2 2280 PCIe NVMe Three Layer Cell SSD

1. Available on select skus only.

**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) of system disk is reserved for the system recovery software.

#### OPTICAL DISC DRIVES

DVD-ROM 9.5mm<sup>2</sup>

DVD-Writer 9.5mm<sup>2</sup>

2. Optical drives are optional or add on features. HD-DVD disks cannot be played on this drive. No support for DVD-RAM. Actual speeds may vary. Don't copy copyright-protected materials.

#### NETWORKING/COMMUNICATIONS

##### Networking

Integrated 10/100/1000M GbE LAN

Network Adapter Intel FoxPond2 I226-T1 2.5GbE

##### Wi-Fi® and Bluetooth®

Realtek RTL8852BE-VT 802.11ax 2x2 Wi-Fi 6 + Bluetooth® 5.4 Wireless Card (802.11ax 2x2, supporting gigabit data rate)<sup>1</sup>

Realtek RTL8852CE 802.11ax 2x2 Wi-Fi 6E + B Bluetooth® 5.3 Wireless Card (802.11ax 2x2, supporting gigabit data rate)<sup>1</sup>

1. 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. Wi-Fi 5 (802.11 ac) is backwards compatible with prior 802.11 specs.

### *Standard Features and Configurable Modules*

#### **AUDIO/MULTIMEDIA**

Realtek ALC3602-CG codec  
Integrated Hi-Definition Audio  
Combo Jack, Headphone / Microphone  
Audio Line-out- retask as Line-in

#### **KEYBOARDS/POINTING DEVICES/BUTTONS AND FUNCTIONS KEYS**

##### **Keyboard**

HP 125 v2 Antimicrobial Wired Keyboard (China only)  
HP 320K v2 Keyboard  
HP Bus Slim v2 Smart Card Wired Keyboard  
HP 655 v2 Black Wireless Keyboard/Mouse Kit

##### **Mouse**

HP Wired 320M Mouse  
HP Wired 125 Antimicrobial Mouse (China only)  
HP Black 125 Wired Mouse  
HP Wired 128 LSR Mouse  
HP USB Hardened Optical Wired Mouse

**NOTE:** 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.

### Standard Features and Configurable Modules

#### PORTS

##### Front

Slim-height Bay - supporting an optical disk drive (option)  
(3) SuperSpeed USB 5Gbps signaling rate  
Combo Jack Microphone/Headphone  
Power Button  
(1) USB-C® 10Gbps

##### Not Shown

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

##### Rear

Audio Line-out- retask as Line-in  
DisplayPort 1.4a  
HDMI Port 1.4b  
Standard lock slot  
(4) USB 2.0 port  
RJ-45 Network Connector  
Power Cord Connector  
Padlock loop  
Integrated Accessories Cable Lock  
Serial port (option)

##### Not Shown

(1) Parallel Port (Optional via PCIe x1 slot)  
(1) 4x Serial port (Optional via PCIe x1 slot)<sup>1</sup>  
(1) PS/2 Port (Optional)

[1. Available for selected regions](#)

#### BAYS

(1) 3.5" internal storage optional  
(1) 9.5mm internal optical drive bay optional

### Standard Features and Configurable Modules

#### SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS

##### Security and Protection

McAfee – MLS

##### HP Utilities and Support

HP Documentation

HP Support Assistant

##### BTB

HP Setup Integrated OOBE (GDPR)

##### Hardware Enabling Drivers or software utility

HP System Event Utility

##### BIOS

Administrator Password

Self recovery

Hard drive utilities

HP Secure erase feature

Secure Boot

Cover Removal Sensor

UEFI Self Certification Level: 2.9

1. Free 1-year subscription of McAfee LiveSafe service included. Internet access required and not included. Subscription required after expiration.

#### POWER

##### Power Supply

180 W

EPA90 Power Supply

280W

EPA92 Power Supply

#### WEIGHT AND DIMENSIONS

(configured with 1 HDD and 1 ODD)

**Chassis** (W x D x H) 3.94 x 12.13 x 11.95 in (100 x 308 x 304 mm) (w/bezel)

**System Weight** 12.57 lbs / 5.7 kg\*

\*NOTE: Weight varies by configuration and component

Standard Features and Configurable Modules

UNIT ENVIRONMENTAL AND OPERATING CONDITIONS

General Unit Operating Guidelines

|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                        |
|----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|
| Environmental and Industry       | <ul style="list-style-type: none"><li>• 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.</li><li>• Leave a 10.2 cm (4 in) clearance on all vented sides of the computer to permit the required airflow.</li><li>• Never restrict airflow into the computer by blocking any vents or air intakes.</li><li>• 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.</li><li>• 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.</li><li>• 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.</li></ul> |                                        |
|                                  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                        |
| Temperature Range                | Operating:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5° to 35° C <sup>1</sup>               |
|                                  | Non-operating:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | -30° to 60° <sup>1</sup>               |
| Relative Humidity                | Operating:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 15% to 80% (non-condensing at ambient) |
|                                  | Non-operating:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 15% to 80% (non-condensing at ambient) |
| Maximum Altitude (unpressurized) | Operating:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | 5,000 m                                |
|                                  | Non-operating:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 50,000 ft (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.

