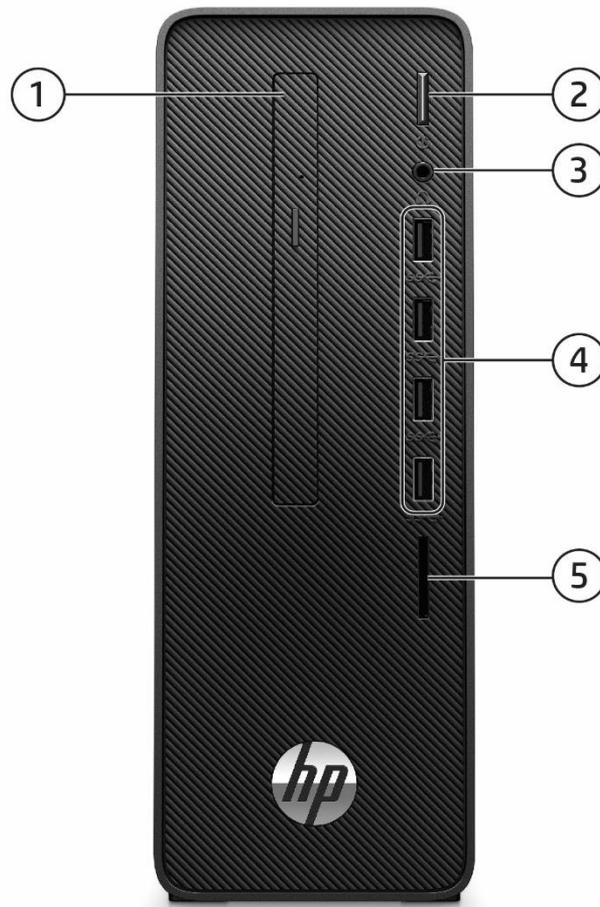


### Overview

#### HP 290 G3 Small Form Factor Business PC



#### **Front**

1. Slim-height Bay - supporting an optical disk drive (optional)
2. Power Button
3. Microphone/Headphone Combo Jack
4. (4) SuperSpeed USB 5Gbps signaling rate Ports<sup>1</sup>
5. SD Media Card Reader

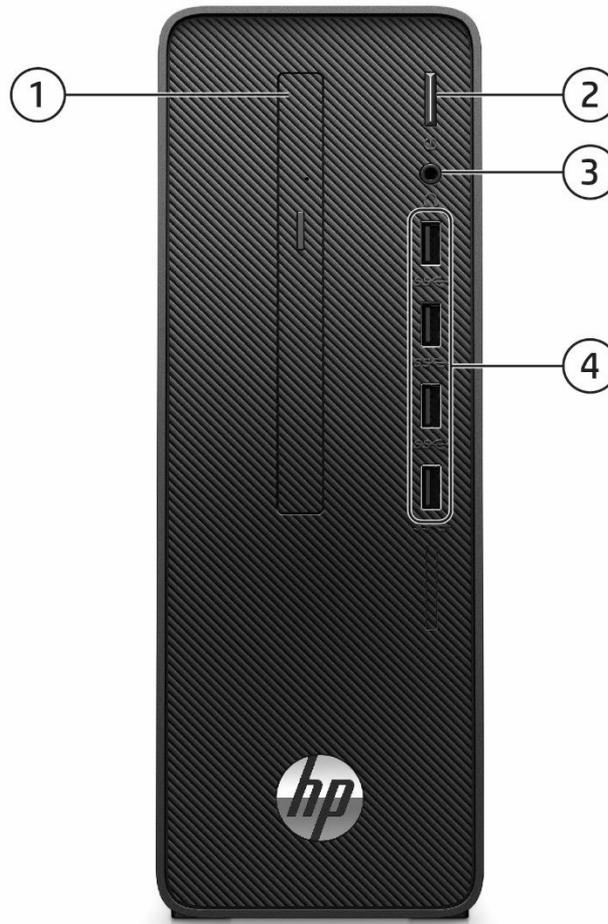
#### **Not Shown**

- Slots
- (1) PCI Express x16
  - (1) PCI Express x1
  - (1) M.2 for WLAN
  - (1) M.2 2242/2280 storage
- Bays
- (1) 3.5" or (2) 2.5" internal storage with caddy (share bay)
  - (1) 9.5mm internal optical drive bay

