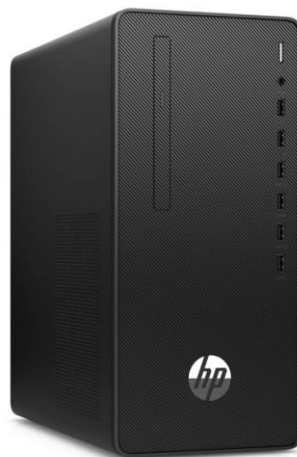


Informacije o proizvodu (EN)

HP računar 295 G8 (997V0ET)



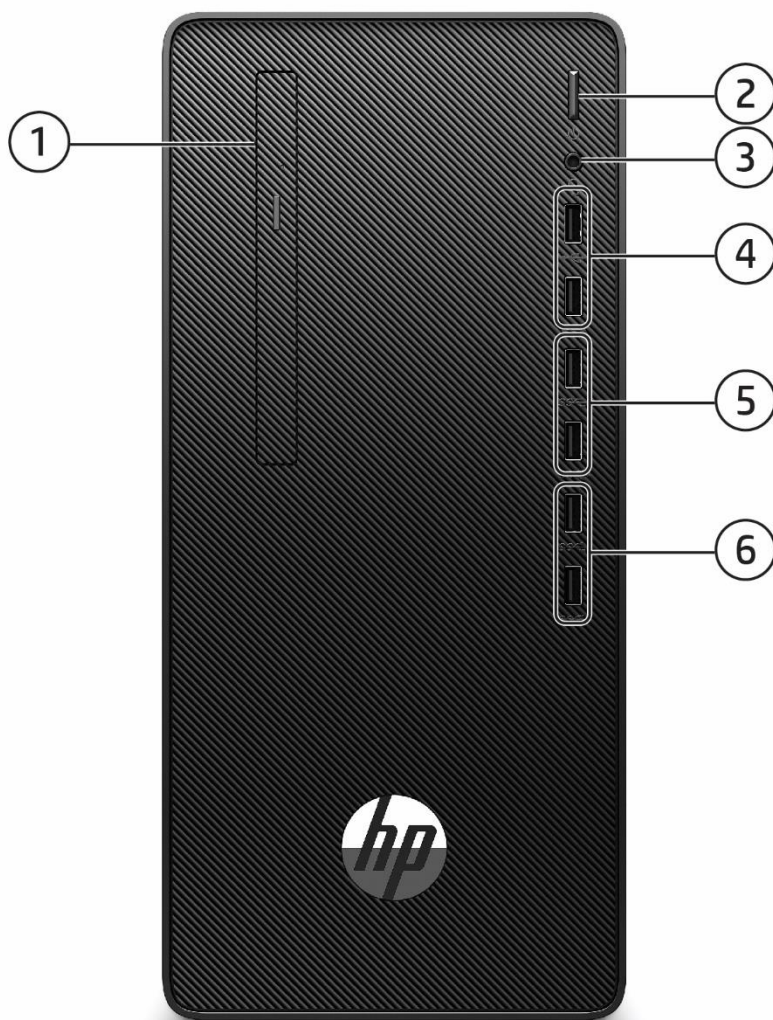
Tehnoteka je online destinacija za upoređivanje cena i karakteristika bele tehnike, potrošačke elektronike i IT uređaja kod trgovinskih lanaca i internet prodavnica u Srbiji. Naša stranica vam omogućava da istražite najnovije informacije, detaljne karakteristike i konkurentne cene proizvoda.

Posetite nas i uživajte u ekskluzivnom iskustvu pametne kupovine klikom na link:

<https://tehnoteka.rs/p/hp-racunar-295-g8-997v0et-akcija-cena/>

Overview

HP 295 G8 Microtower PC



Front

1. Slim-height Bay - supporting an optical disk drive (optional)
2. Power Button
3. Combo jack, Headphone/ Microphone
4. (2) USB 2.0
5. (2) SuperSpeed USB 5 Gbps signaling rate port¹
6. (2) SuperSpeed USB 10 Gbps signaling rate port¹