### Standard Features and Configurable Modules

|                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                              |                     |
|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------|---------------------|
| <b>Eco-Label Certifications &amp; declarations</b>                         | 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: <ul style="list-style-type: none"><li>• IT ECO declaration</li><li>• TUV ultra-low noise</li><li>• US ENERGY STAR®</li><li>• EPEAT Gold* or EPEAT Silver** registered in the United States. See <a href="http://www.epeat.net">http://www.epeat.net</a> for registration status in your country.</li><li>• TCO Certified</li><li>• China Energy Conservation Program (CECP)</li><li>• Clean Energy Certificates (CEL)</li><li>• Minimum Energy Performance Standard (Korea/Vietnam/A/Z MEPS)</li><li>• Ukraine energy</li><li>• Commission Regulation (EC) No 617/2013 (ErP Lot 3)</li></ul> |                                              |                     |
| <b>System Configuration</b>                                                | The configuration used for the Energy Consumption and Declared Noise Emissions data for the Desktop model is based on a “Typically Configured Desktop”.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                                              |                     |
| <b>Energy Consumption (in accordance with US ENERGY STAR® test method)</b> | <b>115VAC, 60Hz</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>230VAC, 50Hz</b>                          | <b>100VAC, 50Hz</b> |
| Normal Operation (Short idle)                                              | 12.46W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 12.51W                                       | 12.40W              |
| Normal Operation (Long idle)                                               | 10.16W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 10.22W                                       | 10.02W              |
| Sleep                                                                      | 1.76W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 1.75W                                        | 1.76W               |
| Off                                                                        | 0.38W                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 0.41W                                        | 0.41W               |
|                                                                            | <b>NOTE:</b> 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. Search keyword generator on HP’s 3rd party option store for solar generator accessories at <a href="http://www.hp.com/go/options">http://www.hp.com/go/options</a> .                       |                                              |                     |
| <b>Heat Dissipation*</b>                                                   | <b>115VAC, 60Hz</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | <b>230VAC, 50Hz</b>                          | <b>100VAC, 50Hz</b> |
| Normal Operation (Short idle)                                              | 42.49 BTU/hr                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 42.66 BTU/hr                                 | 42.28 BTU/hr        |
| Normal Operation (Long idle)                                               | 34.65 BTU/hr                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 34.85 BTU/hr                                 | 34.17 BTU/hr        |
| Sleep                                                                      | 6.00 BTU/hr                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 5.97 BTU/hr                                  | 6.00 BTU/hr         |
| Off                                                                        | 1.30 BTU/hr                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 1.40 BTU/hr                                  | 1.40 BTU/hr         |
|                                                                            | <b>NOTE:</b> Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                                              |                     |
| <b>Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)</b> | Sound Power (L <sub>WAd</sub> , bels)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Sound Pressure (L <sub>pAm</sub> , decibels) |                     |
| Typically Configured – Idle                                                | 3.2                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 19.7                                         |                     |
| Fixed Disk – Random writes                                                 | 3.3                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 20.7                                         |                     |
| Optical Drive – Sequential reads                                           | 4.5                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 38.2                                         |                     |
| 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 “3” 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:                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                                              |                     |

### Standard Features and Configurable Modules

|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |                                         |       |
|-------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|-------|
|                               | <p>Mercury greater than 1ppm by weight<br/>Cadmium greater than 20ppm by weight</p> <p>Battery size: CR2032 (coin cell)<br/>Battery type: Lithium</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |                                         |       |
| <b>Additional Information</b> | <ul style="list-style-type: none"> <li>• This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.</li> <li>• This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.</li> <li>• This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).</li> <li>• This product is in compliance with the IEEE 1680.1 (EPEAT) standard at the &lt;Silver&gt; level, see <a href="http://www.epeat.net">http://www.epeat.net</a></li> <li>• Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.</li> <li>• This product contains 28.2% post-consumer recycled plastic (by wt.)</li> <li>• This product is 91.7% recycle-able when properly disposed of at end of life.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |                                         |       |
| <b>Packaging Materials</b>    | <b>External:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | PAPER/Corrugated                        | 540 g |
|                               | <b>Internal:</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | PAPER/Molded Pulp                       | 350 g |
|                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | PLASTIC/Polyethylene low density - LDPE | 30 g  |
| <b>Material Usage</b>         | <p>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 <a href="http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf">http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf</a>):</p> <ul style="list-style-type: none"> <li>• Asbestos</li> <li>• Certain Azo Colorants</li> <li>• Certain Brominated Flame Retardants – may not be used as flame retardants in plastics</li> <li>• Cadmium</li> <li>• Chlorinated Hydrocarbons</li> <li>• Chlorinated Paraffins</li> <li>• Formaldehyde</li> <li>• Halogenated Diphenyl Methanes</li> <li>• Lead carbonates and sulfates</li> <li>• Lead and Lead compounds</li> <li>• Mercuric Oxide Batteries</li> <li>• Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.</li> <li>• Ozone Depleting Substances</li> <li>• Polybrominated Biphenyls (PBBs)</li> <li>• Polybrominated Biphenyl Ethers (PBBEs)</li> <li>• Polybrominated Biphenyl Oxides (PBBOs)</li> <li>• Polychlorinated Biphenyl (PCB)</li> <li>• Polychlorinated Terphenyls (PCT)</li> <li>• Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.</li> <li>• Radioactive Substances</li> <li>• Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)</li> </ul> |                                         |       |

### Standard Features and Configurable Modules

|                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Packaging Usage</b>                      | <p>HP follows these guidelines to decrease the environmental impact of product packaging:</p> <ul style="list-style-type: none"> <li>• Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.</li> <li>• Eliminate the use of ozone-depleting substances (ODS) in packaging materials.</li> <li>• Design packaging materials for ease of disassembly.</li> <li>• Maximize the use of post-consumer recycled content materials in packaging materials.</li> <li>• Use readily recyclable packaging materials such as paper and corrugated materials.</li> <li>• Reduce size and weight of packages to improve transportation fuel efficiency.</li> <li>• Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>End-of-life Management and Recycling</b> | <p>HP Inc. offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: <a href="http://www.hp.com/go/reuse-recycle">http://www.hp.com/go/reuse-recycle</a> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.</p> <p>The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: <a href="http://www.hp.com/go/recyclers">http://www.hp.com/go/recyclers</a>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.</p> <p>Global Citizenship Report<br/> <a href="http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html">http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html</a></p> <p>Eco-label certifications<br/> <a href="http://www8.hp.com/us/en/hp-information/environment/ecolabels.html">http://www8.hp.com/us/en/hp-information/environment/ecolabels.html</a></p> <p>ISO 14001 certificates:<br/> <a href="http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf">http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf</a><br/> and<br/> <a href="http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf">http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf</a></p> |

## SERVICE AND SUPPORT

On-site Warranty<sup>1</sup>: Available three-year (3-3-3) or one-year (1-1-1) limited warranty (varies by country) delivers on-site, next business day<sup>2</sup> service for parts and labor and complimentary limited technical support<sup>3</sup>. Three-year onsite and labor are not available in all countries. Service offers terms up to 5 years by choosing an optional HP Care Service<sup>4</sup>. 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. HP Care Packs are sold separately. Service levels and response times for HP Care Packs may vary depending on your geographic location. Service starts on date of hardware purchase. Restrictions and limitations apply. For details, visit <http://www.hp.com/go/cpc>. HP services are governed by the applicable HP terms and conditions of service provided or indicated to Customer at the time of purchase. Customer may have additional statutory rights according to applicable local laws, and such rights are not in any way affected by the HP terms and conditions of service or the HP Limited Warranty provided with your HP Product.