1. SuperSpeed USB 5Gbps = USB3.2 Gen1

### Overview

### HP 280 G5 Small Form Factor Business PC (H570)\*



#### **Front**

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

#### **Not Shown**

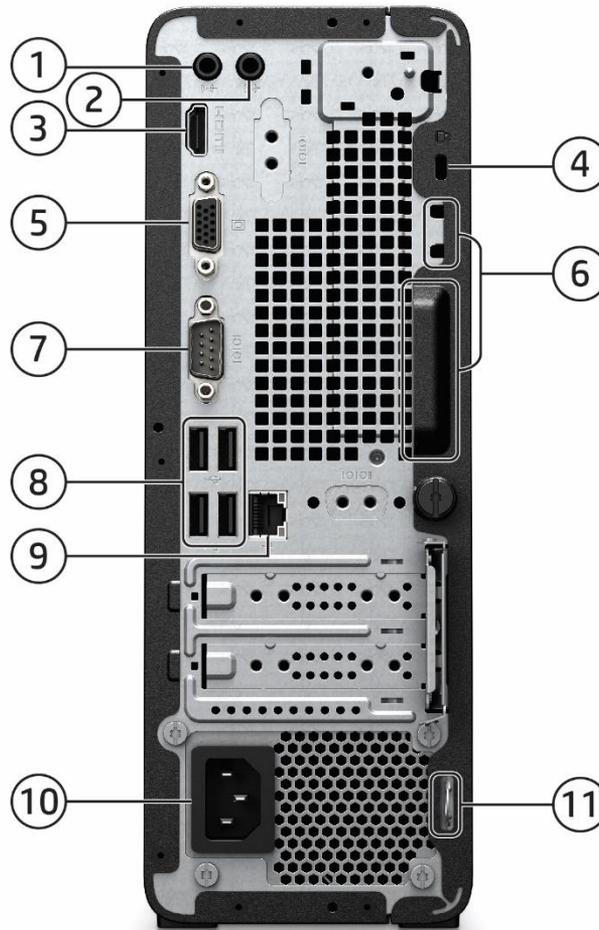
- Slots
- (1) PCI Express x16
  - (1) PCI Express x1
  - (1) M.2 for WLAN
  - (1) M.2 2242/2280 storage
- Bays
- (1) 3.5" or (2) 2.5" internal storage with caddy (share bay)
  - (1) 9.5mm internal optical drive bay

1. SuperSpeed USB 5Gbps = USB3.2 Gen1

\*NOTE: Start from 10/22/2021 280 G5 Small Form Factor Business PC transit from B460 to H570.

### Overview

#### HP 290 G3 Small Form Factor Business PC



#### **Back**

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

#### **Not Shown**

- Parallel Port (Optional via PCIe slot)
- 4 Serial Port (Optional via PCIe slot)<sup>2</sup>
- PS/2 Port (Optional)
- Intrusion Sensor (Optional)

- 1. Port will be covered up when configured with processor which is without internal graphics.
- 2. Available to selected region.

### Standard Features and Configurable Modules

#### AT A GLANCE

- Windows 10 Pro, Windows 10 Home or FreeDos
- Intel® B460 chipset supporting Intel® 10th generation processors, featuring Intel® UHD Graphics Start from 10/22/2021 280 G5 Small Form Factor Business PC transit to H570)
- Supports an optional discrete graphics card
- Integrated 10/100/1000 Ethernet Controller or 802.11 a/b/g/n/ac (1x1) Wi-Fi® and Bluetooth® 4.2 Combo
- Up to 64GB DDR4-2933 Unbuffered Memory (UDIMM)
- Independent monitor support via VGA and HDMI interfaces
- TPM 2.0 support (firmware)<sup>1</sup>
- Supports both Hard Disk Drives and SATA TLC / M.2 PCIe NVMe Solid State Drives
- 8 USB Ports (including 4 SuperSpeed USB 5Gbps ports)
- 180W Full range 115V/230V EPA 90%/85%<sup>3</sup>
- Security cable lock supported (sold separately)
- Intrusion sensor supported (optional)
- Optional Care Services available; terms and conditions vary by country; certain restrictions and exclusions apply<sup>2</sup>

1. TPM feature will be supported on machine pre-configured with FreeDOS but will default set as disabled in BIOS setup menu. In some cases, machines pre-configured with Windows OS might ship with TPM turned off.

2. HP Care Services sold separately. 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 [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.

3. 85% is for specific regions only.

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

### Standard Features and Configurable Modules

#### OPERATING SYSTEMS

##### Preinstalled

Windows 11 Pro<sup>1</sup>  
Windows 11 Home - HP recommends Windows 11 Pro for business<sup>1</sup>  
Windows 10 Pro<sup>1,2</sup>  
Windows 10 Home - HP recommends Windows 11 Pro for business<sup>1,2</sup>  
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\*

##### Intel® Celeron® Processors<sup>2,3,4</sup>

CPU Intel Celeron G5900 Dual Core 3.4GHz 2666MHz 58W (3.4 GHz, 2 MB cache, 2 cores)

CPU Intel Celeron G5905 Dual Core 3.4GHz 2666MHz 58W (3.4 GHz, 2 MB cache, 2 cores)

##### Intel® Pentium®<sup>2,3</sup>

CPU Intel Pentium G6400 Dual Core 4.0GHz 2666MHz 58W (4.0 GHz, 4 MB cache, 2 cores)

CPU Intel Pentium G6405 Dual Core 4.1GHz 2666MHz 58W (4.1 GHz, 4 MB cache, 2 cores)

