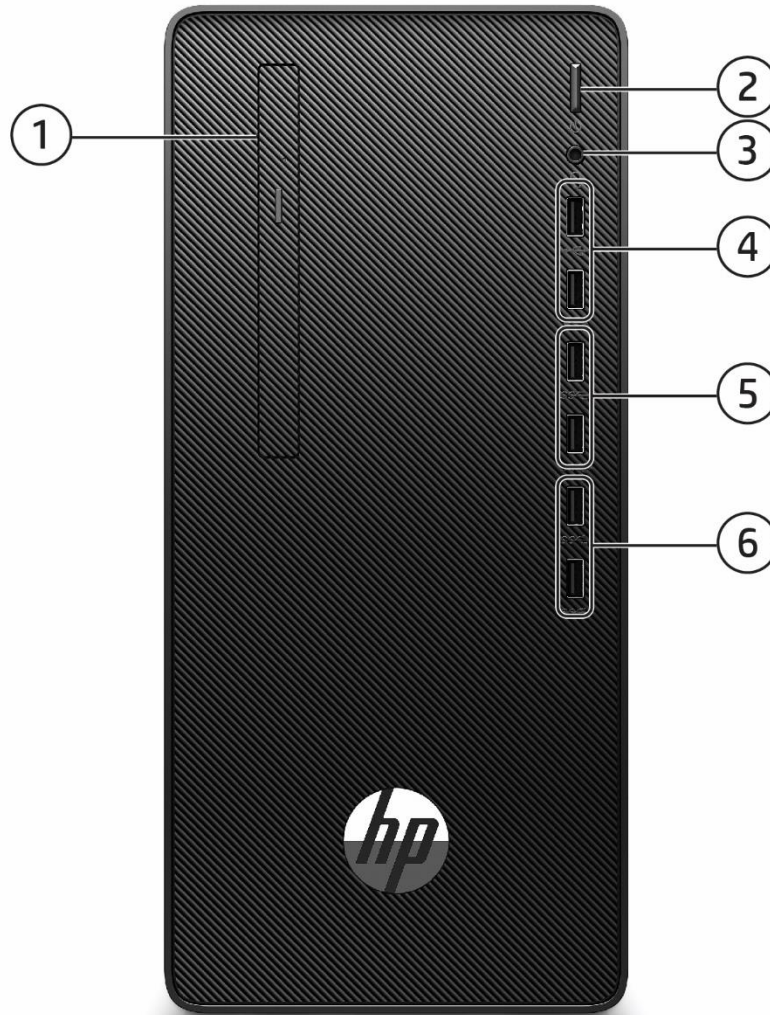


### Overview

#### HP 295 G8 Microtower PC



#### Front

1. Slim-height Bay - supporting an optical disk drive (optional)
2. Power Button
3. Combo jack, Headphone/ Microphone
4. (2) USB 2.0
5. (2) SuperSpeed USB 5 Gbps signaling rate port<sup>1</sup>
6. (2) SuperSpeed USB 10 Gbps signaling rate port<sup>1</sup>

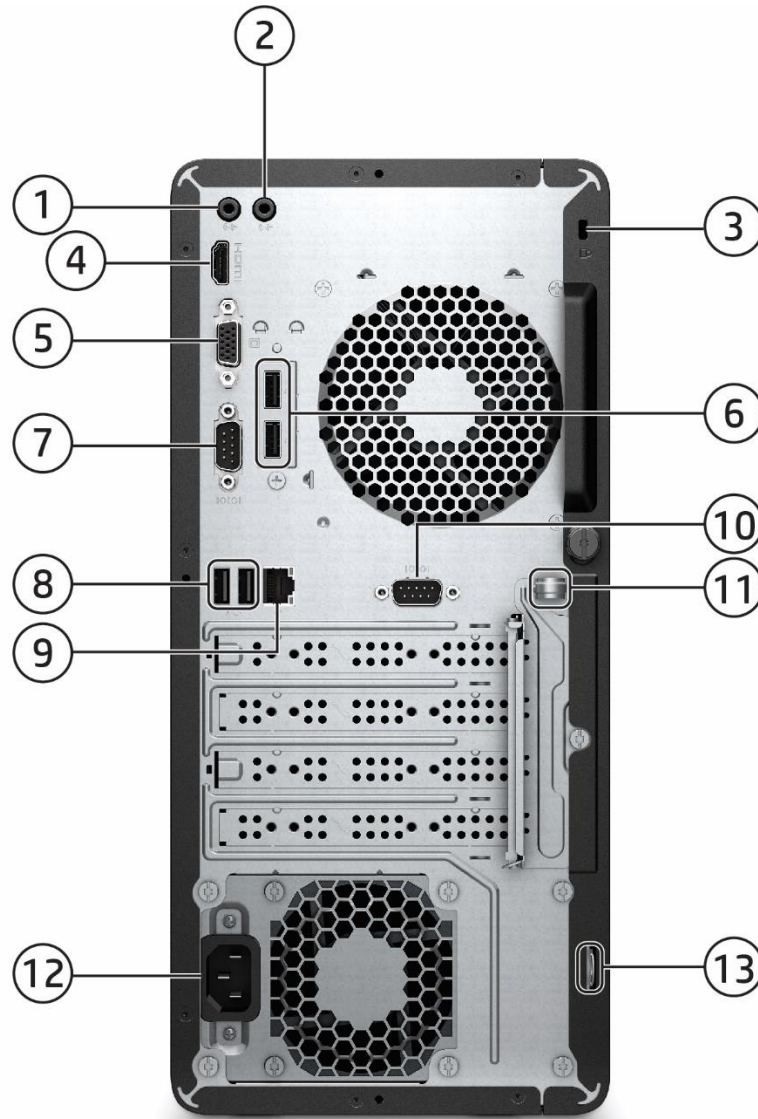
#### Not Shown

- (1) PCI Express x16
- (1) PCI x1
- (1) PCI Express x1
- (1) M.2 for WLAN
- (1) M.2 2280 storage
- (1) 3.5" or 2.5" internal HDD bay
- (1) 3.5" or 2.5" internal HDD bay (share bay with caddy)
- (1) 9.5mm internal optical drive bay