## GRAPHICS



### Technical Specifications - Graphics

#### GRAPHICS

| Intel® UHD Graphics (integrated)                                                                                                                                                                                                                                                                                                                                                 |                                                                                                                                                                                                                                         |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Graphics Controller</b>                                                                                                                                                                                                                                                                                                                                                       | Integrated                                                                                                                                                                                                                              |
| <b>DisplayPort™</b>                                                                                                                                                                                                                                                                                                                                                              | Multimode capable; supports HDCP, Display Port Audio, HBR2 link rates and Multi-Stream Technology for a maximum of 2 displays connected to any output controlled by Intel® Graphics.                                                    |
| <b>HDMI (on board/optional)</b>                                                                                                                                                                                                                                                                                                                                                  | Supports HDMI 1.4 features<br>Supports HDCP 2.3<br>Supports audio over HDMI                                                                                                                                                             |
| <b>Memory</b>                                                                                                                                                                                                                                                                                                                                                                    | 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. |
| <b>Maximum Color Depth</b>                                                                                                                                                                                                                                                                                                                                                       | up to 16 bits/color                                                                                                                                                                                                                     |
| <b>Graphics/Video API Support</b>                                                                                                                                                                                                                                                                                                                                                | HEVC 10b Enc/12b Dec HW<br>VP9 10b Dec HW<br>HDR<br>Rec. 2020<br>DX12                                                                                                                                                                   |
| <b>Max. Resolution (HDMI)</b>                                                                                                                                                                                                                                                                                                                                                    | 4K x 2K@30Hz                                                                                                                                                                                                                            |
| <b>Max. Resolution (DP)</b>                                                                                                                                                                                                                                                                                                                                                      | 4K x 2K@30Hz                                                                                                                                                                                                                            |
| <p><b>Note:</b> The actual amount of maximum graphics memory can be less than the amounts listed above depending upon your computer's configuration.</p> <p><b>Note:</b> Other resolutions may be available but are not recommended as they may not have been tested and qualified by HP</p> <p>Only supported on displays connected to the external DisplayPort™ connector.</p> |                                                                                                                                                                                                                                         |

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

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

### Technical Specifications – Storage

#### STORAGE

**NOTE:** Starting from November 1<sup>st</sup>, 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           | 64 MB                           |
| 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 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.

##### 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           | 32 MB                                                         |
| Logical Blocks        | 1,953,525,168                                                 |
| Seek Time             | Read: <8.5 ms<br>Write: <9.5 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 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.

### Technical Specifications – Storage

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

|                          |                                          |
|--------------------------|------------------------------------------|
| Drive Weight             | < 10g                                    |
| Capacity                 | 256GB                                    |
| Height                   | 2.38mm                                   |
| Length                   | 80mm                                     |
| Width                    | 22mm                                     |
| Interface                | PCIe Gen3x4                              |
| 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 36GB (for Windows) of system disk is reserved for the system recovery software.

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

|                          |                                          |
|--------------------------|------------------------------------------|
| Drive Weight             | < 10g                                    |
| Capacity                 | 512GB                                    |
| Height                   | 2.38mm                                   |
| Length                   | 80mm                                     |
| Width                    | 22mm                                     |
| Interface                | PCIe Gen3x4                              |
| 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 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.

#### 1TB M.2 2280 PCIe NVMe Three Layer Cell SSD

|                          |                                          |
|--------------------------|------------------------------------------|
| Drive Weight             | < 10g                                    |
| Capacity                 | <u>1TB</u>                               |
| Height                   | 2.3mm                                    |
| Length                   | 80mm                                     |
| Width                    | 22mm                                     |
| Interface                | PCIe <u>NVMe</u>                         |
| Maximum Sequential Read  | Up to 2900MB/s                           |
| Maximum Sequential Write | Up to 1100MB/s                           |
| Logical Blocks           | <u>2,000,409,264</u>                     |
| Operating Temperature    | 0° to 70°C (32° to 158°F) [ambient temp] |
| Features                 | <u>Pyrite</u>                            |



### Technical Specifications – Storage

**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.

#### 2TB M.2 2280 PCIe NVMe Three Layer Cell SSD

|                                 |                        |
|---------------------------------|------------------------|
| <b>Capacity</b>                 | 2TB                    |
| <b>Interface</b>                | PCIe Gen4x4            |
| <b>Minimum Sequential Read</b>  | 6400 MB/s $\pm$ 10%    |
| <b>Minimum Sequential Write</b> | 5000 MB/s $\pm$ 10%    |
| <b>Logical Blocks</b>           | 4,000,797,360          |
| <b>Features</b>                 | TRIM; L1.2; Pyrite 2.0 |

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

#### 256GB M.2 2280 PCIe NVMe SSD

|                                 |                                          |
|---------------------------------|------------------------------------------|
| <b>Drive Weight</b>             | < 10g                                    |
| <b>Capacity</b>                 | 256GB                                    |
| <b>Height</b>                   | 2.38mm                                   |
| <b>Length</b>                   | 80mm                                     |
| <b>Width</b>                    | 22mm                                     |
| <b>Interface</b>                | PCIe Gen4x4                              |
| <b>Minimum Sequential Read</b>  | Up to 1600MB/s                           |
| <b>Minimum Sequential Write</b> | Up to 780MB/s                            |
| <b>Logical Blocks</b>           | 500,118,192                              |
| <b>Operating Temperature</b>    | 0° to 70°C (32° to 158°F) [ambient temp] |
| <b>Features</b>                 | 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 36GB (for Windows) of system disk is reserved for the system recovery software.