CPU Intel Pentium G6600 Dual Core 4.2GHz 2666MHz 58W (4.2 GHz 4 MB cache, 2 cores)

CPU Intel Pentium G6605 Dual Core 4.3GHz 2666MHz 58W (4.3 GHz 4 MB cache, 2 cores)

##### Intel 10<sup>th</sup> Processors

##### Intel® Core™ i3<sup>2,3,4</sup>

CPU Intel Core i3-10100 4C 3.6GHz 2666MHz 65W (3.6GHz, turbo up to 4.1GHz, 6 MB cache, 4 cores)

CPU Intel Core i3-10105 4C 3.7GHz 2666MHz 65W (3.7GHz, turbo up to 4.2GHz, 6 MB cache, 4 cores)

##### Intel® Core™ i5<sup>2,3,4</sup>

CPU Intel Core i5-10400 6C 2.9GHz 2666MHz 65W (2.9GHz, turbo up to 4.0GHz, 12 MB cache, 6 cores)

CPU Intel Core i5-10500 6C 3.1GHz 2666MHz 65W (3.1GHz, turbo up to 4.2GHz, 12 MB cache, 6 cores)

CPU Intel Core i5-10505 6C 3.2GHz 2666MHz 65W (3.2GHz, turbo up to 4.3GHz, 12 MB cache, 6 cores)

##### Intel® Core™ i7<sup>2,3,4</sup>

CPU Intel Core i7-10700 8C 2.9GHz 2933MHz 65W (2.9GHz, Up to 4.8GHz with Intel® Turbo Boost<sup>5</sup>, 16MB cache, 8 cores)

2. Your product does not support Windows 8 or Windows 7. In accordance with Microsoft's support policy, HP does not support the Windows® 8 or Windows 7 operating system on products configured with Intel 8th generation and forward processors or provide any Windows® 8 or Windows 7 drivers on <http://www.support.hp.com>

3. 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.

4. In accordance with Microsoft's support policy, HP does not support the Windows 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows 8 or Windows 7 drivers on <http://www.support.hp.com>.

5. 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.

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

### Standard Features and Configurable Modules

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#### CHIPSET

Intel® B460 Chipset

Intel® H570 Chipset

#### GRAPHICS

##### Integrated<sup>6,7</sup>

Intel® UHD

Graphics 630 (integrated on 10<sup>th</sup> Core i processors and Pentium Gold G6600 processor)

Intel® UHD

Graphics 610 (integrated on Pentium Gold G6400 and Celeron)

##### Discrete Graphics

AMD Radeon™ R7 430 2GB GFX

6. HD content required to view HD images.

7. Integrated Intel software is available on select models only and requires separately purchased projector, tv or computer monitor with an integrated or external receiver. External receivers connect to the projector, tv or computer monitor via a standard VGA, HDMI cable, also sold separately.

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#### MEMORY

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

Form Factor	Type	Maximum	# of Slots
Small Form Factor	DDR4 2666 (Transfer rates up to 2666 MT/s) DDR4 2933 (Transfer rates up to 2933 MT/s)	64 GB capacity	2 DIMM <sup>8</sup>
	4 GB DDR4-2666 UDIMM (1x4GB)		
	4GB DDR4-2933 UDIMM NECC (1x4GB)		
	8GB DDR4-2933 UDIMM (1x8GB)		
	8GB DDR4-2933 UDIMM (1x4GB)		
	16GB DDR4-2933 UDIMM NECC (2x8GB)		
	16GB DDR4-2933 UDIMM NECC (1x16GB)		
	64GB DDR4-2933 UDIMM NECC (2x32GB)		
	8 GB DDR4-2666 UDIMM (1x8GB)		
	8 GB DDR4-2666 UDIMM (2x4GB)		
	16 GB DDR4-2666 UDIMM (1x16GB)		
	16 GB DDR4-2666 UDIMM (2x8GB)		
	64GB DDR4-2666 UDIMM (2x32GB)		

8. Memory modules support data transfer rates up to 2933 MT/s; actual data rate is determined by the system's configured processor. See processor specifications for supported memory data rate.

**NOTE:** DDR3-2933 UDIMM is only available for 10th Gen i7 processor.

### Standard Features and Configurable Modules

#### STORAGE AND DRIVES

**SATA3 - 3.5" or 2.5" 6Gb/s HDDs\***

2TB 7200 RPM SATA Hard Disk Drive

1TB 7200 RPM SATA Hard Disk Drive

500GB 7200 RPM SATA Hard Disk Drive

**M.2 Solid State Drives**

128GB M.2 NVMe

256GB M.2 NVMe

512GB M.2 NVMe

**SD Card Reader<sup>9</sup>**

SD/SDHC/SDXC SD Card Reader

**Intel Optane Memory\***

SSD Intel 16GB 2280 Optane Memory

9. Card sold separately.

\*NOTE: Optional per configuration

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#### OPTICAL DISC DRIVES

DVD-ROM 9.5mm<sup>10</sup>

DVD-Writer 9.5mm<sup>10</sup>

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

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#### NETWORKING/COMMUNICATIONS

**Networking**

Integrated 10/100/1000M GbE LAN

**Wi-Fi® and Bluetooth®<sup>11</sup>**

802.11a/b/g/n/ac (1x1) Wi-Fi® and Bluetooth® 4.2 Combo

11. 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.