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

### Overview

### HP 295 G8 Microtower PC



#### Rear

- |  |  |
|--|--|
| 1. Audio Line out                        | 7. Serial Port                             |
| 2. Audio Line in                         | 8. Connector (2) SuperSpeed USB 5 Gbps     |
| 3. Standard lock slot                    | 9. RJ-45 Network Connector                 |
| 4. HDMI Port                             | 10. 2 <sup>nd</sup> Serial Port (Optional) |
| 5. VGA Port                              | 11. Integrated accessories cable lock      |
| 6. Connector (2) USB 2.0 port (Optional) | 12. Power Cord Connector                   |
|  | 13. Padlock Loop                           |

#### Not Shown

- |   |  |
|---|--|
| (1) Parallel Port (Optional via PCIe1 slot) | (1) 4 Serial Port PCIe Card (Optional via PCIe1 slot)* |
| (1) PS/2 Ports (Optional)                   | (1) Internal Speaker (Optional)                        |
| (1) Intrusion Sensor (Optional)             |  |

**\*NOTE:** Only available on selected models.

### Standard Features and Configurable Modules

#### AT A GLANCE

- Windows 10 Pro, Windows 10 Home or FreeDos 2.0
- AMD PRO565 Chipset, latest AMD® Ryzen™ PRO, AMD® Ryzen™, and Athlon PRO processors with AMD Integrated Radeon™ Vega Graphics
- Supports an optional discrete graphics card
- Integrated 10/100/1000 Ethernet Controller or Realtek ac 1x1+BT 4.2 LE with 1 Antenna
- Up to 64GB DDR4- 3200 Unbuffered Memory (UDIMM)<sup>1</sup>
- Independent monitor support via VGA/HDMI interfaces
- Supports both Hard Disk Drives and / M.2 PCIe NVMe Solid State Drives
- Up to 10 USB ports (including native 2 USB 2.0, 2 SuperSpeed USB 5Gbps signaling rate ports and 2 SuperSpeed USB 10Gbps signaling rate ports at front, and native 2 SuperSpeed USB 5Gbps signaling rate ports at rear and optional 2 USB 2.0 at rear)<sup>2</sup>
- Adding 180W/310W/500W 90% HE power supply
- Security cable lock supported (sold separately)
- Integrated accessory cable lock helps secure cabled mouse, keyboard and accessories
- Intrusion sensor supported (Optional)
- Optional HP Care Service available; terms and conditions vary by country; certain restrictions and exclusions apply<sup>3</sup>
- AMD Firmware TPM solution<sup>4</sup>

1. Memory modules support data transfer rates up to 3200 MT/s; actual data rate is determined by the system's configured processor. See processor specifications for supported memory data rate.

2. SuperSpeed USB 10Gbps signaling rate = USB 3.2 Gen2. SuperSpeed USB 5Gbps signaling rate= USB 3.2 Gen1

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

4. TPM feature will be supported on machine pre-configured with FreeDOS, and will be default set as enabled in BIOS setup menu if the machine is dTPM, but will be default set as disabled in BIOS setup menu if the machine is fTPM.

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

### Standard Features and Configurable Modules

#### PRODUCT NAME

HP 295 G8 Microtower PC

#### OPERATING SYSTEM

|                              |  |
|------------------------------|--|
| <b>Preinstalled</b>          | Windows 11 Pro <sup>1</sup><br>Windows 11 Home - HP recommends Windows 11 Pro for business <sup>1</sup><br>Windows 10 Pro <sup>1,2</sup><br>Windows 10 Home - HP recommends Windows 11 Pro for business <sup>1,2</sup> |
| <b>Pre-installed (other)</b> | FreeDOS  |

1. Device comes with Windows 10 and a free Windows 11 upgrade or may be preloaded with Windows 11. Upgrade timing may vary by device. Features and app availability may vary by region. Certain features require specific hardware (see Windows 11 Specifications).

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

See <http://www.windows.com>.

#### PROCESSORS<sup>2</sup>

##### AMD® Ryzen™ 5000 Series Processors

AMD Ryzen™ 7 PRO 5750G Processor (16MB cache, 4.6GHz Boost<sup>3</sup>), 65W

AMD Ryzen™ 5 PRO 5650G Processor (16MB cache, 4.4GHz Boost<sup>3</sup>), 65W

AMD Ryzen™ 3 PRO 5350G Processor (8MB cache, 4.2GHz Boost<sup>3</sup>), 65W

AMD Ryzen™ 7 5700G Processor (16MB cache, 4.6 Boost<sup>3</sup>), 65W

AMD Ryzen™ 5 5600G Processor (16MB cache, 4.4GHz Boost<sup>3</sup>), 65W

AMD Ryzen™ 3 5300G Processor (8MB cache, 4.2GHz Boost<sup>3</sup>), 65W

2. Multi-core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. AMD's numbering is not a measurement of clock speed.

3. AMD Max Boost frequency performance varies depending on hardware, software and overall system configuration.

#### CHIPSET

AMD PRO565

### Standard Features and Configurable Modules

#### GRAPHICS<sup>4</sup>

**Integrated**

AMD Integrated Radeon™ Vega Graphics

**Discrete Graphics<sup>5</sup>**

AMD Radeon™ RX550X 4GB DP+HDMI GFX

AMD Radeon™ R7 430 2GB DP+VGA GFX

AMD Radeon™ 520 1GB DP+VGA GFX

GFX Nvidia® GeForce® GTX1660 Super 6GB

4. HD content required to view HD images.

5. Sold separately or as an optional feature.

#### MEMORY<sup>6</sup>

**Type**

DDR4 3200 (Transfer rates up to 3200 MT/s)

**Maximum**

64GB capacity

**# of Slots**

2 DIMM

4GB DDR4-3200 UDIMM NECC (1x4GB)

8GB DDR4-3200 UDIMM NECC (1x8GB)