#### 512GB M.2 2280 PCIe NVMe SSD

|                                 |                                          |
|---------------------------------|------------------------------------------|
| <b>Drive Weight</b>             | < 10g                                    |
| <b>Capacity</b>                 | 512GB                                    |
| <b>Height</b>                   | 2.38mm                                   |
| <b>Length</b>                   | 80mm                                     |
| <b>Width</b>                    | 22mm                                     |
| <b>Interface</b>                | PCIe Gen4x4                              |
| <b>Minimum Sequential Read</b>  | Up to 1600MB/s                           |
| <b>Minimum Sequential Write</b> | Up to 860MB/s                            |
| <b>Logical Blocks</b>           | 1,000,215,216                            |
| <b>Operating Temperature</b>    | 0° to 70°C (32° to 158°F) [ambient temp] |
| <b>Features</b>                 | APST; ASPM L1.2; NVME spec 1.2           |

Technical Specifications – Storage

**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.

1TB M.2 2280 PCIe NVMe SSD

|                          |                |
|--------------------------|----------------|
| Capacity                 | 1TB            |
| Interface                | PCIe Gen4x4    |
| Minimum Sequential Read  | 2200 MB/s ±10% |
| Minimum Sequential Write | 1600 MB/s ±10% |
| Logical Blocks           | 2,000,409,264  |
| Features                 | TRIM; L1.2     |

**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.

2TB M.2 2280 PCIe NVMe SSD

|                          |                |
|--------------------------|----------------|
| Capacity                 | 2TB            |
| Interface                | PCIe Gen4x4    |
| Minimum Sequential Read  | 5400 MB/s ±10% |
| Minimum Sequential Write | 4700 MB/s ±10% |
| Logical Blocks           | 4,000,797,360  |
| Features                 | TRIM; L1.2     |

**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.

### Technical Specifications – Optical Disc Drives

#### OPTICAL DISC DRIVES

##### HP 9.5mm Slim DVD-ROM Drive

|                                                                  |                                                                                                                                                            |
|------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Height</b>                                                    | 9.5 mm height                                                                                                                                              |
| <b>Orientation</b>                                               | Either horizontal or vertical                                                                                                                              |
| <b>Interface type</b>                                            | SATA/ATAPI                                                                                                                                                 |
| <b>Dimensions (W x H x D)</b>                                    | 5.04 x 0.37 x 5.0 in (128 x 9.5 x 127 mm) without bezel                                                                                                    |
| <b>Weight (max)</b>                                              | Up to 0.31 lb (140g) without bezel                                                                                                                         |
| <b>Read Speeds</b>                                               | DVD+R/-R/+RW/<br>-RW/+R DL /-R DL Up to 8X<br>DVD-ROM Up to 8X<br>CD-ROM, CD-R Up to 24X<br>CD-RW Up to 24X                                                |
| <b>Access time<br/>(typical reads, including<br/>settling)</b>   | Random: DVD-ROM: 170 ms (typical), CD-ROM: 170 ms (typical)<br>Full stroke: DVD-ROM: 320 ms (typical), CD-ROM: 320 ms (typical)                            |
| <b>Power</b>                                                     | Source Slimline SATA DC power receptacle<br>DC Power Requirement 5 VDC $\pm$ 5%-100 mV ripple p-p<br>DC Current 5 VDC (< 1000 mA typical, 1600 mA maximum) |
| <b>Environmental conditions<br/>(operating - non-condensing)</b> | Temperature 41° to 122° F (5° to 50° C)<br>Relative Humidity 10% to 80%<br>Maximum Wet Bulb Temperature 84° F (29° C)                                      |

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

|                                                                |                                                                                                                                                                          |
|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Height</b>                                                  | 9.5 mm height                                                                                                                                                            |
| <b>Orientation</b>                                             | Either horizontal or vertical                                                                                                                                            |
| <b>Interface type</b>                                          | SATA/ATAPI                                                                                                                                                               |
| <b>Dimensions (W x H x D)</b>                                  | 5.04 x 0.37 x 5.0 in (128 x 9.5 x 127 mm) without bezel                                                                                                                  |
| <b>Weight (max)</b>                                            | Up to 0.31 lb (140 g) Without bezel                                                                                                                                      |
| <b>Write Speeds</b>                                            | DVD-R DL - Up to 6X<br>DVD+R - Up to 8X<br>DVD+RW - Up to 8X<br>DVD+R DL - Up to 6X<br>DVD-R - Up to 8X<br>DVD-RW - Up to 6X<br>CD-R - Up to 24X<br>CD-RW - Up to 10X    |
| <b>Read Speeds</b>                                             | DVD-RW, DVD+RW - Up to 8X<br>DVD-R DL, DVD+R DL - Up to 8X<br>DVD+R, DVD-R - Up to 8X<br>DVD-ROM DL, DVD-ROM - Up to 8X<br>CD-ROM, CD-R - Up to 24X<br>CD-RW - Up to 24X |
| <b>Access time<br/>(typical reads, including<br/>settling)</b> | 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)           |

Technical Specifications – Optical Disc Drives

|                                                          |                                                                                                                                                        |
|----------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|
| 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)                                  |

Technical Specifications – Audio

HIGH DEFINITION AUDIO

|                           |                                                                                                                                            |
|---------------------------|--------------------------------------------------------------------------------------------------------------------------------------------|
| Type                      | Integrated                                                                                                                                 |
| HD Stereo Codec           | Realtek ALC3602-CG codec                                                                                                                   |
| Audio I/O Ports           | Support the combo jack for CTIA                                                                                                            |
| Multi-streaming Capable   | Playback multi-streaming can be enabled in the audio control UI to allow independent audio streams to output to the front and rear jacks.  |
| HD Audio Codec            | ALC3602-CG                                                                                                                                 |
| Sampling                  | DAC supports 16bit ~ 24 bit, sampling rate 44.1K/ 48K/ 96K/ 192K Hz<br>ADC supports 16bit ~ 24 bit, sampling rate 44.1K/ 48K/ 96K/ 192K Hz |
| Wavetable Syntheses       | Yes                                                                                                                                        |
| Analog Audio              | Yes                                                                                                                                        |
| # of Channels on Line-Out | Stereo                                                                                                                                     |
| External Speaker Jack*    | 2W class D mono amplifier only. External speakers must be powered externally.                                                              |

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>280W: <3.3A<br>400W: <5.2A<br>500 W: <6A                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Rated Input Current with Energy Efficient* Power Supply | <b>180W</b> active PFC /<br><b>Efficiency at 115Vac</b><br>80PLUS Gold certified 87/90/87% at 20/50/100% load<br><b>Efficiency at 230Vac</b><br>90/92/89% at 20/50/100% load<br>Which meet 80PLUS Gold<br><br><b>280W</b> active PFC /<br><b>Efficiency at 115Vac</b><br>80PLUS Platinum certified 90/92/89% efficient at 20/50/100% load<br><b>Efficiency at 230Vac</b><br>91/93/90% at 20/50/100% load<br>Which meet 80PLUS Gold                                                                                              |
| 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: 70*25mm (linear type)<br>280W/400W/500W: 70x25mm (PWM type)                                                                                                                                                                                                                                                                                                                                                                                                                                                              |

