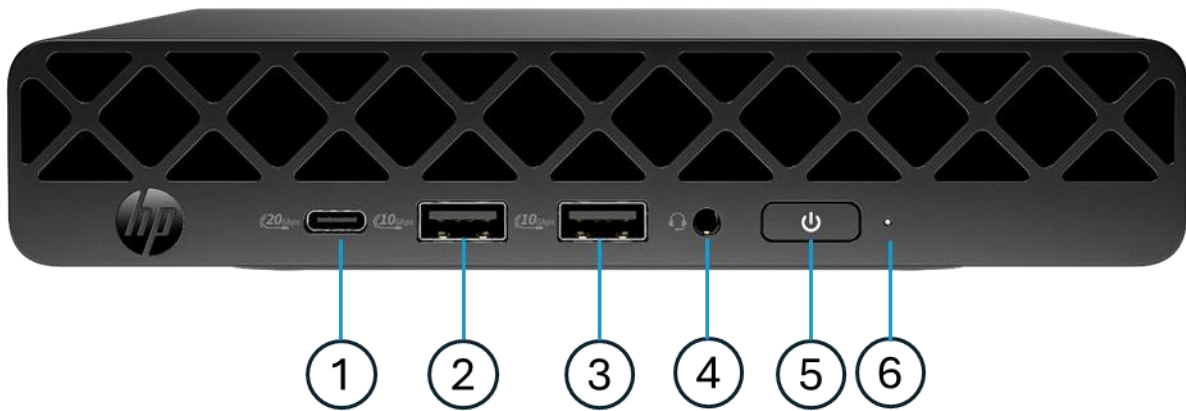


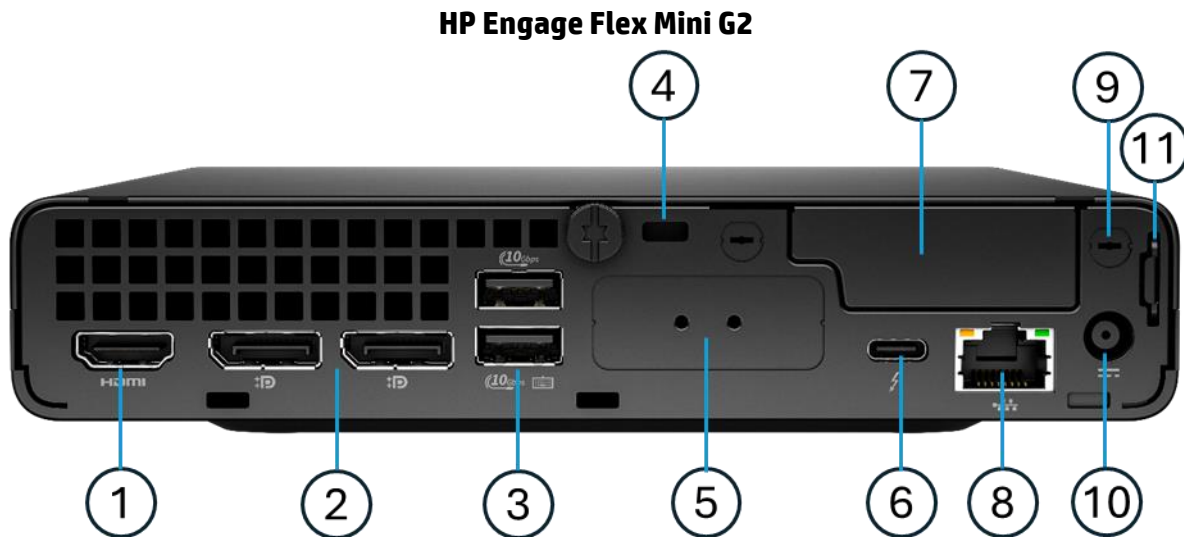
### Overview

#### HP Engage Flex Mini G2



1. Type-C® SuperSpeed USB 20Gbps signaling rate port (charge support up to 5V/3A)
2. Type-A SuperSpeed USB 10Gbps signaling rate port
3. Type-A SuperSpeed USB 10Gbps signaling rate port (Charge support up to 5V/1.5A)
4. Combo Audio Jack with CTIA and OMTP headset support
5. Dual-state power button
6. SSD activity light

### Overview



1. HDMI port 2.1 TMDs 6Gbps
2. (2) Dual-Mode DisplayPort™ 2.1 HBR3 (DP++)
3. (2) Type-A SuperSpeed USB 10Gbps signaling rate port (Supporting wake from S4/S5 with keyboard/mouse connected and enabled in BIOS)
4. Standard cable lock slot (10 mm)
5. (1) Flex Port 1, choice of:
  - HDMI 2.1
  - VGA
  - DisplayPort™ 2.1
  - Intel® I226V 2.5 Gigabit Network Connection LOM (non-vPro)
  - Dual Type A SuperSpeed USB 5Gbps signaling rate port
  - Fiber NIC 1Gbps<sup>1</sup>
  - Serial<sup>2</sup>
  - Dual USB Type C 20Gbps
6. TBT4 with Alt mode and 100W Power in
7. (1) Flex Port 2<sup>3</sup>, choice of:
  - Dual Type-A SuperSpeed USB 5Gbps signaling rate port
  - Serial
  - Second external antenna
  - Video port extender
8. RJ45 network connector
9. External WLAN antenna opening<sup>3</sup>
10. Power connector
11. Retractable Padlock loop

### Not shown

#### Slots

- (1) Internal M.2 2230 connector for WLAN
- (2) Internal M.2 SSD storage 2280 connector<sup>4</sup>

#### Mounting

Support for

- Dual VESA Sleeve V4 Standalone
- Quick Release Bracket
- B200/B300/B500/B550/B560/B600 Mounting bracket

1. Fiber NIC 1Gbps cards would not be available in some selected Europe countries and Korea. And does not support PXE boot.
2. Sold separately or as an optional feature - Not sold in every region.
3. Must be configured at time of purchase.

### Features

#### PRODUCT NAME

HP Engage Flex Mini G2

#### OPERATING SYSTEM

##### Preinstalled

Windows 11 Pro<sup>1</sup>  
Windows 11 IoT Enterprise 2024 LTSC for Retail  
FreeDOS

##### Web Support

Windows 10 Pro (Web Support)<sup>1</sup>  
Windows 10 Enterprise (Web Support)<sup>1</sup>  
Windows 10 Enterprise (Web Support)<sup>1</sup>

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>.

#### CHIPSET

Intel® Q870

### Features

#### PROCESSORS

##### Intel® Core Ultra Processor

Intel® Core™ Ultra 9-285T Processor with Intel® UHD Graphics 4X<sup>e</sup> (1.4GHz, up to 5.4GHz with Intel® Turbo Boost Max Technology, 36MB L3 Cache, 24 cores) 35W,  
Supports Intel® vPro® Technology

Intel® Core™ Ultra 7-265T Processor with Intel® UHD Graphics 4X<sup>e</sup> (2.4GHz, up to 5.3GHz with Intel® Turbo Boost Max Technology, 30MB L3 Cache, 20 cores) 35W,  
Supports Intel® vPro® Technology

Intel® Core™ Ultra 5-235T Processor with Intel® UHD Graphics 3X<sup>e</sup> (2.2GHz, up to 5GHz, 24MB L3 Cache, 14 cores) 35W,  
Supports Intel® vPro® Technology

1. Intel® Turbo Boost technology requires a PC with a processor with Intel Turbo Boost capability. Intel Turbo Boost performance varies depending on hardware, software and overall system. See <http://www.intel.com/technology/turboboost> for more information.
2. Multicore is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering, branding and/or naming is not a measurement of higher performance.
3. Intel vPro® requires Windows 10 Pro 64 bit or higher, a vPro supported processor, vPro enabled chipset, vPro enabled wired LAN and/or Wi-Fi 6E WLAN and TPM 2.0. Some functionality requires additional 3rd party software in order to run. Features of vPro® Essentials and Enterprise vary. See <http://intel.com/vpro>.

### Features

#### GRAPHICS

##### Integrated Intel® Graphics

Intel® UHD Graphics 4Xe <sup>1</sup>
--------------------------------------

Intel® UHD Graphics 3Xe <sup>1</sup>
--------------------------------------

1. 3. Xe is Intel LPGA Graphics Architecture, one Xe-core represents 16EU.4.