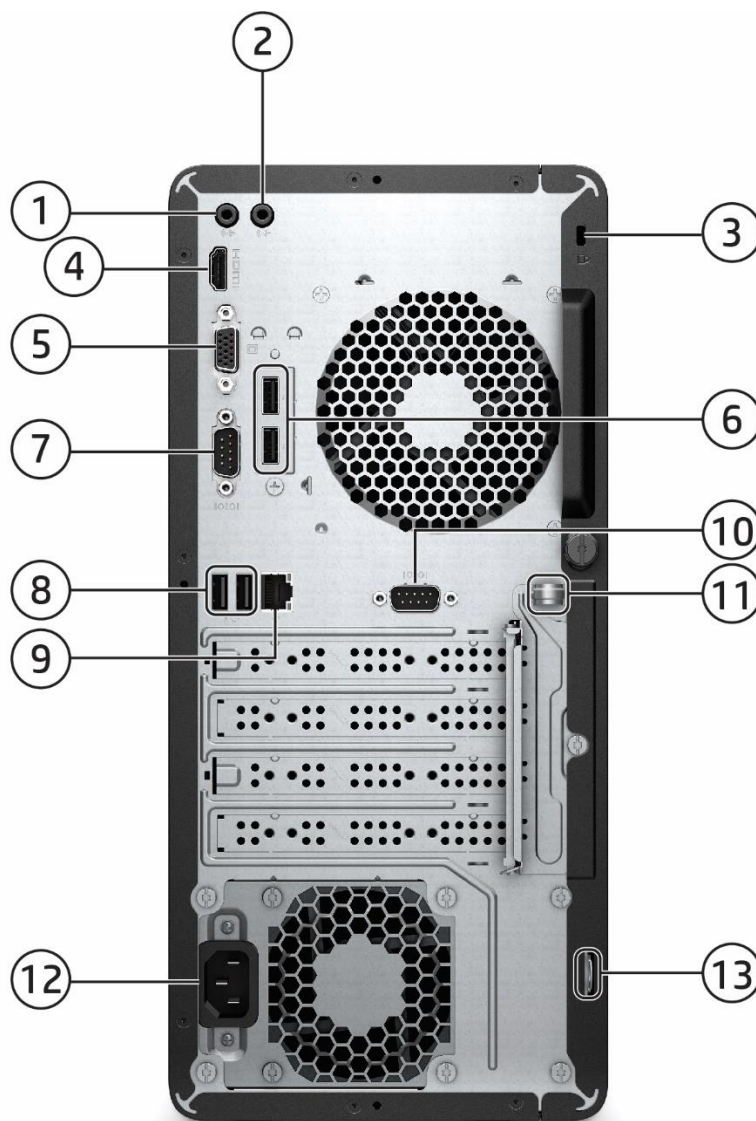
Not Shown

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

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

Overview

HP 295 G8 Microtower PC



Rear

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

Not Shown

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

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

Standard Features and Configurable Modules

AT A GLANCE

- Windows 10 Pro, Windows 10 Home or FreeDos 2.0
- AMD PRO565 Chipset, latest AMD® Ryzen™ PRO, AMD® Ryzen™, and Athlon PRO processors with AMD Integrated Radeon™ Vega Graphics
- Supports an optional discrete graphics card
- Integrated 10/100/1000 Ethernet Controller or Realtek ac 1x1+BT 4.2 LE with 1 Antenna
- Up to 64GB DDR4- 3200 Unbuffered Memory (UDIMM)¹
- Independent monitor support via VGA/HDMI interfaces
- Supports both Hard Disk Drives and / M.2 PCIe NVMe Solid State Drives
- Up to 10 USB ports (including native 2 USB 2.0, 2 SuperSpeed USB 5Gbps signaling rate ports and 2 SuperSpeed USB 10Gbps signaling rate ports at front, and native 2 SuperSpeed USB 5Gbps signaling rate ports at rear and optional 2 USB 2.0 at rear)²
- Adding 180W/310W/500W 90% HE power supply
- Security cable lock supported (sold separately)
- Integrated accessory cable lock helps secure cabled mouse, keyboard and accessories
- Intrusion sensor supported (Optional)
- Optional HP Care Service available; terms and conditions vary by country; certain restrictions and exclusions apply³
- AMD Firmware TPM solution⁴

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

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

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

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

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

Standard Features and Configurable Modules

PRODUCT NAME

HP 295 G8 Microtower PC

OPERATING SYSTEM

Preinstalled	Windows 11 Pro ¹
	Windows 11 Home - HP recommends Windows 11 Pro for business ¹
	Windows 10 Pro ^{1,2}
	Windows 10 Home - HP recommends Windows 11 Pro for business ^{1,2}
Pre-installed (other)	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>.

PROCESSORS²

AMD® Ryzen™ 5000 Series Processors

AMD Ryzen™ 7 PRO 5750G Processor (16MB cache, 4.6GHz Boost³), 65W

AMD Ryzen™ 5 PRO 5650G Processor (16MB cache, 4.4GHz Boost³), 65W

AMD Ryzen™ 3 PRO 5350G Processor (8MB cache, 4.2GHz Boost³), 65W

AMD Ryzen™ 7 5700G Processor (16MB cache, 4.6 Boost³), 65W

AMD Ryzen™ 5 5600G Processor (16MB cache, 4.4GHz Boost³), 65W

AMD Ryzen™ 3 5300G Processor (8MB cache, 4.2GHz Boost³), 65W

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

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

CHIPSET

AMD PRO565

Standard Features and Configurable Modules

GRAPHICS⁴

Integrated

AMD Integrated Radeon™ Vega Graphics

Discrete Graphics⁵

AMD Radeon™ RX550X 4GB DP+HDMI GFX

AMD Radeon™ R7 430 2GB DP+VGA GFX

AMD Radeon™ 520 1GB DP+VGA GFX

GFX Nvidia® GeForce® GTX1660 Super 6GB

4. HD content required to view HD images.

5. Sold separately or as an optional feature.

MEMORY⁶

Type

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

Maximum

64GB capacity

of Slots

2 DIMM

4GB DDR4-3200 UDIMM NECC (1x4GB)