Technical Specifications – Weights and Dimensions

WEIGHTS AND DIMENSIONS

|                          |                                                                                                                                |
|--------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| Chassis (W x D x H)      | 3.94 x 12.13 x 11.95 in (100 x 308 x 304 mm) (w/ bezel)                                                                        |
| System Volume            | 9L                                                                                                                             |
| System Weight*           | 12.57 lbs / 5.7 kg                                                                                                             |
| Packaged<br>(H x W x D)  | 15.67 x 7.87 x 19.65 in<br>398 x 200 x 499 mm                                                                                  |
| Shipping Weight*         | 16.36 lb / 7.42 kg                                                                                                             |
| Palletization<br>Profile | 12-units per layer<br>5 layer max<br>60 per pallet<br>Footprint (HxWxD)<br>83.46 x 39.37 x 47.24 in<br>(2120 x 1000 x 1200 mm) |

\*NOTE: Weight varies by configuration and component

### Technical Specifications – Networking

#### NETWORKING

| <b>10/100/1000 Integrated NIC</b> |                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Ethernet Features</b>          | 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 802.3 clauses 40)<br>Auto-Negotiation (Automatic Speed Selection)<br>Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s   |
| <b>Power Management</b>           | ACPI compliant – multiple power modes<br>Situation-sensitive features reduce power consumption<br>Advanced link down power saving for reducing link down power consumption                                                                                                                                                                                        |
| <b>Performance Features</b>       | 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                                                                                                                                                                                                |
| <b>Manageability</b>              | Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame);<br>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 |

| <b>Intel I226-T1 2.5GbE Ethernet Network Adapter</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                            |
|------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Connector</b>                                     | RJ-45                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>System Interface</b>                              | PCI (Intel proprietary) + SMBus                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Data rates supported</b>                          | 1. 10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14)<br>2. 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30)<br>3. 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 802.3 clauses 40)<br>4. 2.5 Gbit/s operation (2.5GBASE-T; IEEE 802.3bz Clause 126)<br>5. Auto-Negotiation (Automatic Speed Selection)<br>Full Duplex Operation at all Speeds, Half Duplex operation at 10 & 100 Mbit/s |
| <b>IEEE Compliance</b>                               | IEEE 802.1p QoS (Quality of Service) Support<br>IEEE 802.1q VLAN support<br>IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable)<br>IEEE 802.3az EEE (Energy Efficient Ethernet)<br>IEEE 802.3i 10BASE-T<br>IEEE 802.3u 100BASE-TX<br>IEEE 802.3ab 1000BASE-T<br>IEEE 802.3bz 2.5GBASE-T                                                                                                                                      |
| <b>Performance</b>                                   | TCP/IP/UDP Checksum Offload (configurable)<br>Protocol Offload (ARP & NS)<br>Large send offload and Giant send offload<br>Receiving Side Scaling (Hash Mode Only)<br>Jumbo Frame 9K                                                                                                                                                                                                                                                        |

### Technical Specifications – Networking

|                             |                                                                                                                                                                                                                                                                                                                                                                      |
|-----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Power consumption</b>    | Cable Disconnection: 25mW<br>100Mbps Full Run: 450mW<br>1000Mbps Full Run: 1000mW<br>2500Mbps Full Run: 4500mW<br>WoL Enable(S3/S4/S5): 50mW<br>WoL Disable(S3/S4/S5): 25mW                                                                                                                                                                                          |
| <b>Power</b>                | ACPI compliant – multiple power modes                                                                                                                                                                                                                                                                                                                                |
| <b>Management</b>           | Situation-sensitive features reduce power consumption<br>Advanced link down power saving for reducing link down power consumption                                                                                                                                                                                                                                    |
| <b>Management Interface</b> | Auto MDI/MDIX Crossover cable detection                                                                                                                                                                                                                                                                                                                              |
| <b>IT Manageability</b>     | Wake-on-LAN from modern standby or sleep state (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 |

### Realtek RTL8852BE-VT 802.11ax 2x2 Wi-Fi 6 + Bluetooth® 5.4 Wireless Card (802.11ax 2x2, supporting gigabit data rate)

|                                           |                                                                                                                                                                                                                  |
|-------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Wireless LAN Standards<sup>1</sup></b> | IEEE 802.11a<br>IEEE 802.11b<br>IEEE 802.11g<br>IEEE 802.11n<br>IEEE 802.11ac<br>IEEE 802.11ax<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   |
| <b>Interoperability</b>                   | Wi-Fi certified modules                                                                                                                                                                                          |
| <b>Frequency Bands</b>                    | 802.11b/g/n/ax<br>• 2.402 – 2.482 GHz<br>802.11a/n/ac/ax<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                                      |
| <b>Data Rates</b>                         | • 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: max 300Mbps<br>• 802.11ac: max 866.7Mbps<br>• 802.11ax: max 1201Mbps |

### Technical Specifications – Networking

|                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Modulation</b>                       | Direct Sequence Spread Spectrum, OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Security<sup>2</sup></b>             | <ul style="list-style-type: none"> <li>• IEEE and WiFi certified 64 / 128 bit WEP encryption for a/b/g mode only</li> <li>• AES-CCMP: 128 bit in hardware</li> <li>• 802.1x authentication</li> <li>• WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.</li> <li>• WPA2 certification</li> <li>• WPA3 certification</li> <li>• IEEE 802.11i</li> <li>• WAPI</li> </ul>                                                                                                                                     |
| <b>Network Architecture Models</b>      | Ad-hoc (Peer to Peer)<br>Infrastructure (Access Point Required)                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Roaming</b>                          | IEEE 802.11 compliant roaming between access points                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Output Power<sup>3</sup></b>         | <ul style="list-style-type: none"> <li>• 802.11b: +18.5dBm minimum</li> <li>• 802.11g: +17.5dBm minimum</li> <li>• 802.11a: +18.5dBm minimum</li> <li>• 802.11n HT20(2.4GHz): +15.5dBm minimum</li> <li>• 802.11n HT40(2.4GHz): +14.5dBm minimum</li> <li>• 802.11n HT20(5GHz): +15.5dBm minimum</li> <li>• 802.11n HT40(5GHz): +14.5dBm minimum</li> <li>• 802.11ac VHT80(5GHz): +11.5dBm minimum</li> <li>• 802.11ax HE40(2.4GHz): +10dBm minimum</li> <li>• 802.11ax HE80(5GHz): +10dBm minimum</li> </ul> |
| <b>Power Consumption</b>                | <ul style="list-style-type: none"> <li>• Transmit mode: 2.5 W</li> <li>• Receive mode: 2 W</li> <li>• Idle mode (PSP) 180 mW (WLAN Associated)</li> <li>• Idle mode: 50 mW (WLAN unassociated)</li> <li>• Connected Standby/Modern Standby: 10mW</li> <li>• Radio disabled: 8 mW</li> </ul>                                                                                                                                                                                                                   |
| <b>Power Management</b>                 | ACPI and PCI Express compliant power management<br>802.11 compliant power saving mode                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Receiver Sensitivity<sup>4</sup></b> | 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>• 802.11ax, MCS11(HE40): -57dBm maximum<br>• 802.11ax, MCS11(HE80): -54dBm maximum                                                                                                                                    |