##### Adapters and Cables

HP DisplayPort™ Cable
-----------------------

HP DisplayPort™ to DVI-D Adapter
----------------------------------

HP DisplayPort™ to VGA Adapter
--------------------------------

HP USB-C® to HDMI Adapter
---------------------------

HP USB-C® to DisplayPort™ Adapter G2
--------------------------------------

HP 1.8m HDMI Cable
--------------------

1m Thunderbolt 4™ Cable (100W power delivery)
---

### Features

#### STORAGE

**NOTE:** Starting November 1, 2023, HP PCs with Windows require Windows to be installed on SSD.

#### M.2 PCIe NVMe Solid State Drives (SSD)<sup>1</sup>

256GB M.2 2280 PCIe NVMe SSD
512GB M.2 2280 PCIe NVMe SSD
1TB M.2 2280 PCIe NVMe SSD
512GB M.2 2280 PCIe NVMe Three Layer Cell SSD
1TB M.2 2280 PCIe NVMe Three Layer Cell SSD
2TB M.2 2280 PCIe NVMe Three Layer Cell SSD
512GB M.2 2280 PCIe NVMe Self Encrypted OPAL2 Three Layer Cell SSD <sup>2</sup>
256GB M.2 2280 PCIe OPAL2 NVMe SSD

1. For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows) of system disk is reserved for the system recovery software.

2. Storage DriveLock does not work with Self Encrypting or Optane based storage.

#### MEMORY

##### Memory Type

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

**\*NOTE:** Memory modules support data transfer rates up to 5600 MT/s; system speed should follow Intel's design guideline. Actual data rate is determined by the system configuration.

**\*NOTE:** System architecture design is 2 DIMMS per channel and the population starts from the furthest memory slot from the processor.

**\*NOTE:** Symmetric configurations are required for the 2 DIMMs within the same memory channel.

**\*NOTE:** To achieve optimal memory speed, HP strongly recommends using identical memory modules (e.g., same capacity, same part number and from the same supplier within the same memory channel)

**\*NOTE:** All memory slots are customer accessible / upgradeable.

##### Memory Type

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

### Features

#### NETWORKING/COMMUNICATIONS

##### Ethernet (RJ-45)

Intel® I219-LM 1 Gigabit Network Connection LOM (vPro)
--

Intel® I226V 2.5 Gigabit Network Connection LOM
---

##### Wireless

Intel Wi-Fi 7 BE200 +Bluetooth® 5.4 Wireless Card non-vPro
--

Intel Wi-Fi 7 BE200 +Bluetooth® 5.4 Wireless Card vPro
--

Realtek RTL8852CE 802.11ax 2x2 Wi-Fi 6E + BT5.3 Wireless Card (802.11ax 2x2, supporting gigabit data rate)
--

**NOTE:** Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 7 (802.11BE) functionality requires Windows 11 24H2 which would be available starting from end of Aug./2024. a a Wi-Fi 7 router, sold separately. Wi-Fi 7 is backwards compatible with prior 802.11 specs. Available in countries where Wi-Fi 7 is supported. The specification for 802.11BE is a draft specification and is not final. If the final specification differs from the draft specification, it may affect the ability of the device to communicate with other 802.11BE devices.

**NOTE:** WiFi-6E might be restricted by local regulation and only available in countries where Wi-Fi 6E is supported. HP will enable countries in the future by upgrading BIOS in default as the technology becomes available in more regions.

### Features

#### KEYBOARDS AND POINTING DEVICES

##### Keyboards

HP 320K v2 USB Keyboard
HP 125 v2 Wired Keyboard
HP 125 v2 AntiMicrobial Wired Keyboard (China Only)

##### Mouse

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

#### SECURITY

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

### Features

#### PORTS

##### I/O Ports – Internal Ports

M.2 PCIe	(1) M.2 PCIe 3 x1 2230 (for WLAN) (2) M.2 PCIe 4 x 4 2280 (for storage)
----------	--

##### Standard User Accessible Ports

Type-A SuperSpeed USB 10 Gbps signaling rate port	2(front) 2 (rear)
Type-C® SuperSpeed USB 20Gbps signaling rate port	1 (front)
Thunderbolt™ 4.0 with Alt Mode DisplayPort™ and 100W Power intake	1 (rear)
Video <sup>1</sup>	2 DisplayPort™ 2.1 HBR3 1 HDMI 2.1 1 Thunderbot™ 4.0 with Alt Mode DisplayPort™
Audio	1 Combo Audio Jack with CTIA and OMTP headset support (front)

1. For actual resolution supported, refer to the Graphics section of this document.

##### (1) Flexible Port 1, choice of one of the following:

Dual SuperSpeed USB Type-A 5 Gbps signaling rate port	1
Dual SuperSpeed USB Type-C 10Gbps signaling rate port with 15W power out	1
Thunderbolt™ 4.0	1
Video	1 DisplayPort™ 2.1 <u>or</u> HDMI 2.1 <u>or</u> VGA
Serial	1 <sup>1</sup>
Fiber NIC	1x1 Gbps NIC
RJ-45 Ethernet	1 x2.5GbE NIC

1. Sold separately or as an optional feature.

##### (1) Flexible Port 2, choice of one of the following:

Dual Type-A SuperSpeed USB 5Gbps signaling rate port	1
Serial	1
2 <sup>nd</sup> External antenna	1
Video Port Extender (TBC)	1

### Features

#### USB SPECIFICATION AND MARKETING NAME MAPPING TABLE

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

### Features

#### SOFTWARE COMPONENTS AND APPLICATIONS

##### Software

- Buy Microsoft Office <sup>1</sup>
- Edge Customization
- HP Connection Optimizer
- HP Desktop Support Utilities
- HP Documentation
- HP Hotkey Support
- HP Notifications
- HP PC Hardware Diagnostics UEFI
- HP PC Hardware Diagnostics Windows
- HP Privacy Settings
- HP Services Scan<sup>2</sup>
- HP Setup Integrated OOBE
- HP Smart Support <sup>3</sup>
- HP Support Assistant<sup>4</sup>
- myHP with Multicamera support (AIO & Mini)<sup>5</sup>
- HSA Fusion for Commercial
- HSA Telemetry for Commercial

##### Manageability Features

- HP Client Catalog (download)<sup>6</sup>
- HP Client Management Script Library (download) <sup>7</sup>
- HP Cloud Recovery<sup>8</sup>HP Connect for Microsoft Endpoint Manager<sup>9</sup>
- HP Driver Packs (download)
- HP Image Assistant (download) <sup>10</sup>
- HP Manageability Integration Kit (download) <sup>11</sup>
- HP Patch Assistant (download)<sup>12</sup>

##### Security Features

- HP Wolf Security for Business includes: <sup>13</sup>
- HP Sure Admin<sup>14</sup>
- HP Sure Click<sup>15</sup>
- HP Sure Run<sup>16</sup>
- HP Sure Recover<sup>18</sup>
- HP Sure Start<sup>19</sup>
- HP Tamper Lock<sup>20</sup>
- HP Secured-Core PC Enable

##### BIOS

##### Absolute Persistence Module <sup>21</sup>

- HP Bios Recovery
- HP BIOS Update via Network
- HP BIOSphere<sup>22</sup>
- HP Secure Erase<sup>23</sup>
- HP DriveLock & Automatic DriveLock