8GB DDR4-3200 UDIMM NECC (2x4GB)

16GB DDR4-3200 UDIMM NECC (1x16GB)

16GB DDR4-3200 UDIMM NECC (2x8GB)

32GB DDR4-3200 UDIMM NECC (2x16GB)

64GB DDR4-3200 UDIMM NECC (2x32GB)

6. Running at 3200 MT/s when configure w/ Renoir 4000 -series APU.

### Standard Features and Configurable Modules

#### STORAGE<sup>7</sup>

##### **SATA3 - 3.5" or 2.5" HDDs**

2TB 7200 RPM SATA Hard Disk Drive  
1TB 7200 RPM SATA Hard Disk Drive  
500GB 7200 RPM SATA Hard Disk Drive

##### **M.2 Solid State Drives**

128 GB M.2 2280 PCIe NVMe SSD  
256 GB M.2 2280 PCIe NVMe SSD  
512 GB M.2 2280 PCIe NVMe SSD

7. For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software. Storage DriveLock does not work with Self Encrypting or Optane based storage.

---

#### OPTICAL DISK DRIVES<sup>8</sup>

DVD-ROM 9.5mm  
DVD-Writer 9.5mm

8. Optical drives are optional or add on features. Duplication of copyrighted material is strictly prohibited. Actual speeds may vary. Double Layer media compatibility will widely vary with some home DVD players and DVD-ROM drives.

---

#### NETWORKING/COMMUNICATIONS

##### **Networking**

Integrated 10/100/1000M GbE LAN

##### **Wi-Fi<sup>®</sup> and Bluetooth<sup>®</sup>**

802.11 ac (1x1) Wi-Fi<sup>®</sup> and Bluetooth<sup>®</sup> 4.2 Combo<sup>9</sup>

9. 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.

---

#### AUDIO/MULTIMEDIA

Realtek ALC3601  
Combo Jack, Headphone/ Microphone  
Line-in/Line-out (3.5mm)  
Support 2W Internal speaker

---

### Standard Features and Configurable Modules

#### KEYBOARDS/POINTING DEVICES<sup>10</sup>

##### Keyboards

- HP PS/2 Business Slim Keyboard
- HP 125 Wired Keyboard
- HP Wired Desktop 320K Keyboard
- HP 225 Antimicrobial Wired Keyboard

##### Mouse

- HP PS/2 mouse
- HP USB wired optical mouse
- HP 128 Laser Wired Mouse
- HP 125 Wired Mouse
- HP 225 Antimicrobial Wired Mouse

10. Keyboards and mouse are optional or add-on features.

#### PORTS/SLOTS

##### Front

- (1) Combo jack (Headphone/Microphone)
- (2) USB 2.0
- (2) SuperSpeed USB 5Gbps signaling rate port<sup>11</sup>
- (2) SuperSpeed USB 10Gbps signaling rate port<sup>11</sup>

##### Not Shown

- (2) DIMM
- (1) PCIEX16
- (1) PCIEX1
- (1) PCI
- (1) SATA-ODD
- (2) SATA-HDD (2X3.5", could support dual 2.5 drive caddy)
- (1) M.2- PCIE SSD
- (1) M.2 -WLAN

##### Rear

- (1) Audio Line out
- (1) Audio Line in
- (1) HDMI Port
- (1) VGA Port
- (1) Serial Port
- (2) USB 2.0 Port(optional)
- (1) RJ-45
- (2) USB 3.2 Gen1

##### Not Shown

- (2) PS/2 Port (Optional)
- (1) Parallel Port (Optional via PCIe1 slot)
- (1) 4x Serial port (Optional via PCIe1 slot)
- (1) Internal Speaker (Optional)
- (1) Intrusion Sensor (Optional)

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

### Standard Features and Configurable Modules

#### **BAYS**

- (1) 9.5mm external slimline ODD bay
  - (1) 3.5" internal HDD bay
  - (1) 3.5 or 2.5" internal HDD bay (share bay)
-



### Standard Features and Configurable Modules

#### SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS

**Security and Protection**

McAfee\* LiveSafe™<sup>12</sup>

**Productivity**

Buy Office (sold separately)

Dropbox<sup>13</sup>

Xerox® DocuShare® (30 day free trial offer)<sup>14</sup>

**ODD Playback**

sMedio True DVD for HP

**Movies**

Netflix

**App Stores and Content Purchasing**

Amazon<sup>15</sup>

**HP Utilities and Support**

HP Documentation

HP JumpStart

HP Audio Switch

HP Support Assistant

**BTB**

HP Setup Integrated OOBE

**Hardware Enabling Drivers or software utility**

HP System Event Utility

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

13. New Dropbox users are eligible to get 25 GB of Dropbox space free for 12 months from date of registration. For complete details and terms of use, including cancellation policies, visit the Dropbox website at <https://www.dropbox.com/help/space/hp-promotion>. Internet service required and not included.

14. Simply sign up and start using Xerox® DocuShare® Go. No credit card. No obligation. Data will become unavailable unless a subscription is entered before the end of the 30 day free trial period. See visit <http://www.xerox.com/docusharego> for details.

15. Internet access required and not included. Apps sold separately.

**\*NOTE:** Available for LA region only.

### Standard Features and Configurable Modules

#### POWER

##### Power Supply

###### 180 W

EStar Libra2 EPA90 (Gold) Full range 115V/230V

###### 310 W

310W MT Sirius2 ENTL EPA90 (Gold) Full range 115V/230V

###### 500 W

500W MT EPA90 FR 115V/230V

#### DIMENSIONS & WEIGHT

(configured with 1 HDD and 1 ODD)

##### Chassis (H x W x D)

13.3 x 6.12 x 11.7 in (337.4 x 155.4 x 297.2 mm)

##### System Weight

12.17 lbs / 5.52 kg

##### Packaging dimensions and weight

##### Dimensions

11.30 x 15.75 x 19.65 in

287 x400 x499 mm

##### Weight

20.06 lb / 9.10 kg

##### Security Features

TPM 2.0 support (fTPM)<sup>16</sup>

Security cable slot

16. TPM feature will not be supported on machines pre-configured with FreeDOS. In selected countries, machines pre-configured with Windows OS will be shipped with TPM disabled.