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#### AUDIO/MULTIMEDIA

Realtek ALC3601/ ALC3867-CG

Integrated Hi-Definition Audio

Combo Jack, Headphone/ Microphone

Line-in/ Line-out (3.5mm)

### Standard Features and Configurable Modules

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

##### **Keyboard**

USB Business Slim Wired Keyboard  
HP USB Wired Keyboard  
Business Slim USB Antimicrobial Wired Keyboard (China)  
No KB Option

##### **Mouse**

Antimicrobial USB Mouse (China)  
HP Optical USB Mouse  
Universal Wired USB Mouse  
USB Hardened Mouse (Specific region)  
No Mouse Option

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#### **PORTS**

##### **Front**

Slim-height Bay - supporting an optical disk drive (optional)  
(4) SuperSpeed USB 5Gbps signaling rate  
SD Media Card Reader  
Microphone/Headphone Combo Jack  
Power Button

##### **Not Shown**

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

##### **Rear**

Audio Line out  
Audio Line in  
HDMI Port  
Standard lock slot  
VGA Port  
Serial Port  
(4) USB 2.0 port  
RJ-45 Network Connector  
Power Cord Connector  
Padlock loop  
Integrated Accessories Cable Lock

### Standard Features and Configurable Modules

### Standard Features and Configurable Modules

#### Not Shown

- (1) Parallel Port (Optional via PCIe1 slot)
- (1) 4x Serial port (Optional via PCIe1 slot)<sup>12</sup>
- (1) PS/2 Port (Optional)
- (1) Intrusion Sensor (Optional)

12. Available for selected regions

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### BAYS

- (1) 3.5" or (2) 2.5" internal storage with caddy (share bay)
  - (1) 9.5mm internal optical drive bay
- 

### SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS

#### Security and Protection

McAfee\* LiveSafe™<sup>13</sup>

#### Productivity

Buy Office (sold separately)

Dropbox<sup>14</sup>

Xerox® DocuShare® (30 days free trial offer)<sup>18</sup>

#### ODD Playback

sMedio True DVD for HP

#### Movies

Netflix<sup>16</sup>

#### App Stores and Content Purchasing

Amazon<sup>15</sup>

#### HP Utilities and Support

HP Documentation

HP JumpStarts

HP Audio Switch<sup>16</sup>

HP Support Assistant<sup>17</sup>

#### BTB

HP Setup Integrated OOBE

#### Hardware Enabling Drivers or software utility

HP System Event Utility

### Standard Features and Configurable Modules

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

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

14. 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.

15. Internet access required and not included.

16. Easily switch between speaker and microphone sources with intuitive controls and a consistent app experience

17. For more information visit [hp.com/go/hpsupportassistant](http://hp.com/go/hpsupportassistant) [Link will vary outside of the U.S.] HP Support Assistant is available for Android and Windows based PCs.

18. 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 days free trial period. See visit <https://www.xerox.com/docusharego> for details.

### POWER

#### Power Supply

180 W

EPA85 Full range 115V/230V

EPA90 Full range 115V/230V

### WEIGHT AND DIMENSIONS

(configured with 1 HDD and 1 ODD)

**Chassis (W x H x D)**

3.74 x 10.63 x 11.65 in (95 x 270 x 296 mm)

**System Weight**

8.82 lbs / 4 kg\*

**\*NOTE:** Weight varies by configuration and component

### UNIT ENVIRONMENTAL AND OPERATING CONDITIONS

General Unit Operating Guidelines

#### Environmental and Industry

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

#### Temperature Range

**Operating:**

5° to 35° C<sup>19</sup>

**Non-operating:**

-30° to 60°<sup>19</sup>

#### Relative Humidity

**Operating:**

5% to 90% (non-condensing at ambient)

**Non-operating:**

5% to 90% (non-condensing at ambient)

### Standard Features and Configurable Modules

<b>Maximum Altitude (unpressurized) Operating:</b>	5,000 m
<b>Non-operating:</b>	50,000 ft (15240 m)