##### TPM

1. Microsoft 365 sold separately and requires Internet access for activation.

### Features

2. HP Services Scan automatically collects the telemetry necessary upon initial boot of the product to deliver device-level configuration data and health insights and is available preinstalled on select products, thru HP Factory Configuration Services; or it can be downloaded. For more information about how to enable HP Smart Support or for download, please visit <http://www.hp.com/smart-support>.
3. HP Smart Support automatically collects the telemetry necessary upon initial boot of the product to deliver device-level configuration data and health insights and is available preinstalled on select products, thru HP Factory Configuration Services; or it can be downloaded. For more information about how to enable HP Smart Support or for download, please visit <http://www.hp.com/smart-support>.
4. HP Support Assistant is available on Windows. For more information, please visit <http://www.support.hp.com/help/hp-support-assistant>
5. MyHP with Multicamera support for Mini Desktop PC will only available on 13th processor and beyond.
6. HP Services Scan automatically collects the telemetry necessary upon initial boot of the product to deliver device-level configuration data and health insights and is available preinstalled on select products, thru HP Factory Configuration Services; or it can be downloaded. For more information about how to enable HP Smart Support or for download, please visit . HP Client Catalog not preinstalled, however available for download at (<https://www.hp.com/us-en/solutions/client-management-solutions.html>)
7. HP Driver Packs not preinstalled, however available for download at <http://www.hp.com/go/clientmanagement>.
8. HP Cloud Recovery is available for Z by HP, HP Elite and Pro desktops and laptops PCs with Intel® or AMD processors and requires an open, network connection. **NOTE:** You must back up important files, data, photos, videos, etc. before use to avoid loss of data. Detail, please refer to: <https://support.hp.com/us-en/document/c05115630>.
9. HP Connect for Microsoft Endpoint Manager is available from the Azure Market Place for HP Pro, Elite, Z and Point-of-Sale PCs managed with Microsoft Endpoint Manager. Subscription to Microsoft Endpoint Manager required and sold separately. Network connection required.
10. HP Image Assistant not preinstalled, however available for download at (<https://ftp.ext.hp.com/pub/caps-softpaq/cmit/HPIA.html>)
11. HP Manageability Integration Kit can be downloaded from <http://www.hp.com/go/clientmanagement>.
12. HP Patch Assistant available on select HP PCs with the HP Manageability Kit that are managed through Microsoft System Center Configuration Manager. HP Manageability Integration Kit can be downloaded from <http://www8.hp.com/us/en/ads/clientmanagement/overview.html>.
13. HP Wolf Security for Business requires Windows 10 or 11 Pro or higher, includes various HP security features and is available on HP Pro, Elite, RPOS and Workstation products. See product details for included security features.
14. HP Sure Admin requires HP G8 or newer platforms, Windows 10 or higher, HP BIOS, HP Manageability Kit or KMS Service from <http://www.hp.com/go/clientmanagement> and HP Sure Admin Local Access Authenticator
15. HP Sure Click requires Intel Core i3, i5, or i7 processor, Win 11 Pro, Windows 10 Pro or Windows 11 IoT Enterprise 2024, Win 10 IoT Enterprise 2019 LTSC; and is not supported on Win 10 IoT Enterprise 2016 LTSB. See [https://bit.ly/2PrLT6A\\_SureClick](https://bit.ly/2PrLT6A_SureClick) for complete details.
17. HP Sure Sense is available on select HP PCs with Windows 10 Pro, Windows 10 Enterprise, Windows 11 Pro, or Windows 11 Enterprise OS.
16. HP Sure Run is available on select HP PCs and requires Windows 10 and higher.
18. HP Sure Recover is available on select HP PCs and requires Windows 10 or 11 and an open network connection. You must back up important files, data, photos, videos, etc. before using HP Sure Recover to avoid loss of data. HP Sure Recover Gen6 with Embedded Reimaging is an optional feature on select HP PCs which requires Windows 10 or 11 must be configured at purchase. You must back up important files, data, photos, videos, etc. before use to avoid loss of data.
19. HP Sure Start is available on select HP PCs and requires Windows 10 and higher
20. HP Tamper Lock can be Enabled/disabled by customers or IT administrator with administrator authority.
21. Absolute Persistence firmware module is shipped turned off and can only be activated with the purchase a license subscription and full activation of the software agent. License subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. Certain conditions apply. For full details visit: <https://www.absolute.com/about/legal/agreements/absolute/>.
22. HP BIOSphere features may vary depending on the platform and configuration.
23. HP Secure Erase implements the methods outlined in the National Institute of Standards and Technology Special .

### Features

#### UNIT ENVIRONMENT AND OPERATING CONDITIONS

##### ENERGY STAR® certified models available

ENERGY STAR® certified. EPEAT® registered where applicable. Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. EPEAT® status varies by country. Visit <http://www.epeat.net> for more information.

Low halogen (chassis, all internal components and modules)<sup>1</sup>

TAA compliant models available

1. External power supplies, power cords, cables and peripherals are not Low Halogen. Service parts obtained after purchase may not be Low Halogen.

#### UNIT ENVIRONMENT AND OPERATING CONDITIONS

##### General Unit Operating Guidelines

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

Temperature Range	Operating: 50° to 95° F (10° to 35° C) <sup>2</sup> Non-operating: -22° to 149° F (-30° to 65° C)
Relative Humidity	Operating: 10% to 90% (non-condensing at ambient) Non-operating: 5% to 95% (non-condensing at ambient)
Maximum Altitude (unpressurized)	Operating: 5000m Non-operating: 50000ft (15240 m)

2. 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.

### Features

#### ENVIRONMENTAL & INDUSTRY

<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>• US Federal Energy Management Program (FEMP)</li> <li>• EPEAT® Gold 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>• China State Environmental Protection Administration (SEPA)</li> <li>• Taiwan Green Mark</li> <li>• Korea Eco-label</li> <li>• Japan PC Green label*</li> </ul>		
<b>Sustainable Impact Specifications</b>	<ul style="list-style-type: none"> <li>• <a href="#">Product Carbon Footprint</a></li> <li>• At least 50% post-consumer recycled plastic<sup>2</sup></li> <li>• At least 20% recycled metal<sup>3</sup></li> <li>• Low Halogen<sup>4</sup></li> <li>• 100% of HP paper-based packaging is from recycled or certified sustainable sources<sup>5</sup></li> <li>• Bulk packaging available</li> </ul>		
<b>System Configuration</b>	<p>The configuration used for the Energy Consumption and Declared Noise Emissions data for the Desktop model is based on a “Typically Configured Desktop.”</p>		
<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 (Short idle)	10.73 W	11.64 W	10.40 W
Normal Operation (Long idle)	N/A	N/A	N/A
Sleep	4.40 W	4.24 W	4.39 W
Off	0.91 W	0.89 W	0.92 W
	<p><b>NOTE:</b> Energy efficiency data listed is for an ENERGY STAR® certified product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® certified configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.</p>		
<b>Heat Dissipation*</b>	<b>115VAC, 60Hz</b>	<b>230VAC, 50Hz</b>	<b>100VAC, 50Hz</b>
Normal Operation (Short idle)	37 BTU/hr	40 BTU/hr	36 BTU/hr
Normal Operation (Long idle)	N/A	N/A	N/A
Sleep	15 BTU/hr	15 BTU/hr	15 BTU/hr
Off	3.1 BTU/hr	3 BTU/hr	3.1 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	2.7		16
Fixed Disk – Random writes	2.7		16

### Features

Optical Drive – Sequential reads	3.2	21	
<b>Longevity and Upgrading</b>	<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 “5” years after the end of production.</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 (EPEAT) standard at the Gold 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 is 90.1% recycle-able when properly disposed of at end of life.</li> </ul>		
<b>Packaging Materials</b>	<b>External:</b>	PAPER/Corrugated	440 g
		PAPER/Molded Pulp	35 g
	<p>The plastic packaging material contains at least 80.0% recycled content.</p> <p>The corrugated paper packaging materials contains at least 80.0% recycled content.</p>		
<b>RoHS Compliance</b>	<p>HP Inc. complies fully with materials regulations. We were among the first companies to extend the restrictions in the European Union (EU) Restriction of Hazardous Substances (RoHS) Directive to our products worldwide through the HP GSE. HP has contributed to the development of related legislation in Europe, as well as China, India, and Vietnam.</p> <p>We believe the RoHS directive and similar laws play an important role in promoting industry-wide elimination of substances of concern. We have supported the inclusion of additional substances—including PVC, BFRs, and certain phthalates—in future RoHS legislation that pertains to electrical and electronics products.</p> <p>We met our voluntary objective to achieve worldwide compliance with the new EU RoHS requirements for virtually all relevant products by July 2013, and we will continue to extend the scope of the commitment to include further restricted substances as regulations continue to evolve.</p> <p>To obtain a copy of the HP RoHS Compliance Statement, see: <a href="#">HP RoHS position statement</a>.</p>		
<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="https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c05998906">https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c05998906</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>Bis(2-Ethylhexyl) phthalate (DEHP)</li> <li>Benzyl butyl phthalate (BBP)</li> <li>Dibutyl phthalate (DBP)</li> <li>Diisobutyl phthalate (DIBP)</li> <li>Formaldehyde</li> <li>Halogenated Diphenyl Methanes</li> </ul>		

### Features

	<ul style="list-style-type: none"> <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>
<b>End-of-life Management and Recycling</b>	<p>HP offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to:  <a href="https://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c05403198">https://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c05403198</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="#">HP Product Disassembly Instruction Website</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>
<b>HP, Inc. Corporate Environmental Information</b>	<p>For more information about HP's commitment to the environment:</p> <ul style="list-style-type: none"> <li>• Sustainable Impact Report <ul style="list-style-type: none"> <li>○ <a href="https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c06040843">https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c06040843</a></li> </ul> </li> <li>• Eco-label certifications <ul style="list-style-type: none"> <li>○ <a href="https://www.hp.com/us-en/sustainable-impact/document-reports.html#filters_documents_reports==document_type-type_energy_star,type_epeat,type_tcoISO">https://www.hp.com/us-en/sustainable-impact/document-reports.html#filters_documents_reports==document_type-type_energy_star,type_epeat,type_tcoISO</a></li> </ul> </li> <li>• ISO 14001 certificates <ul style="list-style-type: none"> <li>○ <a href="https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c04777932">https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c04777932</a></li> </ul> </li> </ul>
<b>footnotes</b>	<ol style="list-style-type: none"> <li>2. Recycled plastic is expressed as a percentage of the total weight plastic. Post-consumer recycled is based on the definition set in the EPEAT standard for computers, IEEE 1680.1-2018 standard.</li> <li>3. Recycled metal is expressed as a percentage of the total weight of the metal according to ISO 14021 definitions for metal parts over 25 grams.</li> </ol>

### Features

	<ol style="list-style-type: none"><li>4. External power supplies, WWAN modules, power cords, cables and peripherals excluded. Service parts obtained after purchase may not be Low Halogen.</li><li>5. HP paper and fiber-based packaging for PCs, displays, home and office print, and supplies is reported by suppliers as recycled or certified, with a minimum of 97% by volume verified by HP. Packaging is the box that comes with the product and all paper-based materials inside the box. Packaging for personal systems accessories and spare parts is not included. Plastic cushions are made from &gt;90% recycled plastic.</li></ol>
--	---

### Features

#### **SERVICE AND SUPPORT**

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

1. Terms and conditions may vary by country. Certain restrictions and exclusions apply. Other warranty variations may be offered in your region.
2. On-site service may be provided pursuant to a service contract between HP and an authorized HP third-party provider and is not available in certain countries. Global service response times are based on commercially reasonable best effort and may vary by country.
3. Service levels and response times for HP Care Packs may vary depending on your geographic location. Service starts on date of hardware purchase. Restrictions and limitations apply. For details, visit [www.hp.com/go/cpc](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.