### Standard Features and Configurable Modules

#### UNIT ENVIRONMENT AND OPERATING CONDITIONS

##### General Unit Operating Guidelines

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

|                                  |  |
|----------------------------------|--|
| Temperature Range                | Operating: 5° to 35° C <sup>17</sup><br>Non-operating: -30° to 60° C <sup>18</sup>                       |
| Relative Humidity                | Operating: 5% to 90% (non-condensing at ambient)<br>Non-operating: 5% to 90% (non-condensing at ambient) |
| Maximum Altitude (unpressurized) | Operating: 5000 m<br>Non-operating: 50000ft (15240 m)  |

17. 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.

|  |   |                     |                     |
|--|---|---------------------|---------------------|
| <b>Eco-Label Certifications &amp; declarations</b>                         | <p>This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:</p> <ul style="list-style-type: none"> <li>• IT ECO declaration</li> <li>• US ENERGY STAR®</li> <li>• EPEAT® 2019 registered where applicable. EPEAT® registration varies by country. See <a href="http://www.epeat.net">http://www.epeat.net</a> for registration status by country. 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>.</li> </ul> <p>*Based on EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. Status varies by country. Visit <a href="http://www.epeat.net">http://www.epeat.net</a> for more information.</p> |                     |                     |
| <b>Sustainable Impact Specifications</b>                                   | <ul style="list-style-type: none"> <li>• 80 Plus® Gold power supplies available</li> <li>• 15% post-consumer recycled plastic<sup>1</sup></li> </ul> <p>1. Recycled plastic content percentage is based on the definition set in the IEEE 1680.1-2018 standard.</p>   |                     |                     |
| <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> |

### Standard Features and Configurable Modules

|  |   |                     |   |
|--|---|---------------------|---|
| Normal Operation (Short idle)  | 11.68 W   | 12.29 W             | 12.02 W   |
| Normal Operation (Long idle)   | 10.55 W   | 10.46 W             | 10.91 W   |
| Sleep  | 1.10 W  | 1.07 W              | 1.10 W  |
| Off  | 0.33 W  | 0.35 W              | 0.33 W  |
|  | <p><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.</p> |                     |   |
| <b>Heat Dissipation*</b>   | <b>115VAC, 60Hz</b>   | <b>230VAC, 50Hz</b> | <b>100VAC, 50Hz</b>                               |
| Normal Operation (Short idle)  | 40 BTU/hr   | 40 BTU/hr           | 40 BTU/hr   |
| Normal Operation (Long idle)   | 36 BTU/hr   | 35 BTU/hr           | 38 BTU/hr   |
| Sleep  | 4 BTU/hr  | 4 BTU/hr            | 4 BTU/hr  |
| Off  | 1 BTU/hr  | 1 BTU/hr            | 1 BTU/hr  |
|  | <p><b>NOTE:</b> Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.</p>  |                     |   |
| <b>Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)</b> | <b>Sound Power (L<sub>WAd</sub>, bels)</b>  |                     | <b>Sound Pressure (L<sub>pAm</sub>, decibels)</b> |
| Typically Configured – Idle  | 3.1   |                     | 23  |
| Fixed Disk – Random writes   | 4.8   |                     | 42  |
| Longevity and Upgrading  | <p>This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include:</p> <p>Spare parts are available throughout the warranty period and or for up to “3” years after the end of production.</p>  |                     |   |
| Batteries  | <p>This battery(s) in this product comply with EU Directive 2006/66/EC</p> <p>Batteries used in the product do not contain:<br/>           Mercury greater the 1ppm by weight<br/>           Cadmium greater than 20ppm by weight</p>   |                     |   |

### Standard Features and Configurable Modules

|                               |  |   |        |
|-------------------------------|--|---|--------|
|                               | <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">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/Paperboard                        | 1220 g |
|                               | <b>Internal:</b>   | PAPER/Molded Pulp                       | 520 g  |
|                               |  | PLASTIC/Polyethylene low density - LDPE | 53 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> |   |        |
| <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>  |   |        |

### Standard Features and Configurable Modules

|  |   |
|--|---|
| <p><b>End-of-life Management and Recycling</b></p> | <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></p> <p>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:** One-year (1-1-1) limited warranty delivers, next business day service for parts and labor and includes free support 24 x 7. One-year onsite and labor are not available in all countries. Service offers terms up to 3 years by choosing an optional HP Care Pack. To choose the right level of service for your HP product, visit HP Care Pack Central: <http://www.hp.com/go/cpc>.

**NOTE 1:** Terms and conditions may vary by country. Certain restrictions and exclusions apply. Other warranty variations may be offered in your region.

**NOTE 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.

**NOTE 3:** Technical support applies only to HP-configured and third-party HP qualified hardware and software. 24 x 7 support may not be available in some countries.

**NOTE 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 [www.hp.com/go/cpc](http://www.hp.com/go/cpc). HP Services are governed by the applicable HP terms and conditions of service provided or indicated to Customer at the time of purchase. Customer may have additional statutory rights according to applicable local laws, and such rights are not in any way affected by the HP terms and conditions of service or the HP Limited Warranty provided with your HP Product.