19. 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>System Configuration</b>	The configuration used for the Energy Consumption and Declared Noise Emissions data for the Desktop model is based on a "Typically Configured Desktop".		
<b>Energy Consumption (in accordance with US ENERGY STAR® test method)</b>	<b>115VAC, 60Hz</b>	<b>230VAC, 50Hz</b>	<b>100VAC, 50Hz</b>
Normal Operation (Short idle)	19.49W	19.33W	19.3W
Normal Operation (Long idle)	17.74W	18.9W	18.5W
Sleep	1.45W	1.46W	1.47W
Off	0.28W	0.28W	0.28W
	<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. Search keyword generator on HP's 3rd party option store for solar generator accessories at <a href="http://www.hp.com/go/options">www.hp.com/go/options</a>.</p>		
<b>Heat Dissipation*</b>	<b>115VAC, 60Hz</b>	<b>230VAC, 50Hz</b>	<b>100VAC, 50Hz</b>
Normal Operation (Short idle)	66.46 BTU/hr	65.92 BTU/hr	65.81 BTU/hr
Normal Operation (Long idle)	60.49 BTU/hr	64.45 BTU/hr	63.09 BTU/hr
Sleep	4.94 BTU/hr	4.98 BTU/hr	5.01 BTU/hr
Off	0.95 BTU/hr	0.95 BTU/hr	0.95 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	3.8	26.1	
Fixed Disk – Random writes	3.9	26.9	
<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 "3" years after the end of production.</p>		
<b>Batteries</b>	This battery(s) in this product comply with EU Directive 2006/66/EC		

### Standard Features and Configurable Modules

	<p>Batteries used in the product do not contain:                  Mercury greater than 1ppm by weight                  Cadmium greater than 20ppm by weight</p> <p>Battery size: CR2032 (coin cell)                  Battery type: Lithium</p>		
<b>Additional Information</b>	<ul style="list-style-type: none"> <li>• This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.</li> <li>• This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.</li> <li>• This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).</li> <li>• This product is in compliance with the IEEE 1680.1 (EPEAT) standard at the &lt;Silver&gt; level, see <a href="http://www.epeat.net">http://www.epeat.net</a></li> <li>• Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.</li> <li>• This product contains 28.2% post-consumer recycled plastic (by wt.)</li> <li>• This product is 91.7% recycle-able when properly disposed of at end of life.</li> </ul>		
<b>Packaging Materials</b>	<b>External:</b>	PAPER/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>		

### Standard Features and Configurable Modules

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

### SERVICE AND SUPPORT

On-site Warranty<sup>20</sup>: Available three-year (3-3-3) or one-year (1-1-1) limited warranty (varies by country) delivers on-site, next business day<sup>21</sup> service for parts and labor and complimentary limited technical support<sup>22</sup>. Three-year onsite and labor are not available in all countries. Service offers terms up to 5 years by choosing an optional HP Care Service<sup>23</sup>. To choose the right level of service for your HP product, visit HP Care Pack Central: <http://www.hp.com/go/cpc>.

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

21. 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.

22. Technical support applies only to HP-configured and third-party HP qualified hardware and software.

23. 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 [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.

### GRAPHICS

### Technical Specifications - Graphics

#### GRAPHICS

<b>Intel® UHD Graphics 630 (integrated on Core i7/i5/i3/Pentium G6500 and above processors)</b>			
<b>Intel® UHD Graphics 610 (integrated on Pentium G6400 and below/ and Celeron)</b>			
<b>DisplayPort™</b>	Multimode capable; supports HDCP, DisplayPort™ Audio (2 streams), HBR2 link rates and Multi-Stream Technology for a maximum of 3 displays (including the integrated panel)		
<b>Maximum Graphics Memory</b>	Microsoft Windows 7	Windows 8.1	Windows 10
	Up to 1.7GB	Up to 1.8GB	>4 GB
<i>Note: the actual amount of maximum graphics memory can be less than the amounts listed above depending upon your computer's configuration.</i>			
<b>Maximum Color Depth</b>	32 bits/pixel		
<b>Graphics/Video API Support</b>	10 <sup>th</sup> Generation Intel® Core™ processors/Pentium G6500 and above:		
	<ul style="list-style-type: none"> <li>With Intel® UHD Graphics 630</li> <li>DirectX 12, OpenGL 4.3, OpenCL 1.2, Intel® Quick Sync Video</li> </ul>		
<b>Supported Display Resolutions and Refresh Rates</b>	Pentium G6400 and below/ and Celeron		
	<ul style="list-style-type: none"> <li>With Intel® UHD Graphics 610</li> <li>DirectX 12, OpenGL 4.3, OpenCL 1.2, Intel® Quick Sync Video</li> </ul>		
<b>Supported Display Resolutions and Refresh Rates</b>	Max. Resolution (VGA) 2048 x 1536@60Hz Max. Resolution (HDMI) 4096 x 2160@60Hz		
<i>Note: other resolutions may be available but are not recommended as they may not have been tested and qualified by HP.</i>			
<i>* Only supported on displays connected to the external DisplayPort connector.</i>			

#### AMD Radeon™ R7 430 2GB Graphics Card

<b>Engine Clock</b>	780 MHz
<b>Memory Clock</b>	1100 MHz
<b>Memory Size(width)</b>	2GB(64-bit)
<b>Memory Type</b>	256M x 32 GDDR5
<b>Max. Resolution(VGA)</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
<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