#### **CERTIFICATION AND COMPLIANCE**

##### **Energy Efficiency Compliance**

ENERGY STAR® certified. EPEAT® registered where applicable. EPEAT® registration varies by country. See <http://www.epeat.net> for registration status by country. According to IEEE 1680.1-2018.

### Technical specifications – Processors

#### PROCESSORS

##### Intel Core Ultra Processors 200S series

All HP Engage Flex Mini G2 models featuring this technology include processors that are part of the Intel® Stable Image Platform Program (SIPP) designed to ensure the stability promise inherent in the value proposition of the HP Elite series GG1 iDesktop Business PC.

Intel® Management Engine (ME) v19– An advanced set of remote management features and functionality which provides network administrators the latest and most effective tools to remotely discover, heal, and protect networked client systems regardless of the system's health or power state. AMT includes the following advanced management functions:

- Support for configuration of Intel ME 19.0 capabilities
- No reset after provisioning
- Support for Intel Enterprise Digital Fence
- The Platform Discovery Utility can now discover these additional Intel products:
  - Public Key Infrastructure
- Profile Editor and Profile Editor Plugin Interface
- Required Permissions for Solutions Framework

### Technical Specifications – Graphics

#### GRAPHICS

<b>Intel® HD Graphics (integrated)</b>	
<b>VGA Controller</b>	Integrated
<b>DisplayPort™</b>	Supports up to UHBR20 Support MST (Multi-Stream Transport), Maximum of 3 displays with Daisy-Chain monitor Support VESA DSC 1.2b Support HDCP Support up to 36 BPP (Bit Pre Pixel)
<b>HDMI</b>	Supports HDMI 2.1 features Supports up to 6Gbps TMDS link rates on 3 lanes Supports up to 12Gbps FRL link rates on 4 lanes Supports HDCP 2.3 Supports audio over HDMI Support up to 36 BBP (Bit Pre Pixel)
<b>VGA (optional)</b>	VGA output
<b>USB-C® DP Alt Mode (optional)</b>	DisplayPort™ over the optional USB-C® module
<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>Graphics/Video API Support</b>	HEVC/VP9 8k@60 12-bit 420/422/444 Decode AV1 8K@60 10-bit 420 Decode AVC 4k@60 8bit 420 Decode HDR Direct3D* 2015 /Direct3D 12/Direct3D 11.2/Direct/Direct3D11.1/Direct3D 10/Direct2D OpenGL* 4.5 OpenCL* 3.0 Direct X* 12
<b>Max resolution (Native DP)</b>	DP2.1 (HBR3) 5120 x3200 @60hz 24 bpp
<b>Max resolution (Native HDMI)</b>	4096 x 2160 @60HzHDMI 2.1 (TMDS 6Gbps) 4K@60HZ 24 bpp
<b>Max resolution (option VGA)</b>	2048 x 1536@ 60Hz
<b>Max resolution (option DP)</b>	UHBR20: 8K60Hz compressed, 5K120Hz compressed
<b>Max resolution (option HDMI)</b>	HDMI2.1 (FRL 12G bps) 8K60Hz Compressed, 5K120Hz compressed, 4K144Hz compressed
<b>Max resolution (option Type C)</b>	DP2.1(HBR3) 5120 x 3200@60Hz

### Technical Specifications – Storage

#### STORAGE

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

<b>Capacity</b>	256GB
<b>Interface</b>	PCIe NVMe
<b>Minimum Sequential Read</b>	3100 MB/s $\pm$ 20%
<b>Minimum Sequential Write</b>	1200 MB/s $\pm$ 20%
<b>Logical Blocks</b>	500,118,192
<b>Features</b>	TRIM; L1.2

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

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

<b>Capacity</b>	512GB
<b>Interface</b>	PCIe NVMe
<b>Minimum Sequential Read</b>	3500 MB/s $\pm$ 20%
<b>Minimum Sequential Write</b>	1600 MB/s $\pm$ 20%
<b>Logical Blocks</b>	1,000,215,216
<b>Features</b>	TRIM; L1.2

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

##### 1TB M.2 2280 PCIe NVMe SSD

<b>Capacity</b>	1TB
<b>Interface</b>	PCIe NVMe
<b>Minimum Sequential Read</b>	3500 MB/s $\pm$ 20%
<b>Minimum Sequential Write</b>	2700 MB/s $\pm$ 20%
<b>Logical Blocks</b>	2,000,409,264
<b>Features</b>	TRIM; L1.2

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

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

<b>Capacity</b>	512GB
<b>Interface</b>	PCIe Gen4x4
<b>Minimum Sequential Read</b>	6400 MB/s $\pm$ 20%
<b>Minimum Sequential Write</b>	3500 MB/s $\pm$ 20%
<b>Logical Blocks</b>	1,000,215,216
<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 30GB (for Windows) is reserved for system recovery software.

### Technical Specifications – Storage

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

<b>Capacity</b>	1TB
<b>Interface</b>	PCIe Gen4x4
<b>Minimum Sequential Read</b>	6400 MB/s $\pm$ 20%
<b>Minimum Sequential Write</b>	5000 MB/s $\pm$ 20%
<b>Logical Blocks</b>	2,000,409,264
<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 30GB (for Windows) is reserved for 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 $\pm$ 20%
<b>Minimum Sequential Write</b>	5000 MB/s $\pm$ 20%
<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 30GB (for Windows) is reserved for system recovery software.

#### 256GB M.2 2280 PCIe NVMe Self Encrypted OPAL2 Value SSD

<b>Capacity</b>	256GB
<b>Interface</b>	PCIe NVMe
<b>Minimum Sequential Read</b>	3100 MB/s $\pm$ 20%
<b>Minimum Sequential Write</b>	1200 MB/s $\pm$ 20%
<b>Logical Blocks</b>	500,118,192
<b>Features</b>	TRIM; L1.2; TCG Opal 2.0

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

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

<b>Capacity</b>	512GB
<b>Interface</b>	PCIe Gen4x4
<b>Minimum Sequential Read</b>	6400 MB/s $\pm$ 20%
<b>Minimum Sequential Write</b>	3500 MB/s $\pm$ 20%
<b>Logical Blocks</b>	1,000,215,216
<b>Features</b>	TRIM; L1.2; TCG Opal 2.0

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

### Technical Specifications – Networking

#### NETWORKING AND COMMUNICATIONS

<b>Intel® I219-LM 1 Gigabit Network Connection LOM (vPro)</b>	
<b>Connector</b>	RJ-45
<b>System Interface</b>	PCI (Intel proprietary) + SMBus
<b>Data rates supported</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 8023 clauses 40) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s
<b>IEEE Compliance</b>	IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE (Energy Efficient Ethernet)
<b>Performance</b>	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload and Giant send offload Receiving Side Scaling (Hash Mode Only) Jumbo Frame 9K
<b>Power consumption</b>	Cable Disconnection: 25mW 100Mbps Full Run: 450mW 1000bp Full Run: 1000mW WoL Enable(S3/S4/S5): 50mW WoL Disable(S3/S4/S5): 25mW
<b>Power Management</b>	ACPI compliant – multiple power modes Situation-sensitive features reduce power consumption 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) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite Virtual Cable Doctor for Ethernet cable status
<b>Security &amp; Manageability</b>	Intel® vPro™ support with appropriate Intel® chipset components

### Technical Specifications – Networking

<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>	<ol style="list-style-type: none"> <li>1. 10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14)</li> <li>2. 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30)</li> <li>3. 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 802.3 clauses 40)</li> <li>4. 2.5 Gbit/s operation (2.5GBASE-T; IEEE 802.3bz Clause 126)</li> <li>5. Auto-Negotiation (Automatic Speed Selection)</li> </ol> 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 IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE (Energy Efficient Ethernet) IEEE 802.3i 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3ab 1000BASE-T IEEE 802.3bz 2.5GBASE-T
<b>Performance</b>	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload and Giant send offload Receiving Side Scaling (Hash Mode Only) Jumbo Frame 9K
<b>Power consumption</b>	Cable Disconnection: 25mW 100Mbps Full Run: 450mW 1000Mbps Full Run: 1000mW 2500Mbps Full Run: 4500mW WoL Enable(S3/S4/S5): 50mW WoL Disable(S3/S4/S5): 25mW
<b>Power Management</b>	ACPI compliant – multiple power modes Situation-sensitive features reduce power consumption 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) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite Virtual Cable Doctor for Ethernet cable status