### Technical Specifications - Graphics

#### GRAPHICS

##### AMD® Radeon™ Graphics

|                                   |   |
|-----------------------------------|---|
| <b>Graphics Controller</b>        | Integrated  |
| <b>DisplayPort™</b>               | Multimode capable; supports HDCP, DisplayPort™ Audio (2 streams), HBR2 link rates and Multi-Stream Technology for a maximum of 3 displays connected to any output controlled by AMD® Graphics |
| <b>HDMI</b>                       | Supports HDMI 2.0a features<br>Supports HDCP 2.3<br>Supports audio over HDMI  |
| <b>VGA</b>                        | VGA output  |
| <b>Memory</b>                     | The actual amount of maximum graphics memory can be >4GB. System memory is allocated for graphics as needed, to provide an optimal balance between graphics and system memory use.            |
| <b>Maximum Color Depth</b>        | up to 10 bits/color   |
| <b>Graphics/Video API Support</b> | VP9 10b Dec HW<br>HDR<br>Rec. 2020<br>DX12  |
| <b>Max. Resolution (VGA)</b>      | 2048 x 1536@60Hz  |
| <b>Max. Resolution (HDMI)</b>     | 4096 x 2160@60Hz  |
| <b>Max. Resolution (DP)</b>       | 4096 x 2160@60Hz  |

##### AMD® Radeon™ RX 550X 4 GB FH 2DP+HDMI

|                                      |   |
|--------------------------------------|---|
| <b>Engine Clock</b>                  | 1183MHz   |
| <b>Memory Clock</b>                  | 6 Gbps  |
| <b>Memory Size (width)</b>           | 4 GB (128-bit)                                      |
| <b>Memory Type</b>                   | GDDR5   |
| <b>Max. Resolution (HDMI)</b>        | 4096x2160 @ 60Hz                                    |
| <b>Max. Resolution (DP)</b>          | 5120x2880 @ 60Hz                                    |
| <b>Multi Display Support</b>         | 2 displays  |
| <b>HDCP Compliance</b>               | Yes   |
| <b>Rear I/O connectors (bracket)</b> | HDMI, DP  |
| <b>Cooling (active/passive)</b>      | Active fan-sink (Active cooling with dynamic speed) |
| <b>Total power consumption (W)</b>   | <50W  |
| <b>PCB form-factor with bracket</b>  | LP (low profile) PCB with FH/LP bracket             |

##### AMD® Radeon™ R7 430 2GB VGA+DP 64bit Graphics Card

|                                      |                 |
|--------------------------------------|-----------------|
| <b>Engine Clock</b>                  | 780 MHz         |
| <b>Memory Clock</b>                  | 1100 MHz        |
| <b>Memory Size (width)</b>           | 2 GB (64-bit)   |
| <b>Memory Type</b>                   | 256M x 32 GDDR5 |
| <b>Max. Resolution (HDMI)</b>        | 2048x1536       |
| <b>Max. Resolution (DP)</b>          | 4096x2160@60Hz  |
| <b>Multi Display Support</b>         | 2 displays      |
| <b>HDCP Compliance</b>               | Yes             |
| <b>Rear I/O connectors (bracket)</b> | VGA+DP          |

### Technical Specifications - Graphics

|                                     |   |
|-------------------------------------|---|
| <b>Cooling (active/passive)</b>     | Active fan-sink (Active cooling with dynamic speed) |
| <b>Total power consumption (W)</b>  | <50W  |
| <b>PCB form-factor with bracket</b> | LP PCB with FH/LP bracket                           |

### **NVIDIA® GeForce® GTX 1660 Super 6GB Graphics Card**

|                                      |   |
|--------------------------------------|---|
| <b>Engine Clock</b>                  | 1785 MHz  |
| <b>Memory Clock</b>                  | 7000 MHz  |
| <b>Memory Size (width)</b>           | 6GB (192-bit)                                       |
| <b>Memory Type</b>                   | 256M x 32 GDDR6 @6pcs                               |
| <b>Max. Resolution (DVI)</b>         | 7680x4320@120Hz                                     |
| <b>Max. Resolution (DP)</b>          | 7680x4320@120Hz                                     |
| <b>Multi Display Support</b>         | 3 displays  |
| <b>HDCP Compliance</b>               | Yes   |
| <b>Rear I/O connectors (bracket)</b> | DVI-D+DP+HDMI                                       |
| <b>Cooling (active/passive)</b>      | Active fan-sink (Active cooling with dynamic speed) |
| <b>Total power consumption (W)</b>   | <125W   |
| <b>PCB form-factor with bracket</b>  | FH PCB with FH bracket                              |



### Technical Specifications - Storage

#### STORAGE\*

|  |  |   |
|--|--|---|
| <b>2 TB 7.2K rpm SATA 6.0Gb/s 3.5" Hard Disk Drive</b>   | <b>Capacity</b>  | 2 TB  |
|  | <b>Rotational Speed</b>  | 7,200 rpm   |
|  | <b>Interface</b>   | SATA 6.0 Gb/s   |
|  | <b>Cache, Multi-segmented (MB)</b>   | 64 MB   |
|  | <b>Height</b>  | 1.028 in/26.11 mm   |
|  | <b>Width</b>   | 4.0 in/101.6 mm   |
|  | <b>Depth</b>   | 5.787 in/146.99 mm  |
|  | <b>Weight</b>  | 1.38 lb/626 g   |
|  | <b>Operating Temperature</b>   | 41° to 131° F (5° to 55° C)                                   |
| <b>1 TB 7.2K rpm SATA 6.0Gb/s 3.5" Hard Disk Drive</b>   | <b>Capacity</b>  | 1 TB  |
|  | <b>Rotational Speed</b>  | 7,200 rpm   |
|  | <b>Interface</b>   | SATA 6.0 Gb/s   |
|  | <b>Buffer Size</b>   | 32 MB   |
|  | <b>Logical Blocks</b>  | 1,953,525,168   |
|  | <b>Seek Time (typical reads, includes controller overhead, including settling)</b> | Single Track: 2.0 ms<br>Average: 11 ms<br>Full-Stroke: 21 ms  |
|  | <b>Height</b>  | 1 in/2.54 cm  |
|  | <b>Width (nominal)</b>   | Media diameter: 3.5 in/8.89 cm<br>Physical size: 4 in/10.2 cm |
|  | <b>Operating Temperature</b>   | 41° to 131° F (5° to 55° C)                                   |
| <b>500 GB 7.2K rpm SATA 6.0Gb/s 3.5" Hard Disk Drive</b> | <b>Capacity</b>  | 500 GB  |
|  | <b>Rotational Speed</b>  | 7,200 rpm   |
|  | <b>Drive Type</b>  | Serial ATA 3.0 (6.0 Gb/s)                                     |
|  | <b>Interface</b>   | 32 MB   |
|  | <b>Buffer Size</b>   | 976,773,168   |
|  | <b>Seek Time</b>   | Single Track: 2.0 ms<br>Average: 11 ms<br>Full-Stroke: 21 ms  |
|  | <b>Height (nominal)</b>  | 1 in/2.54 cm  |
|  | <b>Width</b>   | Media diameter: 3.5 in/8.89 cm<br>Physical size: 4 in/10.2 cm |
|  | <b>Operating Temperature</b>   | 41° to 131° F (5° to 55° C)                                   |