### Technical Specifications – Networking

|                                                                                                      |                                                                                                                                                                                                                                                                                                                  |
|------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Antenna type</b>                                                                                  | High efficiency antenna with spatial diversity.<br>Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications                                                                                                                           |
| <b>Form Factor</b>                                                                                   | PCI-Express M.2 MiniCard                                                                                                                                                                                                                                                                                         |
| <b>Dimensions</b>                                                                                    | 1. Type 2230: 2.4 x 22.0 x 30.0 mm                                                                                                                                                                                                                                                                               |
| <b>Weight</b>                                                                                        | 1. Type 2230: 2.8g                                                                                                                                                                                                                                                                                               |
| <b>Operating Voltage</b>                                                                             | 3.3v +/- 9%                                                                                                                                                                                                                                                                                                      |
| <b>Temperature</b>                                                                                   | Operating: 14° to 158° F (–10° to 70° C)<br>Non-operating: –40° to 176° F (–40° to 80° C)                                                                                                                                                                                                                        |
| <b>Humidity</b>                                                                                      | Operating: 10% to 90% (non-condensing)<br>Non-operating: 5% to 95% (non-condensing)                                                                                                                                                                                                                              |
| <b>Altitude</b>                                                                                      | Operating: 0 to 10,000 ft (3,048 m)<br>Non-operating: 0 to 50,000 ft (15,240 m)                                                                                                                                                                                                                                  |
| <b>LED Activity</b>                                                                                  | LED Amber – Radio OFF;<br>LED OFF – Radio ON                                                                                                                                                                                                                                                                     |
| <b>HP Integrated Module with Bluetooth® 4.0/4.1/4.2/5.0/5.1/5.2/5.3/5.4 Wireless Card Technology</b> |                                                                                                                                                                                                                                                                                                                  |
| <b>Bluetooth® Specification</b>                                                                      | 4.0/4.1/4.2/5.0/5.1/5.2/5.3/5.4 Wireless Card Compliant                                                                                                                                                                                                                                                          |
| <b>Frequency Band</b>                                                                                | 2402 to 2480 MHz                                                                                                                                                                                                                                                                                                 |
| <b>Number of Available Channels</b>                                                                  | Legacy: 0~79 (1 MHz/CH)<br>BLE: 0~39 (2 MHz/CH)                                                                                                                                                                                                                                                                  |
| <b>Data Rates and Throughput</b>                                                                     | 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) |
| <b>Transmit Power</b>                                                                                | The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR.                                                                                                                                                                                    |
| <b>Power Consumption</b>                                                                             | Peak (Tx): 330 mW<br>Peak (Rx): 230 mW<br>Selective Suspend: 17 mW                                                                                                                                                                                                                                               |
| <b>Bluetooth® Software Supported Link Topology</b>                                                   | Microsoft Windows Bluetooth Software                                                                                                                                                                                                                                                                             |
| <b>Power Management</b>                                                                              | Microsoft Windows ACPI, and USB Bus Support                                                                                                                                                                                                                                                                      |
| <b>Certifications</b>                                                                                | FCC (47 CFR) Part 15C/E, Section 15.247, 15.249<br>ETSI 300 328, ETSI 301 893                                                                                                                                                                                                                                    |
| <b>Bluetooth® Profiles Supported</b>                                                                 | 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                                                                                                                                                                              |

Technical Specifications – Networking

|  |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|  | <div>LE L2CAP Connection Oriented Channels</div> <div>Train Nudging &amp; Interlaced Scan</div> <div>Bluetooth 4.2 ESR08 Compliance</div> <div>LE Secure Connection- Basic/Full</div> <div>LE Privacy 1.2 –Link Layer Privacy</div> <div>LE Privacy 1.2 –Extended Scanner Filter Policies</div> <div>LE Data Packet Length Extension</div> <div>FAX Profile (FAX)</div> <div>Basic Imaging Profile (BIP)2</div> <div>Headset Profile (HSP)</div> <div>Hands Free Profile (HFP)</div> <div>Advanced Audio Distribution Profile (A2DP)</div> <div>Bluetooth 5.1</div> <div>ESR9/10 Compliance</div> <div>LE Advertisement Extensions</div> <div>Channel Selection Algo</div> <div>Limited High Duty Cycle Non-Connectable Advertising</div> <div>2Mbps LE</div> <div>LE Long Range</div> |
|--|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

1. Wi-Fi 6 is designed to support gigabit data rate when transferring files between two devices connected to the same router. Requires a wireless router, sold separately, that supports 80MHz and higher channels.  
Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 (802.11ax) is backwards compatible with prior 802.11 specs.
2. The FCC has declared as of September 1, 2014 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.
3. Check latest software/driver release for updates on supported security features.
4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