### Technical Specifications – Networking

<b>Intel® I226-V 2.5 Gigabit Network Connection LOM (non-vPro)</b>	
<b>Connector</b>	RJ-45
<b>System Interface</b>	PCI (Intel proprietary) + SMBus
<b>Data rates supported</b>	<ol style="list-style-type: none"> <li>10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14)</li> <li>100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30)</li> <li>1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 802.3 clauses 40)</li> <li>2.5 Gbit/s operation (2.5GBASE-T; IEEE 802.3bz Clause 126)</li> <li>Auto-Negotiation (Automatic Speed Selection)</li> </ol> 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 IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE (Energy Efficient Ethernet) IEEE 802.3i 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3ab 1000BASE-T IEEE 802.3bz 2.5GBASE-T
<b>Performance</b>	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload and Giant send offload Receiving Side Scaling (Hash Mode Only) Jumbo Frame 9K
<b>Power consumption</b>	Cable Disconnection: 25mW 100Mbps Full Run: 450mW 1000Mbps Full Run: 1000mW 2500Mbps Full Run: 4500mW WoL Enable(S3/S4/S5): 50mW WoL Disable(S3/S4/S5): 25mW
<b>Power Management</b>	ACPI compliant – multiple power modes Situation-sensitive features reduce power consumption 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) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite Virtual Cable Doctor for Ethernet cable status
<b>Security &amp; Manageability</b>	Intel® non-vPro™ support with appropriate Intel® chipset components

### Technical Specifications – Networking and Communications

<b>Intel BE200 Wi-Fi 7 +Bluetooth® 5.4 Wireless Card M.2 320MHz PCIe World-wide WLAN vPro<sup>1</sup></b>	
<b>Wireless LAN Standards</b>	<ul style="list-style-type: none"> <li>IEEE 802.11a</li> <li>IEEE 802.11b</li> <li>IEEE 802.11g</li> <li>IEEE 802.11n</li> <li>IEEE 802.11ac</li> <li>IEEE 802.11ax</li> <li>IEEE 802.11be</li> <li>IEEE 802.11d</li> <li>IEEE 802.11e</li> <li>IEEE 802.11h</li> <li>IEEE 802.11i</li> <li>IEEE 802.11k</li> <li>IEEE 802.11r</li> <li>IEEE 802.11v</li> </ul>
<b>Interoperability</b>	Wi-Fi certified
<b>Frequency Band</b>	<ul style="list-style-type: none"> <li>802.11b/g/n/ax/be</li> <li>• 2.402 – 2.482 GHz</li>   <li>802.11a/n/ac/ax/be</li> <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> <li>• 5.955 – 6.415 GHz</li> <li>• 6.435 – 6.515 GHz</li> <li>• 6.535 – 6.875 GHz</li> <li>• 6.895 – 7.115 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: max 300Mbps</li> <li>• 802.11ac: 1733Mbps</li> <li>• 802.11ax: max 2.4Gbps</li> <li>• 802.11be: max 5.76Gbps</li> </ul>
<b>Modulation</b>	Direct Sequence Spread Spectrum OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM, 4096QAM
<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>• WPA3 certification</li> <li>• IEEE 802.11i</li> <li>• WAPI</li> </ul>
<b>Network Architecture Models</b>	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
<b>Roaming</b>	IEEE 802.11 compliant roaming between access points

### Technical Specifications – Networking and Communications

<b>Output Power<sup>3</sup></b>	<ul style="list-style-type: none"> <li>• 802.11b, 1Mbps: +17dBm minimum</li> <li>• 802.11g, 6Mbps: +16dBm minimum</li> <li>• 802.11a, 6Mbps: +17dBm minimum</li> <li>• 802.11n, MCS7(HT20): +14dBm minimum</li> <li>• 802.11n, MCS7(HT40): +13.5dBm minimum</li> <li>• 802.11ac MCS9(VHT20): 13.5dBm minimum</li> <li>• 802.11ac MCS9(VHT40): +13.5dBm minimum</li> <li>• 802.11ac MCS9(VHT80): +12.5dBm minimum</li> <li>• 802.11ac MCS9(VHT160): +10.5dBm minimum</li> <li>• 802.11ax MCS11(HE20)(6GHz): +11.5dBm minimum</li> <li>• 802.11ax MCS11(HE40)(6GHz): +7.5dBm minimum</li> <li>• 802.11ax MCS11(HE80)(6GHz): +7.5dBm minimum</li> <li>• 802.11ax MCS11(HE160)(6GHz): +7.5dBm minimum</li> <li>• 802.11be MCS13(EHT20)(6GHz): 11.5dBm</li> <li>• 802.11be MCS13(EHT40)(6GHz): 7.5dBm</li> <li>• 802.11be MCS13(EHT80)(6GHz): 7.5dBm</li> <li>• 802.11be MCS13(EHT160)(6GHz): 6.5dBm</li> <li>• 802.11be MCS13(EHT320)(6GHz): 4.5dBm</li> </ul>
<b>Power Consumption</b>	<ul style="list-style-type: none"> <li>• Transmit mode 3.1 W</li> <li>• Receive mode 1.8 W</li> <li>• Idle mode (PSP) 180 mW (WLAN Associated)</li> <li>• Idle mode 50 mW (WLAN unassociated)</li> <li>• Connected Standby 10mW</li> <li>• Radio disabled 8 mW</li> </ul>
<b>Power Management</b>	<p>ACPI and PCI Express compliant power management 802.11 compliant power saving mode</p>
<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: -85dBm maximum</li> <li>• 802.11a/g, 6Mbps: -90.5dBm maximum</li> <li>• 802.11a/g, 54Mbps: -72.5dBm maximum</li> <li>• 802.11n, MCS0(HT20): -90dBm maximum</li> <li>• 802.11n, MCS7(HT20): -71.5dBm maximum</li> <li>• 802.11n, MCS0(HT40): -88.5dBm maximum</li> <li>• 802.11n, MCS7(HT40): -68.5dBm maximum</li> <li>• 802.11ac, MCS9(VHT20): -88.5dBm maximum</li> <li>• 802.11ac, MCS9(VHT40): -65.5dBm maximum</li> <li>• 802.11ac, MCS9(VHT80): -60.5dBm maximum</li> <li>• 802.11ac, MCS9(VHT160): -58.5dBm maximum</li> <li>• 802.11ax, MCS11(HE20)(6GHz): -59.5dBm maximum</li> <li>• 802.11ax, MCS11(HE40)(6GHz): -56.5dBm maximum</li> <li>• 802.11ax, MCS11(HE80)(6GHz): -53.5dBm maximum</li> <li>• 802.11ax, MCS11(HE160)(6GHz): -51.5dBm maximum</li> <li>• 802.11be, MCS13(EHT20)(6GHz): -55.5dBm maximum</li> <li>• 802.11be, MCS13(EHT40)(6GHz): -53.5dBm maximum</li> <li>• 802.11be, MCS13(EHT80)(6GHz): -51.5dBm maximum</li> <li>• 802.11be, MCS13(EHT160)(6GHz): -48.5dBm maximum</li> <li>• 802.11be, MCS13(EHT320)(6GHz): -45.5dBm maximum</li> </ul>
<b>Antenna type</b>	<p>High efficiency antenna with spatial diversity Two embedded tri-band 2.4/5/6 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications</p>
<b>Form Factor</b>	<p>PCI-Express M.2 MiniCard</p>

### Technical Specifications – Networking and Communications

<b>Dimensions</b>	1. Type 2230: 2.3 x 22.0 x 30.0 mm 2. Type 1216: 1.67 x 12.0 x 16.0 mm
<b>Weight</b>	1. Type 2230: 2.8g 2. Type 1216: 1.3g
<b>Operating Voltage</b>	3.3v +/- 9%
<b>Temperature</b>	Operating: 14° to 158° F (–10° to 70° C) Non-operating: –40° to 176° F (–40° to 80° C)
<b>Humidity</b>	Operating: 10% to 90% (non-condensing) Non-operating: 5% to 95% (non-condensing)
<b>Altitude</b>	Operating: 0 to 10,000 ft (3,048 m) Non-operating: 0 to 50,000 ft (15,240 m)
<b>LED Activity</b>	LED Amber – Radio OFF; LED OFF – Radio ON
<b>Subtitle</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>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) BLE: 0~39 (2 MHz/CH)
<b>Data Rates and Throughput</b>	Legacy: 3 Mbps data rate; throughput up to 2.17 Mbps BLE: 1 Mbps data rate; throughput up to 0.2 Mbps Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)
<b>Transmit Power</b>	The Bluetooth component shall operate as a Class I Bluetooth device with a maximum transmit power of +15.5 dBm for BR and +13dBm for EDR.
<b>Power Consumption</b>	Peak (Tx): 330 mW Peak (Rx): 230 mW Selective Suspend: 17 mW
<b>Bluetooth® Software Supported Link Topology</b>	1. Microsoft Windows Bluetooth Software 2. Linux/Chrome OS Bluetooth Software.
<b>Power Management</b>	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
<b>Certifications</b>	FCC (47 CFR) Part 15C/E, Section 15.247, 15.249, 15.407 ETSI 300 328, ETSI 301 893, ETSI 303 687

## Technical Specifications – Networking and Communications

<p><b>Bluetooth® Profiles Supported</b></p>	<p>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 &amp; 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)            BT5.2            ESR9/10 Compliance            LE Advertisement Extensions            Channel Selection Algo            Limited High Duty Cycle Non-Connectable Advertising            2Mbps LE            LE Long Range            BT5.3            Host to Controller Encryption Key Control Enhancements            Compliance to the latest Errata Sectipn 12.3 of BT 5.3 specification</p>
---	--

1. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 7 (802.11BE) functionality requires compatible Windows 11 OS, compatible processor, and separately purchased Wi-Fi 7 router to support backwards compatibility with prior 802.11 specs. Available in countries where Wi-Fi 7 is supported. The specification for 802.11BE is a draft specification and is not final. If the final specification differs from the draft specification, it may affect the ability of the device to communicate with other 802.11BE devices.
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).