### Technical Specifications - Storage

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

|                                 |  |
|---------------------------------|--|
| <b>Drive Weight</b>             | < 10g                                    |
| <b>Capacity</b>                 | 128GB                                    |
| <b>Height</b>                   | 2.38mm                                   |
| <b>Length</b>                   | 80mm                                     |
| <b>Width</b>                    | 22mm                                     |
| <b>Interface</b>                | PCIe Gen3x4                              |
| <b>Maximum Sequential Read</b>  | Up to 2800MB/s                           |
| <b>Maximum Sequential Write</b> | Up to 600MB/s                            |
| <b>Logical Blocks</b>           | 250,069,680                              |
| <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           |

#### 256 GB M.2 2280 PCIe NVMe Three Layer Cell 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 Gen3x4                              |
| <b>Maximum Sequential Read</b>  | Up to 2700MB/s                           |
| <b>Maximum Sequential Write</b> | Up to 1000MB/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           |

#### 512 GB M.2 2280 PCIe NVMe Three Layer Cell 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 Gen3x4                              |
| <b>Maximum Sequential Read</b>  | Up to 2900MB/s                           |
| <b>Maximum Sequential Write</b> | Up to 1100MB/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           |

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

|                                 |                |
|---------------------------------|----------------|
| <b>Drive Weight</b>             | < 10g          |
| <b>Capacity</b>                 | 256 GB         |
| <b>Height</b>                   | 2.38mm         |
| <b>Length</b>                   | 80mm           |
| <b>Width</b>                    | 22mm           |
| <b>Interface</b>                | PCIe Gen3      |
| <b>Maximum Sequential Read</b>  | Up to 1600MB/s |
| <b>Maximum Sequential Write</b> | Up to 780MB/s  |

### Technical Specifications - Storage

|                              |  |
|------------------------------|--|
| <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           |

|                                      |                                 |  |
|--------------------------------------|---------------------------------|--|
| <b>512 GB M.2 2280 PCIe NVMe SSD</b> | <b>Drive Weight</b>             | < 10g                                    |
|                                      | <b>Capacity</b>                 | 512 GB                                   |
|                                      | <b>Height</b>                   | 2.38mm                                   |
|                                      | <b>Length</b>                   | 80mm                                     |
|                                      | <b>Width</b>                    | 22mm                                     |
|                                      | <b>Interface</b>                | PCIe Gen3                                |
|                                      | <b>Maximum Sequential Read</b>  | Up to 1600MB/s                           |
|                                      | <b>Maximum 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  |  |

|                                      |                              |                             |
|--------------------------------------|------------------------------|-----------------------------|
| <b>500 GB 7200RPM 2.5in SATA HDD</b> | <b>Capacity</b>              | 500 GB                      |
|                                      | <b>Rotational Speed</b>      | 7,200 rpm                   |
|                                      | <b>Interface</b>             | SATA 6 Gb/s                 |
|                                      | <b>Buffer Size</b>           | 32 MB                       |
|                                      | <b>Logical Blocks</b>        | 976,773,168                 |
|                                      | <b>Seek Time</b>             | 12 ms (Average)             |
|                                      | <b>Height</b>                | 0.267 in/6.8 mm (nominal)   |
|                                      | <b>Width (nominal)</b>       | 2.75 in/70 mm (nominal)     |
|                                      | <b>Operating Temperature</b> | 41° to 131° F (5° to 55° C) |

|                                   |                              |                             |
|-----------------------------------|------------------------------|-----------------------------|
| <b>1TB 7200RPM 2.5in SATA HDD</b> | <b>Capacity</b>              | 1 TB                        |
|                                   | <b>Rotational Speed</b>      | 7,200 rpm                   |
|                                   | <b>Interface</b>             | SATA 6 Gb/s                 |
|                                   | <b>Buffer Size</b>           | 32 MB                       |
|                                   | <b>Logical Blocks</b>        | 1,953,525,168               |
|                                   | <b>Seek Time</b>             | 12 ms (Average)             |
|                                   | <b>Height</b>                | 0.374 in/9.5 mm (nominal)   |
|                                   | <b>Width (nominal)</b>       | 2.75 in/70 mm (nominal)     |
|                                   | <b>Operating Temperature</b> | 41° to 131° F (5° to 55° C) |

**NOTE\*:** For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30GB of disk is reserved for system recovery software.

### Technical Specifications - Storage

#### OPTICAL DISC DRIVES

|  |  |   |
|--|--|---|
| <b>HP 9.5mm Desktop G2 Slim DVD Writer Drive</b> | <b>Height</b>  | 9.5 mm height   |
|  | <b>Orientation</b>   | Either horizontal or vertical   |
|  | <b>Interface type</b>  | SATA/ATAPI  |
|  | <b>Disc recording capacity</b>                               | Up to 8.5 GB DL or 4.7 GB standard  |
|  | <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>  | 0.31 lb (140 g)   |
|  | <b>Read 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<br>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 (typical reads, including 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)  |
|  | <b>Power</b>   | 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)  |
|  | <b>Environmental conditions (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)   |

|   |                               |  |
|---|-------------------------------|--|
| <b>HP 9.5mm Desktop G2 Slim DVD-ROM Drive</b> | <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 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<br>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 |

### Technical Specifications - Storage

|   |  |
|---|--|
|   | 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-<br/>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)                                      |

**NOTE:** For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software. Storage DriveLock does not work with Self Encrypting or Optane based storage.