### Technical Specifications – Networking

| <b>Realtek RTL8852CE 802.11ax 2x2 Wi-Fi 6E + Bluetooth® 5.3 Wireless Card</b><br>(802.11ax 2x2, supporting gigabit data rate) |                                                                                                                                                                                                                                                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Wireless LAN Standards<sup>1</sup></b>                                                                                     | IEEE 802.11a<br>IEEE 802.11b<br>IEEE 802.11g<br>IEEE 802.11n<br>IEEE 802.11ac<br>IEEE 802.11ax<br>IEEE 802.11d<br>IEEE 802.11e<br>IEEE 802.11h<br>IEEE 802.11i<br>IEEE 802.11k                                                                                                                          |
| <b>Interoperability</b>                                                                                                       | Wi-Fi certified                                                                                                                                                                                                                                                                                         |
| <b>Frequency Band</b>                                                                                                         | 802.11b/g/n/ax<br>• 2.402 – 2.482 GHz<br><br>802.11a/n/ac/ax<br>• 5.15 – 5.25 GHz<br>• 5.25 – 5.35 GHz<br>• 5.47 – 5.725 GHz<br>• 5.825 – 5.850 GHz<br>• 5.955 – 6.415 GHz<br>• 6.435 – 6.515 GHz<br>• 6.535 – 6.875 GHz<br>• 6.895 – 7.115 GHz                                                         |
| <b>Data Rates</b>                                                                                                             | • 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, (20MHz, 40MHz, ,80MHz & 160MHz)<br>• 802.11ax: MCS0 ~ MCS11, (20MHz, 40MHz, ,80MHz & 160MHz) |
| <b>Modulation</b>                                                                                                             | Direct Sequence Spread Spectrum<br>OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM                                                                                                                                                                                                              |
| <b>Security<sup>2</sup></b>                                                                                                   | • IEEE and WiFi certified 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>• WPA3 (personal) certification<br>• IEEE 802.11i<br>• WAPI<br>• EAP       |
| <b>Network Architecture Models</b>                                                                                            | Ad-hoc (Peer to Peer)<br>Infrastructure (Access Point Required)                                                                                                                                                                                                                                         |
| <b>Roaming</b>                                                                                                                | IEEE 802.11 compliant roaming between access points                                                                                                                                                                                                                                                     |

### Technical Specifications – Networking

|                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Output Power<sup>3</sup></b>         | <ul style="list-style-type: none"> <li>• 802.11b: +17dBm minimum</li> <li>• 802.11g: +16dBm minimum</li> <li>• 802.11a: +17dBm minimum</li> <li>• 802.11n HT20(2.4GHz): +14dBm minimum</li> <li>• 802.11n HT40(2.4GHz): +13dBm minimum</li> <li>• 802.11n HT20(5GHz): +14dBm minimum</li> <li>• 802.11n HT40(5GHz): +13dBm minimum</li> <li>• 802.11ac VHT80(5GHz): +10dBm minimum</li> <li>• 802.11ac VHT160(5GHz): +10dBm minimum</li> <li>• 802.11ax HE40(2.4GHz): +12dBm minimum</li> <li>• 802.11ax HE80(5GHz): +10dBm minimum</li> <li>• 802.11ax HE160(5GHz): +10dBm minimum</li> <li>• 802.11ax HE80(6GHz): +10dBm minimum</li> <li>• 802.11ax HE160(6GHz): +10dBm minimum</li> </ul> |
| <b>Power Consumption</b>                | <ul style="list-style-type: none"> <li>• Transmit mode: 2.5 W</li> <li>• Receive mode: 2 W</li> <li>• Idle mode (PSP) 180 mW (WLAN Associated)</li> <li>• Idle mode: 50 mW (WLAN unassociated)</li> <li>• Connected Standby/Modern Standby: 10mW</li> <li>• Radio disabled: 8 mW</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Power Management</b>                 | ACPI and PCI Express compliant power management<br>802.11 compliant power saving mode                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Receiver Sensitivity<sup>4</sup></b> | <ul style="list-style-type: none"> <li>• 802.11b, 1Mbps: -93.5dBm maximum</li> <li>• 802.11b, 11Mbps: -84dBm maximum</li> <li>• 802.11a/g, 6Mbps: -86dBm maximum</li> <li>• 802.11a/g, 54Mbps: -72dBm maximum</li> <li>• 802.11n, MCS07: -67dBm maximum</li> <li>• 802.11n, MCS15: -64dBm maximum</li> <li>• 802.11ac, MCS0(VHT80): -84dBm maximum</li> <li>• 802.11ac, MCS9(VHT80): -59dBm maximum</li> <li>• 802.11ac, MCS9(VHT160): -58.5dBm maximum</li> <li>• 802.11ax, MCS11(HE40): -57dBm maximum</li> <li>• 802.11ax, MCS11(HE80): -54dBm maximum</li> <li>• 802.11ax, MCS11(HE160): -53.5dBm maximum</li> </ul>                                                                      |
| <b>Antenna type</b>                     | High efficiency antenna with spatial diversity<br>Two embedded tri-band 2.4/5/6 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| <b>Form Factor</b>                      | PCI-Express M.2 MiniCard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Dimensions</b>                       | 1. Type 2230: 2.3 x 22.0 x 30.0 mm                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Weight</b>                           | 1. Type 2230: 2.8g                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |
| <b>Operating Voltage</b>                | 3.3v +/- 9%                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Temperature</b>                      | Operating: 14° to 158° F (–10° to 70° C)<br>Non-operating: –40° to 176° F (–40° to 80° C)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| <b>Humidity</b>                         | Operating: 10% to 60% (non-condensing)<br>Non-operating: 5% to 95% (non-condensing)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Altitude</b>                         | Operating: 0 to 10,000 ft (3,048 m)<br>Non-operating: 0 to 50,000 ft (15,240 m)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>LED Activity</b>                     | N/A                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |

### Technical Specifications – Networking

| <b>HP Integrated Module with Bluetooth® 4.0/4.1/4.2/5.0/5.1/5.2/5.3 Wireless Card Technology</b> |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|--------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Bluetooth® Specification</b>                                                                  | 4.0/4.1/4.2/5.0/5.1/5.2/5.3 Wireless Card Compliant                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Frequency Band</b>                                                                            | 2402 to 2480 MHz                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Number of Available Channels</b>                                                              | Legacy: 0~79 (1 MHz/CH)<br>BLE: 0~39 (2 MHz/CH)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Data Rates and Throughput</b>                                                                 | 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)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Transmit Power</b>                                                                            | The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Power Consumption</b>                                                                         | Peak (Tx): 330 mW<br>Peak (Rx): 230 mW<br>Selective Suspend: 17 mW                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Bluetooth® Software Supported Link Topology</b>                                               | Microsoft Windows Bluetooth Software                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| <b>Power Management</b>                                                                          | Microsoft Windows ACPI, and USB Bus Support                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Certifications</b>                                                                            | FCC (47 CFR) Part 15C/E, Section 15.247, 15.249, 15.407<br>ETSI 300 328, ETSI 301 893, ETSI 303 687                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
| <b>Bluetooth® Profiles Supported</b>                                                             | 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)<br>Bluetooth 5.2<br>ESR9/10 Compliance<br>LE Advertisement Extensions<br>Channel Selection Algo<br>Limited High Duty Cycle Non-Connectable Advertising<br>2Mbps LE<br>LE Long Range<br>Windows Bluetooth profiles support<br>Bluetooth 5.3 |