### Technical Specifications – Networking and Communications

<b>Intel BE200 Wi-Fi 7 +Bluetooth® 5.4 Wireless Card M.2 320MHz PCIe World-wide WLAN non-vPro<sup>1</sup></b>	
<b>Wireless LAN Standards</b>	<ul style="list-style-type: none"> <li>IEEE 802.11a</li> <li>IEEE 802.11b</li> <li>IEEE 802.11g</li> <li>IEEE 802.11n</li> <li>IEEE 802.11ac</li> <li>IEEE 802.11ax</li> <li>IEEE 802.11be</li> <li>IEEE 802.11d</li> <li>IEEE 802.11e</li> <li>IEEE 802.11h</li> <li>IEEE 802.11i</li> <li>IEEE 802.11k</li> <li>IEEE 802.11r</li> <li>IEEE 802.11v</li> </ul>
<b>Interoperability</b>	Wi-Fi certified
<b>Frequency Band</b>	<ul style="list-style-type: none"> <li>802.11b/g/n/ax/be</li> <li>• 2.402 – 2.482 GHz</li> <li>802.11a/n/ac/ax/be</li> <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> <li>• 5.955 – 6.415 GHz</li> <li>• 6.435 – 6.515 GHz</li> <li>• 6.535 – 6.875 GHz</li> <li>• 6.895 – 7.115 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: max 300Mbps</li> <li>• 802.11ac: 1733Mbps</li> <li>• 802.11ax: max 2.4Gbps</li> <li>• 802.11be: max 5.76Gbps</li> </ul>
<b>Modulation</b>	Direct Sequence Spread Spectrum OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM, 4096QAM
<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 bitIn 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) Infrastructure (Access Point Required)
<b>Roaming</b>	IEEE 802.11 compliant roaming between access points

### Technical Specifications – Networking and Communications

<b>Output Power<sup>3</sup></b>	<ul style="list-style-type: none"> <li>• 802.11b, 1Mbps: +17dBm minimum</li> <li>• 802.11g, 6Mbps: +16dBm minimum</li> <li>• 802.11a, 6Mbps: +17dBm minimum</li> <li>• 802.11n, MCS7(HT20): +14dBm minimum</li> <li>• 802.11n, MCS7(HT40): +13.5dBm minimum</li> <li>• 802.11ac MCS9(VHT20): 13.5dBm minimum</li> <li>• 802.11ac MCS9(VHT40): +13.5dBm minimum</li> <li>• 802.11ac MCS9(VHT80): +12.5dBm minimum</li> <li>• 802.11ac MCS9(VHT160): +10.5dBm minimum</li> <li>• 802.11ax MCS11(HE20)(6GHz): +11.5dBm minimum</li> <li>• 802.11ax MCS11(HE40)(6GHz): +7.5dBm minimum</li> <li>• 802.11ax MCS11(HE80)(6GHz): +7.5dBm minimum</li> <li>• 802.11ax MCS11(HE160)(6GHz): +7.5dBm minimum</li> <li>• 802.11be MCS13(EHT20)(6GHz): 11.5dBm</li> <li>• 802.11be MCS13(EHT40)(6GHz): 7.5dBm</li> <li>• 802.11be MCS13(EHT80)(6GHz): 7.5dBm</li> <li>• 802.11be MCS13(EHT160)(6GHz): 6.5dBm</li> <li>• 802.11be MCS13(EHT320)(6GHz): 4.5dBm</li> </ul>
<b>Power Consumption</b>	<ul style="list-style-type: none"> <li>• Transmit mode 3.1 W</li> <li>• Receive mode 1.8 W</li> <li>• Idle mode (PSP) 180 mW (WLAN Associated)</li> <li>• Idle mode 50 mW (WLAN unassociated)</li> <li>• Connected Standby 10mW</li> <li>• Radio disabled 8 mW</li> </ul>
<b>Power Management</b>	<p>ACPI and PCI Express compliant power management 802.11 compliant power saving mode</p>
<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: -85dBm maximum</li> <li>• 802.11a/g, 6Mbps: -90.5dBm maximum</li> <li>• 802.11a/g, 54Mbps: -72.5dBm maximum</li> <li>• 802.11n, MCS0(HT20): -90dBm maximum</li> <li>• 802.11n, MCS7(HT20): -71.5dBm maximum</li> <li>• 802.11n, MCS0(HT40): -88.5dBm maximum</li> <li>• 802.11n, MCS7(HT40): -68.5dBm maximum</li> <li>• 802.11ac, MCS9(VHT20): -88.5dBm maximum</li> <li>• 802.11ac, MCS9(VHT40): -65.5dBm maximum</li> <li>• 802.11ac, MCS9(VHT80): -60.5dBm maximum</li> <li>• 802.11ac, MCS9(VHT160): -58.5dBm maximum</li> <li>• 802.11ax, MCS11(HE20)(6GHz): -59.5dBm maximum</li> <li>• 802.11ax, MCS11(HE40)(6GHz): -56.5dBm maximum</li> <li>• 802.11ax, MCS11(HE80)(6GHz): -53.5dBm maximum</li> <li>• 802.11ax, MCS11(HE160)(6GHz): -51.5dBm maximum</li> <li>• 802.11be, MCS13(EHT20)(6GHz): -55.5dBm maximum</li> <li>• 802.11be, MCS13(EHT40)(6GHz): -53.5dBm maximum</li> <li>• 802.11be, MCS13(EHT80)(6GHz): -51.5dBm maximum</li> <li>• 802.11be, MCS13(EHT160)(6GHz): -48.5dBm maximum</li> <li>• 802.11be, MCS13(EHT320)(6GHz): -45.5dBm maximum</li> </ul>
<b>Antenna type</b>	<p>High efficiency antenna with spatial diversity Two embedded tri-band 2.4/5/6 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications</p>
<b>Form Factor</b>	<p>PCI-Express M.2 MiniCard</p>
<b>Dimensions</b>	<ol style="list-style-type: none"> <li>1. Type 2230: 2.3 x 22.0 x 30.0 mm</li> <li>2. Type 1216: 1.67 x 12.0 x 16.0 mm</li> </ol>

### Technical Specifications – Networking and Communications

<b>Weight</b>	1. Type 2230: 2.8g 2. Type 1216: 1.3g
<b>Operating Voltage</b>	3.3v +/- 9%
<b>Temperature</b>	Operating: 14° to 158° F (–10° to 70° C) Non-operating: –40° to 176° F (–40° to 80° C)
<b>Humidity</b>	Operating: 10% to 90% (non-condensing) Non-operating: 5% to 95% (non-condensing)
<b>Altitude</b>	Operating: 0 to 10,000 ft (3,048 m) Non-operating: 0 to 50,000 ft (15,240 m)
<b>LED Activity</b>	LED Amber – Radio OFF; 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) BLE: 0~39 (2 MHz/CH)
<b>Data Rates and Throughput</b>	Legacy: 3 Mbps data rate; throughput up to 2.17 Mbps BLE: 1 Mbps data rate; throughput up to 0.2 Mbps Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)
<b>Transmit Power</b>	The Bluetooth component shall operate as a Class I Bluetooth device with a maximum transmit power of +15.5 dBm for BR and +13dBm for EDR.
<b>Power Consumption</b>	Peak (Tx): 330 mW Peak (Rx): 230 mW Selective Suspend: 17 mW
<b>Bluetooth® Software Supported Link Topology</b>	1. Microsoft Windows Bluetooth Software 2. Linux/Chrome OS Bluetooth Software.
<b>Power Management</b>	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
<b>Certifications</b>	FCC (47 CFR) Part 15C/E, Section 15.247, 15.249, 15.407 ETSI 300 328, ETSI 301 893, ETSI 303 687

## Technical Specifications – Networking and Communications

<p><b>Bluetooth® Profiles Supported</b></p>	<p>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            LE Nudging &amp; 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)            BT5.2            ESR9/10 Compliance            LE Advertisement Extensions            Channel Selection Algo            Limited High Duty Cycle Non-Connectable Advertising            Mbps LE            LE Long Range            BT5.3            Host to Controller Encryption Key Control Enhancements            Compliance to the latest Errata Section 12.3 of BT 5.3 specification</p>
---	--

1. Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 7 (802.11BE) functionality requires compatible Windows 11 OS, compatible processor, and separately purchased Wi-Fi 7 router to support backwards compatibility with prior 802.11 specs. Available in countries where Wi-Fi 7 is supported. The specification for 802.11BE is a draft specification and is not final. If the final specification differs from the draft specification, it may affect the ability of the device to communicate with other 802.11BE devices.
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).