### Technical Specifications - Audio

#### HIGH DEFINITION AUDIO

|                                   |   |
|-----------------------------------|---|
| <b>Type</b>                       | Integrated  |
| <b>HD Stereo Codec</b>            | Realtek ALC3601   |
| <b>Audio I/O Ports</b>            | <p>Front<br/>           Combo jack, Headphone/ Microphone (Headphone-out 0.5 Ohm Output Impedance, expects at least a 32 ohm load, Microphone-in 150-K ohm Input Impedance)</p> <p>Rear<br/>           Line-out (190 ohms Output Impedance, expects at least a 10-K ohm load).<br/>           Mic-in (150-K ohm Input Impedance)<br/>           Line-in (Input the audio signal to system via the loopback cable)</p> <p>When plug in all rear side jacks, can switch the function to 5.1 ch via audio GUI.</p> |
| <b>Internal Speaker Amplifier</b> | Codec embeded amp for supporting 2W mono speaker.   |
| <b>Multi-streaming Capable</b>    | Multi-streaming can be enabled in the Realtek control panel to allow independent audio streams to be sent to/from the front and rear jacks.   |
| <b>Sampling</b>                   | Independent sampling rates for DAC's and ADC's; supports resolutions from 16 to 24-bit, 44.1K/ 48 K/96K / 192K Hz for DAC and 16 bit, 44.1K/ 48K/ 96K/ 192K Hz for ADC  |
| <b>Wavetable Syntheses</b>        | Yes   |
| <b>Analog Audio</b>               | Yes   |
| <b># of Channels on Line-Out</b>  | Stereo (Left channel / Right channel)   |
| <b>Internal Speaker</b>           | Yes   |
| <b>External Speaker Jack</b>      | 2W class D mono amplifier for the internal speaker only. External speakers must be powered externally.  |

### Technical Specifications - Networking

#### NETWORKING

|                                       |                               |  |
|---------------------------------------|-------------------------------|--|
| <b>Integrated<br/>10/100/1000 NIC</b> | <b>Ethernet Features</b>      | 10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 802.3 clauses 40) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s            |
|                                       | <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); 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>Interface</b>              | PCIe + SMBus   |
|                                       | <b>NIC Device Driver Name</b> | PCIe GBE Ethernet Family Controller  |

#### Realtek 802.11ac (1x1) WiFi and Bluetooth® 4.2 Combo\*

|   |   |
|---|---|
| <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 |
|---|---|

1. Wireless access point and Internet service required and not included. Availability of public wireless access points limited. Wi-Fi 5 (802.11 ac) is backwards compatible with prior 802.11 specs.

|                         |                  |
|-------------------------|------------------|
| <b>Interoperability</b> | Wi-Fi® certified |
|-------------------------|------------------|

|                        |             |   |
|------------------------|-------------|---|
| <b>Frequency Bands</b> | 802.11b/g/n | <ul style="list-style-type: none"> <li>• 2.402 – 2.482 GHz</li> </ul> |
|------------------------|-------------|---|

**NOTE:** The FCC has declared products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 & 15.249 or otherwise disable those channels.

|           |   |
|-----------|---|
| 802.11a/n | <ul style="list-style-type: none"> <li>• 4.9 – 4.95 GHz (Japan)</li> <li>• 5.15 – 5.25 GHz</li> <li>• 5.25 – 5.35 GHz</li> <li>• 5.47 – 5.725 GHz</li> <li>• 5.825 – 5.850 GHz</li> </ul> |
|-----------|---|

|                   |   |
|-------------------|---|
| <b>Data Rates</b> | <ul style="list-style-type: none"> <li>• 802.11b: 1, 2, 5.5, 11 Mbps</li> <li>• 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps</li> <li>• 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps</li> <li>• 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)</li> <li>• 802.11ac: MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz)</li> </ul> |
|-------------------|---|

## Technical Specifications - Networking

|                             |  |
|-----------------------------|--|
| <b>Modulation</b>           | Direct Sequence Spread Spectrum<br>BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM  |
| <b>Security<sup>2</sup></b> | <ul style="list-style-type: none"><li>• IEEE and WiFi compliant 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>• IEEE 802.11i</li><li>• Cisco Certified Extensions, all versions through CCX4 and CCX Lite</li><li>• WAPI</li></ul> |

2. Check latest software/driver release for updates on supported security features.

|                                    |  |
|------------------------------------|--|
| <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: +14dBm minimum</li><li>• 802.11g: +12dBm minimum</li><li>• 802.11a: +12dBm minimum</li><li>• 802.11n HT20(2.4GHz): +12dBm minimum</li><li>• 802.11n HT40(2.4GHz): +12dBm minimum</li><li>• 802.11n HT20(5GHz): +10dBm minimum</li><li>• 802.11n HT40(5GHz): +10dBm minimum</li><li>• 802.11ac VHT80(5GHz): +10dBm minimum</li></ul> |

3. Maximum output power may vary by country according to local regulations.

|                          |   |
|--------------------------|---|
| <b>Power Consumption</b> | <ul style="list-style-type: none"><li>• Transmit mode 2.0 W</li><li>• Receive mode 1.6 W</li><li>• Idle mode (PSP) 180 mW (WLAN Associated)</li><li>• Idle mode 50 mW (WLAN unassociated)</li><li>• Connected Standby 10 mW</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 |
|---|--|

4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

|                     |  |
|---------------------|--|
| <b>Antenna type</b> | High efficiency antenna.<br>One embedded dual band 2.4/5 GHz antenna is provided to the card to support WLAN communications and Bluetooth communications |
|---------------------|--|

|                     |                          |
|---------------------|--------------------------|
| <b>Form Factors</b> | PCI-Express M.2 MiniCard |
|---------------------|--------------------------|