### Technical Specifications - Storage

#### STORAGE

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

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

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##### 1TB 7.2K rpm SATA 6.0Gb/s 3.5" Hard Disk Drive

<b>Capacity</b>	1 TB
<b>Rotational Speed</b>	7,200 rpm
<b>Interface</b>	Serial ATA 3.0 (6.0 Gb/s)
<b>Buffer Size</b>	32 MB
<b>Logical Blocks</b>	1,953,525,168
<b>Seek Time</b>	Read: <8.5 ms Write: <9.5 ms Full-Stroke: 21 ms
<b>Height</b>	1 in/2.54 cm
<b>Width</b>	Media diameter: 3.5 in/8.89 cm Physical size: 4 in/10.2 cm
<b>Operating Temperature</b>	41° to 131° F (5° to 55° C)

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

<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 Average: 11 ms Full-Stroke: 21 ms
<b>Height</b>	1 in/2.54 cm
<b>Width</b>	Media diameter: 3.5 in/8.89 cm Physical size: 4 in/10.2 cm

### Technical Specifications - Storage

**Operating Temperature** 41° to 131° F (5° to 55° C)

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

**Drive Weight** < 10g  
**Capacity** 128 GB  
**Height** 2.38mm  
**Length** 80mm  
**Width** 22mm  
**Interface** PCIe Gen3x4  
**Maximum Sequential Read** Up to 2800MB/s  
**Maximum Sequential Write** Up to 600MB/s  
**Logical Blocks** 250,069,680  
**Operating Temperature** 0° to 70°C (32° to 158°F) [ambient temp]  
**Features** APST; ASPM L1.2; NVME spec 1.2

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

**Drive Weight** < 10g  
**Capacity** 256 GB  
**Height** 2.38mm  
**Length** 80mm  
**Width** 22mm  
**Interface** PCIe Gen3x4  
**Maximum Sequential Read** Up to 2700MB/s  
**Maximum Sequential Write** Up to 1000MB/s  
**Logical Blocks** 500,118,192  
**Operating Temperature** 0° to 70°C (32° to 158°F) [ambient temp]  
**Features** APST; ASPM L1.2; NVME spec 1.2

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

**Drive Weight** < 10g  
**Capacity** 512 GB  
**Height** 2.38mm  
**Length** 80mm  
**Width** 22mm  
**Interface** PCIe Gen3x4  
**Maximum Sequential Read** Up to 2900MB/s  
**Maximum Sequential Write** Up to 1100MB/s

### Technical Specifications - Storage

<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

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#### 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
<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

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

<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

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#### 500 GB 7200RPM 2.5in SATA HDD

<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)

### Technical Specifications - Storage

<b>Width (nominal)</b>	2.75 in/70 mm (nominal)
<b>Operating Temperature</b>	41° to 131° F (5° to 55° C)

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#### 1TB 7200RPM 2.5in SATA HDD

<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)

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**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 – Optical Disc Drives

#### OPTICAL DISC DRIVES

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

<b>Height</b>	9.5 mm height
<b>Orientation</b>	Either horizontal or vertical
<b>Interface type</b>	SATA/ATAPI
<b>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 DVD+R - Up to 8X DVD+RW - Up to 8X DVD+R DL - Up to 6X DVD-R - Up to 8X DVD-RW - Up to 6X CD-R - Up to 24X CD-RW - Up to 10X DVD-RW, DVD+RW - Up to 8X DVD-R DL, DVD+R DL - Up to 8X DVD+R, DVD-R - Up to 8X DVD-ROM DL, DVD-ROM - Up to 8X CD-ROM, CD-R - Up to 24X CD-RW - Up to 24X
<b>Access time (typical reads, including settling)</b>	Random DVD-ROM: 170 ms (typical), CD-ROM: 170 ms (typical) Full Stroke DVD-ROM: 320 ms (typical), CD-ROM: 320 ms (typical) Stop Time 6 seconds (typical)
<b>Power</b>	Source Slimline SATA DC power receptacle DC Power Requirement 5 VDC $\pm$ 5%-100 mV ripple p-p 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) Relative Humidity 10% to 80% Maximum Wet Bulb Temperature 84° F (29° C)

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

<b>Height</b>	9.5 mm height
<b>Orientation</b>	Either horizontal or vertical
<b>Interface type</b>	SATA/ATAPI
<b>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 DVD+R - Up to 8X DVD+RW - Up to 8X DVD+R DL - Up to 6X DVD-R - Up to 8X DVD-RW - Up to 6X CD-R - Up to 24X

### Technical Specifications – Optical Disc Drives

CD-RW - Up to 10X  
DVD-RW, DVD+RW - Up to 8X  
DVD-R DL, DVD+R DL - Up to 8X  
DVD+R, DVD-R - Up to 8X  
DVD-ROM DL, DVD-ROM - Up to 8X  
CD-ROM, CD-R - Up to 24X  
CD-RW - Up to 24X