### Technical Specifications – Networking and Communications

#### Realtek RTL8852CE 802.11ax 2x2 Wi-Fi 6E + BT5.3 Wireless Card (802.11ax 2x2, supporting gigabit data rate)

<b>Wireless LAN Standards</b>	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac IEEE 802.11ax IEEE 802.11d IEEE 802.11e IEEE 802.11h IEEE 802.11i IEEE 802.11k
<b>Interoperability</b>	Wi-Fi certified
<b>Frequency Band</b>	802.11b/g/n/ax • 2.402 – 2.482 GHz  802.11a/n/ac/ax • 5.15 – 5.25 GHz • 5.25 – 5.35 GHz • 5.47 – 5.725 GHz • 5.825 – 5.850 GHz • 5.955 – 6.415 GHz • 6.435 – 6.515 GHz • 6.535 – 6.875 GHz • 6.895 – 7.115 GHz
<b>Data Rates</b>	• 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) • 802.11ac : MCS0 ~ MCS9, (20MHz, 40MHz, ,80MHz & 160MHz) • 802.11ax : MCS0 ~ MCS11, (20MHz, 40MHz, ,80MHz & 160MHz)
<b>Modulation</b>	Direct Sequence Spread Spectrum OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM
<b>Security[2]</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 (personal) certification</li> <li>• IEEE 802.11i</li> <li>• WAPI</li> <li>• EAP</li> </ul>
<b>Network Architecture Models</b>	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
<b>Roaming</b>	IEEE 802.11 compliant roaming between access points

### Technical Specifications – Networking and Communications

<b>Output Power[3]</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 802.11 compliant power saving mode
<b>Receiver Sensitivity[4]</b>	802.11b, 1Mbps : -93.5dBm maximum 802.11b, 11Mbps : -84dBm maximum 802.11a/g, 6Mbps : -86dBm maximum 802.11a/g, 54Mbps : -72dBm maximum 802.11n, MCS07 : -67dBm maximum 802.11n, MCS15 : -64dBm maximum 802.11ac, MCS0(VHT80) : -84dBm maximum 802.11ac, MCS9(VHT80) : -59dBm maximum 802.11ac, MCS9(VHT160) : -58.5dBm maximum •802.11ax, MCS11(HE40) : -57dBm maximum •802.11ax, MCS11(HE80) : -54dBm maximum •802.11ax, MCS11(HE160) : -53.5dBm maximum
<b>Antenna type</b>	High efficiency antenna with spatial diversity 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) Non-operating: -40° to 176° F (-40° to 80° C)
<b>Humidity</b>	Operating: 10% to 60% (non-condensing) Non-operating: 5% to 95% (non-condensing)
<b>Altitude</b>	Operating: 0 to 10,000 ft (3,048 m) Non-operating: 0 to 50,000 ft (15,240 m)
<b>LED Activity</b>	N/A
<b>Subtitle</b>	<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 Compliant

### Technical Specifications – Networking and Communications

<b>Frequency Band</b>	2402 to 2480 MHz
<b>Number of Available Channels</b>	Legacy : 0~79 (1 MHz/CH) BLE : 0~39 (2 MHz/CH)
<b>Data Rates and Throughput</b>	Legacy : 3 Mbps data rate; throughput up to 2.17 Mbps BLE : 1 Mbps data rate; throughput up to 0.2 Mbps Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)
<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 Peak (Rx): 230 mW Selective Suspend: 17 mW
<b>Bluetooth Software Supported</b>  <b>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  ETSI 300 328, ETSI 301 893, ETSI 303 687
<b>Bluetooth Profiles Supported</b>	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) BT5.2 ESR9/10 Compliance LE Advertisement Extensions Channel Selection Algo Limited High Duty Cycle Non-Connectable Advertising 2Mbps LE LE Long Range Windows BT profiles support BT5.3 Periodic Advertisement interval Encryption key size control enhancements

### Technical Specifications – Networking and Communications

[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).

<b>HP Flex 1GbE Fiber LC Single Port</b>	
<b>Connector</b>	Fiber
<b>Cabling</b>	1 GbE over Category OM1 (or better) up to 100m
<b>Controller</b>	Microchip LAN7801
<b>Data Rates Supported</b>	100/1000 Mbps
<b>Compliance</b>	IEE 802.1q priority encoding/tagging (QoS, CoS) IEE 802.1q VLAN tagging IEE 802.3x flow control
<b>Bus Architecture</b>	USB
<b>Power requirement</b>	Requires 3.3V (Integrated regulators for code Vdc)
<b>Boot ROM support</b>	Yes
<b>Network transfer mode</b>	Full-duplex; Half duplex
<b>Network transfer rate</b>	100BASE-X (Half-duplex) 100Mbps 1000BASE-X (Half-duplex) 1000Mbps 1000BASE-X (Full-duplex) 2000Mbps
<b>Operating temperature</b>	32° to 95° F (0° to 35°C)
<b>calvin</b>	1.5 x 1.7 x 0.75 In (3.84 x 4.3 x 1.9 cm)
<b>Operating System Driver Support</b>	Windows 11 64-Bit Linux®

### Technical Specifications – Input/Output Devices

#### I/O DEVICES

<b>HP 125 AntiMicrobial Wired Keyboard (China only)</b>		
<b>Physical Characteristics</b>	Keys	104/105/107/109 layout (depending upon country)
	Dimensions (LxWxH)	436 x 138 x 20.7 mm
	Weight	471g
<b>Electrical</b>	Operating voltage	5V +- 5%
	Power consumption	50mA
	System Interface	USB Type A plug connector
	ESD	Contact Discharge: 8 KV Air Discharge: 12.5 KV
	EMI - RFI	Conforms to FCC rules for a Class B computing device
<b>Mechanical</b>	Keycaps	Low-profile design
	Switch actuation	55±10g nominal peak force with tactile feedback
	Switch life	10 million keystrokes (Life tester)
	Switch type	Contamination-resistant switch membrane
	Key-leveling mechanisms	For all double-wide and greater-length keys
	Cable length	1.8 m
<b>Environmental</b>	Acoustics	43-dBA maximum sound pressure level
	Operating temperature	50° to 122° F (10° to 50° C)
	Non-operating temperature	-4° to 149° F (-20° to 65° C)
	Operating humidity	10% to 95% (non-condensing at ambient)
	Non-operating humidity	0% to 95% (non-condensing at ambient)
	Operating shock	40 g, six surfaces
	Non-operating shock	80 g, six surfaces
	Operating vibration	2-g peak acceleration
	Non-operating vibration	4-g peak acceleration
	Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
	Drop (in box)	30 in (76.2 cm) on concrete, 16-drop sequence
<b>Approvals</b>	UL, cUL, FCC, CE, TUV GS, VCCI, BSMI, RCM, KCC, USB-IF, WHQL, EN/IEC 60601-1	
<b>Ergonomic compliance</b>	ANSI HFS 100, ISO 9241-4, and TUVGS	

### Technical Specifications – Input/Output Devices

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

### Technical Specifications – Input/Output Devices

		137-350	0	0.008
		350-500	-6	-
		500	-	0.0039
	Drop (out of box)	76cm on carpet, six-drop sequence		
	Drop (in box)	10 times drop including 6 faces, one corner and 3 edges on rigid surface. Drop Height: 91cm		
<b>Approvals</b>	CB, CE, FCC, ICES, EAC, NOM-NYCE SCT, RCM, BIS, VCCI, KC, BSMI			
<b>Ergonomic compliance</b>	TUVGS			

### Technical Specifications – Input/Output Devices

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

### Technical Specifications – Input/Output Devices

		Frequency (Hz)	Slope (dB/oct)	PSD (g <sup>2</sup> /Hz)
	Non-operating vibration	5.100	0	0.015
		100-137	-6	-
		137-350	0	0.008
		350-500	-6	-
		500	-	0.0039
	Drop (out of box)	76cm on carpet, six-drop sequence		
	Drop (in box)	N/A		
<b>Approvals</b>	CB, CE, FCC, cULus, ICES, EAC, NOM-NYCE SCT, RCM, VCCI, KC, BSMI			
<b>Ergonomic compliance</b>	TUVGS			