Technical Specifications – Networking

|  |                                                                             |
|--|-----------------------------------------------------------------------------|
|  | Periodic Advertisement interval<br>Encryption key size control enhancements |
|--|-----------------------------------------------------------------------------|

- 1. Wi-Fi 6E requires a Wi-Fi 6E router, sold separately, to function in the 6GHz band. Availability of public wireless access points limited. Wi-Fi 6E is backwards compatible with prior 802.11 specs. And available in countries where Wi-Fi 6E is supported. Wi-Fi 6E is designed to support gigabit data rate when transferring files between two devices connected to the same router. Requires a wireless router, sold separately, that supports 80MHz and higher channels.
- 2. Check latest software/driver release for updates on supported security features.
- 3. The FCC has declared as of September 1, 2014 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.
- 4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

After-Market Options (availability may vary by region)

### AFTER MARKET OPTIONS

| Type            | Description                                        | Part #  |
|-----------------|----------------------------------------------------|---------|
| Memory          | HP 8GB DDR5-5600 DIMM                              | A9TF0AA |
|                 | HP 16GB DDR5-5600 DIMM                             | A9TF1AA |
|                 | HP 32GB DDR5-5600 DIMM                             | A9TF3AA |
| Storage         | HP PCIe Gen 4 NVME TLC M.2 512GB SSD               | 406L8AA |
|                 | HP PCIe Gen 4 NVME TLC M.2 1TB SSD                 | 406L7AA |
|                 | HP 1TB 7200rpm SATA 6Gb/s 3.5" Hard Drive          | QK555AA |
| Graphics        | AMD Radeon RX 6300 2GB GDDR6 DP+HDMI               | 7Y6P7AA |
| Networking      | Intel I226-T1 2.5GbE Ethernet Network Adapter      | 9P1U8AA |
| Security        | HP Business PC Security Lock V3 Kit                | 3XJ17AA |
|                 | HP Keyed Cable Lock 10mm kit                       | T1A62AA |
|                 | HP Master Keyed Cable Lock 10mm                    | T1A63AA |
|                 | HP Combination Standard Cable Lock                 | T0Y15AA |
|                 | HP Essential Combination Lock                      | T0Y16AA |
| Cables/Adapters | HP HDMI Standard Cable Kit                         | T6F94AA |
|                 | HP USB to Serial Port Adapter                      | J7B60AA |
|                 | HP PCIe x1 Parallel Port Card                      | N1M40AA |
| Input           | HP Business Slim v2 Smart Card USB Keyboard        | A71J9AA |
|                 | HP 125 G2 Wired Keyboard                           | AY2Y7AA |
|                 | HP 125 Wired Mouse                                 | 265A9AA |
|                 | HP 128 Laser Wired Mouse                           | 265D9AA |
|                 | HP Wired Desktop 320M Mouse                        | 9VA80AA |
|                 | HP 320K G2 Wired Keyboard                          | 9SR37UT |
|                 | HP Wired Desktop 320MK G2 Mouse and Keyboard Combo | 9SR36UT |
|                 | HP 655 Wireless Keyboard and Mouse Combo G2        | 4R009UT |
|                 | HP 405 Multi-Device Wired Backlit Keyboard         | 7N7C1AA |
|                 | HP 455 G2 Programmable WRLS USB Keyboard           | B08ZDAA |
|                 | HP 475 Dual-Mode Wireless Keyboard                 | 7N7B9AA |
| Others          | HP S101 Speaker bar                                | 5UU40AA |
|                 | HP Z G3 Conferencing Speaker Bar wStand            | 647Y2AA |

### Change Log

© Copyright 2026 HP Development Company, L.P.

The information contained herein is subject to change without notice. The only warranties for HP products are set forth in the express limited warranty statements accompanying such products. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Microsoft and Windows are registered trademarks or trademarks of Microsoft Corporation in the U.S. and/or other countries. Intel, Celeron®, Core, Pentium are registered trademarks or trademarks of Intel Corporation in the U.S. and/or other countries. Bluetooth® is a trademark of its proprietor, used by HP Inc. under license. NVIDIA, GeForce, Kepler and NVS are trademarks and/or registered trademarks of NVIDIA Corporation in the U.S. and other countries. AMD and Radeon are trademarks of Advanced Micro Devices, Inc.

DisplayPort™ and the DisplayPort™ logo are trademarks owned by the Video Electronics Standards Association (VESA®) in the United States and other countries.

Wi-Fi® is a registered trademark of Wi-Fi Alliance®.

| Date of change:    | Version History: |            | Description of change:                                                                                                         |
|--------------------|------------------|------------|--------------------------------------------------------------------------------------------------------------------------------|
| January 17, 2025   | From v1 to v2    | Correction | DDR4 corrected to DDR5 in Memory section                                                                                       |
| January 21, 2025   | From v2 to v3    | Removal    | NECC word removed from Memory section                                                                                          |
| March 28, 2025     | From v3 to v4    | Correction | Maximum of displays changed to 2 in DisplayPort in Graphics section                                                            |
| April 15, 2025     | From v4 to v5    | Correction | Internal Speaker values corrected to none.                                                                                     |
| June 12, 2025      | From v5 to v6    | Addition   | TCO Certification added to Environmental table                                                                                 |
| July 10, 2025      | From v6 to v7    | Correction | High-definition audio table values corrected                                                                                   |
| July 24, 2025      | From v7 to v8    | Correction | All M.2 2280 PCIe NVMe SSD's interface and speed based corrected to PCIe Gen4x4 and minimum sequential read/write respectively |
| October 15, 2025   | From v8 to v9    | Addition   | BIOS added to Software section                                                                                                 |
| November 13, 2025  | From v9 to v10   | Addition   | Footnotes 2 and 3 added to front call outs section                                                                             |
| December 9, 2025   | From v10 to v11  | Update     | BIOS in SW section updated                                                                                                     |
| February 11, 2026  | From v11 to v12  | Addition   | Memory cards added                                                                                                             |
| September 11, 2026 | From v12 to v13  | Addition   | Note to graphics section added                                                                                                 |
|                    |                  |            |                                                                                                                                |
|                    |                  |            |                                                                                                                                |