**Access time  
(typical reads, including  
settling)**

Random DVD-ROM: 170 ms (typical), CD-ROM: 170 ms (typical)  
Full Stroke DVD-ROM: 320 ms (typical), CD-ROM: 320 ms (typical)  
Stop Time 6 seconds (typical)

**Power**

Source Slimline SATA DC power receptacle  
DC Power Requirement 5 VDC  $\pm$  5%-100 mV ripple p-p  
DC Current 5 VDC (< 1000 mA typical, 1600 mA maximum)

**Environmental conditions  
(operating - non-condensing)**

Temperature 41° to 122° F (5° to 50° C)  
Relative Humidity 10% to 80%  
Maximum Wet Bulb Temperature 84° F (29° C)

### Technical Specifications – Audio

#### HIGH DEFINITION AUDIO

<b>Type</b>	Integrated
<b>HD Audio Codec</b>	Realtek ALC3601 / ALC3867-CG
<b>Audio I/O Ports</b>	Front side Combo jack for supporting CTIA, Rear side Line-in/ Line-out/ Mic-in jacks
<b>Wavetable Syntheses</b>	Yes
<b>Analog Audio</b>	Yes
<b>Internal Speaker</b>	NA
<b>DAC Sampling Rates</b>	16 to 24-bit; 44.1K/ 48 K/96K / 192K Hz
<b>ADC Sampling Rates</b>	16 bit, 44.1K/ 48K/ 96K/ 192K Hz

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### Technical Specifications - Power

#### POWER SUPPLY

##### P/S 180W SFF ENTS20L EAP85

<b>Operating Voltage Range</b>	180 – 264 VAC
<b>Rated Voltage Range</b>	200-240V AC
<b>Rated Line Frequency</b>	50/60 HZ
<b>Operating Line Frequency</b>	47 – 63 Hz
<b>Rated Input Current</b>	180W : <1.3A
<b>Rated Input Current with Energy Efficient* Power Supply</b>	82/85/82% 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. 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>	50 x 20 mm (linear type)

##### P/S 180W SFF ENTS20L EAP90

<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
<b>Rated Input Current with Energy Efficient* Power Supply</b>	87/90/87% efficient at 20/50/100% load (115Vac) 88/92/88% 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. 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>	50 x 20 mm (linear type)

### Technical Specifications – Weights and Dimensions

#### WEIGHTS AND DIMENSIONS

<b>Chassis (W x D x H)</b>	3.74 x 11.93 x 10.63 in (95 x 303 x 270 mm) (w/ bezel)
<b>System Volume</b>	463.16cu in 7.6L
<b>System Weight*</b>	8.82 lbs / 4 kg
<b>Packaged (H x W x D)</b>	13.46 x 7.72 x 19.65 in 342 x 196 x 499 mm
<b>Shipping Weight*</b>	13.2 lb / 6 kg
<b>Shipping Weight (Molded Pulp)*</b>	13.86 lb / 6.3 kg
<b>Palletization Profile</b>	12-units per layer 6 layer max 72 per pallet Footprint (H x W x D) 85.91 x 39.37 x 47.24 in (2182 x 1000 x 1200 mm)

\*NOTE: Weight varies by configuration and component

### Technical Specifications – Networking

#### NETWORKING

##### 10/100/1000 Integrated NIC

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

##### Realtek 802.11ac (1x1) Wi-Fi® and Bluetooth® 4.2 Combo \*

<b>Wireless LAN Standards<sup>1</sup></b>	<p>IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac</p> <p><a href="#">1. Wireless access point and Internet service required and not included. Availability of public wireless access points limited.</a></p>	
<b>Interoperability</b>	Wi-Fi® certified modules	
<b>Frequency Bands</b>	802.11b/g/n	<p>•2.402 – 2.482 GHz</p> <p><a href="#">Note: The FCC has declared as of January 1, 2015 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.</a></p>
	802.11a/n	<p>•4.9 – 4.95 GHz (Japan)</p> <p>•5.15 – 5.25 GHz</p> <p>•5.25 – 5.35 GHz</p> <p>•5.47 – 5.725 GHz</p> <p>•5.825 – 5.850</p>

### Technical Specifications – Networking

<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>
<b>Modulation</b>	<p>Direct Sequence Spread Spectrum</p> <p>BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM</p>
<b>Security<sup>2</sup></b>	<ul style="list-style-type: none"> <li>• IEEE and 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> <p><a href="#">2 Check latest software/driver release for updates on supported security features.</a></p>
<b>Network Architecture Models</b>	<p>Ad-hoc (Peer to Peer)</p> <p>Infrastructure (Access Point Required)</p>
<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> <p><a href="#">3. Maximum output power may vary by country according to local regulations.</a></p>
<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 10mW</li> <li>• Radio disabled 8 mW</li> </ul>
<b>Power Management</b>	<p>ACPI and PCI Express compliant power management</p> <p>802.11 compliant power saving mode</p>
<b>Receiver Sensitivity<sup>4</sup></b>	802.11b, 1Mbps : -93.5dBm maximum