### HP USB 125 (Antimicrobial)/128 Laser Mouse (China only)

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

### Technical Specifications – Power

#### AUDIO/MULTIMEDIA

Type	Integrated
HD Stereo Codec	Realtek ALC3252
Audio I/O Ports	combo audio jack with CTIA and OMTP headset support
Internal Speaker Amplifier	2W class D mono amplifier for the internal speaker only. External speakers must be powered
Multi-streaming Capable	Playback multi-streaming can be enabled in the audio control panel to allow independent audio streams to be sent to/from the front and rear jacks or integrated speaker.
Sampling	Independent sampling rates for DAC's and ADC's; supports resolutions from 16 to 24-bit; 44.1 kHz to 192 kHz for DAC and 44.1 kHz to 192 kHz for ADC
Wavetable Syntheses	Yes - Uses OS soft wavetable
Analog Audio	Yes
# of Channels on Line-Out	Stereo (Left & Right channels)
Internal Speaker	Yes

### Technical Specifications – Power

#### Unit Environment and Operating Conditions

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

#### POWER

<b>External Power Supplies<sup>1</sup></b>	90W EPS, active PFC, 88% average efficiency at 115V & 89% at 230Vac 100W EPS, active PFC, 88% average efficiency at 115V & 89% at 230Vac 120W EPS, active PFC, 88% average efficiency at 115V & 89% at 230Vac
<b>Operating Voltage Range</b>	90Vac~264Vac
<b>Rated Voltage Range</b>	100Vac~240Vac
<b>Rated Line Frequency</b>	50HZ~60HZ
<b>Operating Line Frequency</b>	47HZ~63HZ
<b>Rated Input Current with Energy Efficient* Power Supply</b>	90W ≤ 1.7A 100W ≤ 1.6A 120W ≤ 1.7A
<b>DC Output</b>	+19.5V

1. External power supplies, power cords, cables and peripherals are not low halogen. Service parts obtained after purchase may not be low halogen.

<b>Current Leakage (NFPA 99: 2012)</b>	Less than 40 microamps of leakage current at 250 Vac with the ground wire disconnected, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1. Less than 40 microamps of leakage current at 250 Vac with the ground wire intact with normal polarity, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1.
<b>Power Supply Fan</b>	N/A
<b>Power cord length</b>	6.0 ft. (1.83 m) <sup>1</sup>
<b>External Power Adapter</b>	External power
<b>Dimensions</b>	90W: 126 x 50 x 30mm 100W: 136x60x22mm 120W: 138 x 68.5 x 25.4 mm
<b>Total Cord Length</b>	1 m, 6.0 ft. (1.83 m)

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

2. The length of India power cord is 2.0m

The power supply shall comply with harmonic input current requirements as detailed in EN61000-3-2 and JEIDA MITI standards. The harmonic input current requirements must be met under the following operating conditions:

Load Requirements: 50% and 100%

Input Voltage: 230Vac/50Hz.

### Technical Specifications – Power

For active power factor correction the power factor at 50% & 100% loads shall be greater than 0.9 over the entire nominal input voltage range (100-127VAC and 200-240VAC).

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

### Technical Specifications – Miscellaneous Features

#### WEIGHTS & DIMENSIONS

	Imperial	Metric
<b>Chassis (WxDxH)</b>	6.97 x 7.13 x 1.35 in	177 x 181 x 34 mm
<b>System Volume</b>	63.4 cu in	1.09 L
<b>System Weight</b>	3.13 lb	1.42 kg
<b>Max Supported Weight (desktop orientation)</b>	0 lb	0 kg
<b>Stand Dimensions</b>	6.3 x 4.6 x 0.73 in	160 x 117 x 18.5 mm
<b>Packaging (WxDxH)</b>	18.9 x 4.1 x 9.4 in	481 x 105 x 240 mm
<b>Shipping Weight</b>	6.49 lb	2.95 kg
<b>Multipack Packaging</b>	20.28 x 16.54 x 25 in	515 x 420 x 636 mm
<b>Palletization Profile</b>	22-units per layer 8 layers max 176 units per pallet 46.14 x 37.87 x 81.5 in, 1172 x 962 x 2070 mm (including pallet)	

### Technical Specifications – Miscellaneous Features

#### MISCELLANEOUS FEATURES

##### Management Features

- Advanced Configuration and Power Management interface (ACPI). Allows the system to wake from a low power mode. Controls system power consumption, making it possible to place individual cards and peripherals in a low-power or powered-off state without affecting other elements of the system.
- Intel® Wired for Management support; industry wide initiative to make Intel® architecture based PCs, servers and mobile computers more inherently manageable out-of-the-box and over the network
- Dual State Power Button; acts as both an on/off button and a suspend-to-sleep button

##### Serviceability Features

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

### Technical Specifications – Miscellaneous Features

#### Additional Features

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

### Technical Specifications – After Market Options

#### AFTER MARKET OPTIONS

<b>Graphics Solutions</b>	<b>Part Number</b>
HP DisplayPort to HDMI True 4k Adapter	2JA63AA
HP HDMI Standard Cable Kit	T6F94AA
HP HDMI to VGA Adapter	H4F02AA
HP DisplayPort to VGA Adapter	F7W97AA
HP DisplayPort to DVI-D Adapter	F7W96AA
HP USB-C to DisplayPort Adapter G2	8Y8Y1AA
HP USB-C to HDMI 2.0 Adapter	1WC36AA
HP USB-C to USB 3.0 Adapter	N2Z63AA
HP Single Mini Display Port Adapter to Display Port Adapter	2MY05AA

<b>Desktop Mini Accessories</b>	<b>Part Number</b>
HP Desktop Mini 90W Power Supply Kit	L4R65AA
HP Desktop Mini v4+ VESA Sleeve	99T54AA
HP Desktop Mini v4+ VESA Sleeve with Power Supply Holder	99T55AA
HP B250 PC Mounting Bracket	8RA46AA
HP B200 PC Mounting Bracket	762T5AA
HP B300 PC Mounting Bracket	2DW53AA
HP B300 PC Mounting Bracket with Power Supply Holder	7DB37AA
HP Quick Release Bracket 2	6KD15AA
HP B550 PC Mounting Bracket	16U00AA
HP B560 PC Mounting Bracket	763U8AA

<b>Data Storage Drives</b>	<b>Part Number</b>
HP PCIe Gen 4 NVME TLC M.2 512GB SSD	406L8AA
HP PCIe Gen 4 NVME TLC M.2 1TB SSD	406L7AA
<b>Input Devices</b>	<b>Part Number</b>
HP 125 G2 Wired Keyboard	AY2Y7AA
HP 125 Wired Mouse	265A9AA
HP 128 Laser Wired Mouse	265D9AA
HP 320K G2 Wired USB Keyboard	9SR37UT
HP Wired Desktop 320M Mouse	9VA80AA
HP Wired Desktop 320MK Mouse and Keyboard G2	9SR36UT

### Technical Specifications – After Market Options

<b>System Memory</b>	<b><u>Part Number</u></b>
HP 8GB DDR5-5600 SODIMM	79U70AA
HP 16GB DDR5-5600 SODIMM	79U71AA
HP 32GB DDR5-5600 SODIMM	79U72AA

<b>Security Devices</b>	<b><u>Part Number</u></b>
HP Keyed Cable Lock 10mm	T1A62AA
HP Master Keyed Cable Lock 10mm	T1A63AA
HP Combination Standard Cable Lock	T0Y15AA
HP Essential Combination Lock	T0Y16AA

<b>I/O Devices</b>	<b><u>Part Number</u></b>
HP DisplayPort 2.1 Flex IO v3	B6BS8AA
HP VGA Flex IO v3	B6BT0AA
HP Dual Type-C 3.2 Gen2 15W Out Flex IO v3	B6BT5AA
HP USB 3.1 Gen1 x2 Module FlexIO v2	13L58AA
HP USB to Serial Port Adapter	J7B60AA
HP USB-C to DisplayPort Adapter G2	8Y8Y1AA
HP Serial Port v3 FlexIO	5B895AA
HP HDMI 2.1 Flex IO v3	B6BS9AA
HP 2.5GbE LAN Flex Port	169K0AA
HP Flex 1GbE Fiber LC Single Port	20J15AA
HP USB External DVDRW Drive	F2B56AA
HP Thunderbolt 4™ Flex IO v3	B6BT1AA

© Copyright 2025 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. USB Type-C® and USB-C® are trademarks of USB implementers Forum. NVIDIA, GeForce 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. ENERGY STAR is a registered trademark owned by the U.S. Environmental Protection Agency. DisplayPort™ and the DisplayPort™ logo are trademarks owned by the Video Electronics Standards Association (VESA®) In the United States and other countries.

Date	Version History	Action	Description of Change
April 16, 2025	From v1 to v2	Changed	ENVIRONMENTAL & INDUSTRY section