### Technical Specifications - Networking

|  |  |
|--|--|
| <b>Dimensions</b>  | Type 2230 : 2.3 x 22.0 x 30.0 mm   |
| <b>Weight</b>  | 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; LED White – Radio ON  |
| <b>HP Integrated Module with Bluetooth 4.0/4.1/4.2 Wireless Technology</b> |  |
| <b>Bluetooth® Specification</b>  | 4.0/4.1/4.2 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>Receiver Sensitivity Legacy</b>   |  |
| <b>Power Consumption</b>   | Peak (Tx) 330 mW<br>Peak (Rx) 230 mW<br>Selective Suspend 17 mW  |
| <b>Range</b>   | Legacy : 0~79 (1 MHz/CH)<br>BLE : 0~39 (2 MHz/CH)  |
| <b>Electrical Interface</b>  | USB 2.0 compliant  |
| <b>Bluetooth® Software Supported Link Topology</b>                         | Microsoft Windows Bluetooth® Software  |
| <b>Power Management Certifications</b>                                     | ETS 300 328, ETS 300 826<br>Low Voltage Directive IEC950<br>UL, CSA, and CE Mark   |
| <b>Bluetooth® Profiles Supported</b>                                       | FCC (47 CFR) Part 15C, Section 15.247 & 15.249   |
| <b>Power Management Certifications</b>                                     | Microsoft Windows ACPI, and USB Bus Support  |

### Technical Specifications - Networking

**Certifications****Bluetooth® Profiles Supported**

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

### Technical Specifications - Power

#### POWER SUPPLY

|  |   |
|--|---|
| <b>Operating Voltage Range</b>                                 | 90 – 264 VAC  |
| <b>Rated Voltage Range</b>                                     | 100-240V AC   |
| <b>Rated Line Frequency</b>                                    | 50/60 HZ  |
| <b>Operating Line Frequency</b>                                | 47 – 63 Hz  |
| <b>Rated Input Current</b>                                     | 180W: <2.3A;<br>310W: <4A   |
| <b>Rated Input Current with Energy Efficient* Power Supply</b> | 180W active PFC<br>87/90/87% efficient at 20/50/100% load (115V)<br>88/91/88% efficient at 20/50/100% load (230V);<br>310W active PFC<br>87/90/87% efficient at 20/50/100% load (115V)<br>88/91/88% efficient at 20/50/100% load (230V)   |
| <b>DC Output</b>   | +12.1V  |
| <b>Current Leakage (NFPA 99: 2102)</b>                         | 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. |
| <b>Power Supply Fan</b>  | 70*25mm (linear type)   |

### Technical Specifications – Dimensions and weight

#### DIMENSIONS & WEIGHT

|                                |  |
|--------------------------------|--|
| <b>Chassis (H x W x D)</b>     | 13.3 x 6.12 x 11.7 in (337.4 x 155.4 x 297.2 mm)   |
| <b>System Volume</b>           | 15.1 L   |
| <b>System Weight*</b>          | 12.17 lbs / 5.52 kg  |
| <b>Tower Stand (H x W x D)</b> | N/A  |
| <b>Packaged (H x W x D)</b>    | 11.3 x 15.75 x 19.65 in<br>287 x 400 x 499 mm  |
| <b>Shipping Weight</b>         | 20.06 lb / 9.10 kg   |
| <b>Palletization Profile</b>   | 6 units per layer<br>7 layer max<br>42 per pallet<br>Footprint<br>-85.31x39.37x47.24 in (2167 x 1000 x1200 mm) |

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

### AFTER MARKET OPTIONS

| Type            | Description   | Part #  |
|-----------------|---|---------|
| <b>Memory</b>   | HP 4GB DDR4-3200 DIMM                                 | 13L78AA |
|                 | HP 8GB DDR4-3200 DIMM                                 | 13L76AA |
|                 | HP 16GB DDR4-3200 DIMM                                | 13L74AA |
| <b>Storage</b>  | HP 500GB 7200rpm 3.5 SATA 6.0Gb/s Smart IV Hard Drive | QK554AA |
|                 | HP 1TB 7200rpm SATA 6Gbps Hard Drive                  | QK555AA |
| <b>Graphics</b> | AMD Radeon R7 430 Card                                | 1MX32AA |
| <b>Security</b> | HP Keyed Cable Lock 10mm kit                          | T1A62AA |
| <b>Adapters</b> | HP HDMI Standard Cable Kit                            | T6F94AA |
| <b>Input</b>    | HP Wired Desktop 320M Mouse                           | 9VA80AA |
|                 | HP PS/2 Business Slim Keyboard                        | N3R86AA |
|                 | HP Wired Desktop 320K Keyboard                        | 9SR37AA |
|                 | HP 125 Wired Keyboard                                 | 266C9AA |
|                 | HP 225 Antimicrobial Wired Mouse and Keyboard Combo   | 286K3AA |
|                 | HP 225 Wired Mouse and Keyboard Combo                 | 286J4AA |
| <b>Others</b>   | HP 125 Wired Mouse                                    | 265A9AA |
|                 | HP Business Headset v2                                | T4E61AA |

### Summary of Changes

| Date of change:   | Version History: |            | Description of change:  |
|-------------------|------------------|------------|---|
| June 22, 2021     | V1 to V2         | Update     | Power supply specs in At a glance section updated / NVIDIA® GeForce® GTX 1660 Super 6GB Graphics Card added / 64GB (2x32GB) DDR4 3200 added to Memory section |
| July 23, 2021     | V2 to V3         | Correction | 64GB in a ta a glance section and 64GB (2x32GB) DDR4 3200 in Memory section   |
| October 11, 2021  | V3 to V4         | Removal    | USB Type-C® DP Alt Mode Row removed from AMD Radeon™ Vega Graphics (integrated) table in graphics section   |
| December 21, 2021 | V4 to V5         | Update     | Windows 11 upgrade  |
|                   | V5 to V6         |            |   |
|                   | V6 to V7         |            |   |
|                   | V7 to V8         |            |   |
|                   | V8 to V9         |            |   |
|                   | V9 to V10        |            |   |
|                   |                  |            |   |
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