### Technical Specifications – Networking

	802.11b, 11Mbps : -84dBm maximum 802.11a/g, 6Mbps : -86dBm maximum 802.11a/g, 54Mbps : -72dBm maximum 802.11n, MCS07 : -67dBm maximum 802.11n, MCS15 : -64dBm maximum 802.11ac, MCS0 : -84dBm maximum 802.11ac, MCS9 : -59dBm maximum	
	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>Antenna type</b>	High efficiency antenna. One embedded dual band 2.4/5 GHz antenna is provided to the card to support WLAN communications and Bluetooth communications	
<b>Form Factor</b>	PCI-Express M.2 MiniCard	
<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>	<b>Operating:</b> <b>Non-operating:</b>	14° to 158° F (-10° to 70° C) -40° to 176° F (-40° to 80° C)
<b>Humidity</b>	<b>Operating:</b> <b>Non-operating:</b>	10% to 90% (non-condensing) 5% to 95% (non-condensing)
<b>Altitude</b>	<b>Operating:</b> <b>Non-operating:</b>	0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)
<b>LED Activity</b>	LED Amber – Radio OFF; LED White – Radio ON	

### HP Integrated Module with Bluetooth 4.0/4.1/4.2 Wireless Technology

<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) 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>Receiver Sensitivity Legacy</b>	
<b>Power Consumption</b>	Peak (Tx) 330 mW Peak (Rx) 230 mW

### Technical Specifications – Networking

	Selective Suspend 17 mW
<b>Range</b>	Legacy : 0~79 (1 MHz/CH) 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>	Microsoft Windows ACPI, and USB Bus Support
<b>Certifications 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)

After-Market Options (availability may vary by region)

### AFTER MARKET OPTIONS

<b><u>Type</u></b>	<b><u>Description</u></b>	<b><u>Part #</u></b>
<b>Memory</b>	HP 4GB DDR4-2666 DIMM	3TK85AA
	HP 8GB DDR4-2666 DIMM	3TK87AA
	HP 16GB DDR4-2666 DIMM	3TK83AA
<b>Storage</b>	HP 500GB SATA 6.0Gb/s Hard Drive	QK554AA
	HP 1TB 7200rpm SATA 6Gbps Hard Drive	QK555AA
	HP Turbo Drive Gen2 256GB M.2 SSD Drive	1CA51AA
	HP 256GB SATA TLC Non-SED Solid State Drive	P1N68AA
	HP 9.5mm G3 8/6/4 SFF G4 400 SFF/MT DVD Writer	1CA53AA
<b>Graphics</b>	AMD Radeon™ R7 430 2GB 2DP Card	5JW82AA
<b>Security</b>	HP Business PC Security Lock V3 Kit	3XJ17AA
	HP Keyed Cable Lock 10mm kit	T1A62AA
<b>Adapters</b>	HP PCIe x1 Parallel Port Card	N1M40AA
	HP HDMI Standard Cable Kit	T6F94AA
	HP USB to Serial Port Adapter	J7B60AA
<b>Networking</b>	Intel Ethernet I210-T1 GbE NIC Card	EOX95AA
<b>Input</b>	HP USB Mouse	QY777AA
	HP USB Hardened Mouse	P1N77AA
	HP USB Grey v2 Mouse	Z9H74AA
	HP USB Keyboard	QY776AA
	HP USB Business Slim Keyboard	N3R87AA
	HP USB Antimicrobial Slim Keyboard and Mouse	Z9H50AA
<b>Others</b>	HP Business Headset v2	T4E61AA
	HP S101 Speaker bar	5UU40AA

### Change Log

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<b>Date of change:</b>	<b>Version History:</b>		<b>Description of change:</b>
July 24, 2020	From v1 to v2	Added	Intel Celeron G5905
July 29, 2020	From v2 to v3	Correction	Dimensions order
September 24, 2020	From v3 to v4	Addition	Xerox® DocuShare® and footnote to software section.
November 2, 2020	From v4 to v5	Addition	Disclaimer and I7-10700 information update in processors section.
March 1, 2021	From v5 to v6	Addition	UNIT ENVIRONMENTAL AND OPERATING CONDITIONS
March 2, 2021	From v6 to v7	Update	Xerox specs and disclaimer updated in Software section
June 22, 2021	From v7 to v8	Addition	ALC3867-CG added to HD Audio Codec
September 13, 2021	From v8 to v9	Addition	Integration of H570 chipset and G6405, G6605, i3-10105 and i5-10505 processors and power supply section updated
September 16, 2021	From v9 to v10	Update	At a glance section and disclaimers added to call outs and processors
September 23, 2021	From v10 to v11	Update	EPEAT disclaimer
December 24, 2021	From v11 to v12	Update	Windows 11 upgrade