8GB DDR4-3200 UDIMM NECC (1x8GB)

8GB DDR4-3200 UDIMM NECC (2x4GB)

16GB DDR4-3200 UDIMM NECC (1x16GB)

16GB DDR4-3200 UDIMM NECC (2x8GB)

32GB DDR4-3200 UDIMM NECC (2x16GB)

64GB DDR4-3200 UDIMM NECC (2x32GB)

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

Standard Features and Configurable Modules

STORAGE⁷

SATA3 - 3.5" or 2.5" HDDs

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

M.2 Solid State Drives

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

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

OPTICAL DISK DRIVES⁸

DVD-ROM 9.5mm
DVD-Writer 9.5mm

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

NETWORKING/COMMUNICATIONS

Networking

Integrated 10/100/1000M GbE LAN

Wi-Fi® and Bluetooth®

802.11 ac (1x1) Wi-Fi® and Bluetooth® 4.2 Combo⁹

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

AUDIO/MULTIMEDIA

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

Standard Features and Configurable Modules

KEYBOARDS/POINTING DEVICES¹⁰

Keyboards

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

Mouse

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

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

PORTS/SLOTS

Front

(1) Combo jack (Headphone/Microphone)
(2) USB 2.0
(2) SuperSpeed USB 5Gbps signaling rate port¹¹
(2) SuperSpeed USB 10Gbps signaling rate port¹¹

Not Shown

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

Rear

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

Not Shown

(2) PS/2 Port (Optional)
(1) Parallel Port (Optional via PClex1 slot)
(1) 4x Serial port (Optional via PClex1 slot)
(1) Internal Speaker (Optional)
(1) Intrusion Sensor (Optional)

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

Standard Features and Configurable Modules

BAYS

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

Standard Features and Configurable Modules

SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS

Security and Protection

McAfee® LiveSafe™¹²

Productivity

Buy Office (sold separately)

Dropbox¹³

Xerox® DocuShare® (30 day free trial offer)¹⁴

ODD Playback

sMedio True DVD for HP

Movies

Netflix

App Stores and Content Purchasing

Amazon¹⁵

HP Utilities and Support

HP Documentation

HP JumpStart

HP Audio Switch

HP Support Assistant

BTB

HP Setup Integrated OOBE

Hardware Enabling Drivers or software utility

HP System Event Utility

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

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

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

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

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

Standard Features and Configurable Modules

POWER

Power Supply

180 W

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

310 W

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

500 W

500W MT EPA90 FR 115V/230V

DIMENSIONS & WEIGHT

(configured with 1 HDD and 1 ODD)

Chassis (H x W x D)

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

System Weight

12.17 lbs / 5.52 kg

Packaging dimensions and weight

Dimensions

11.30 x 15.75 x 19.65 in

287 x400 x499 mm

Weight

20.06 lb / 9.10 kg

Security Features

TPM 2.0 support (fTPM)¹⁶

Security cable slot

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

Standard Features and Configurable Modules

UNIT ENVIRONMENT AND OPERATING CONDITIONS

General Unit Operating Guidelines

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

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

17. Operating temperature is de-rated 1.0 deg C per 300 m (1000 ft) to 3000 m (10,000 ft) above sea level, no direct sustained sunlight. Maximum rate of change is 10 deg C/Hr. The upper limit may be limited by the type and number of options installed.

Eco-Label Certifications & declarations	This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks: • IT ECO declaration • US ENERGY STAR® • US Federal Energy Management Program (FEMP) • EPEAT[®] Gold registered in the United States. See http://www.epeat.net for registration status in your country. • TCO Certified • China Energy Conservation Program (CECP) • China State Environmental Protection Administration (SEPA) • Taiwan Green Mark • Korea Eco-label • Japan PC Green label • Commission Regulation (EC) No 617/2013 (ErP Lot 3)		
Sustainable Impact Specifications	• 80 Plus® Gold power supplies available • 15% post-consumer recycled plastic¹ 1. Recycled plastic content percentage is based on the definition set in the IEEE 1680.1-2018 standard.		
System Configuration	The configuration used for the Energy Consumption and Declared Noise Emissions data for the Desktop model is based on a "Typically Configured Desktop".		
Energy Consumption (in accordance with US	115VAC, 60Hz	230VAC, 50Hz	100VAC, 50Hz

Standard Features and Configurable Modules

ENERGY STAR® test method)			
Normal Operation (Short idle)	11.68 W	12.29 W	12.02 W
Normal Operation (Long idle)	10.55 W	10.46 W	10.91 W
Sleep	1.10 W	1.07 W	1.10 W
Off	0.33 W	0.35 W	0.33 W
	NOTE: Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.		
Heat Dissipation*	115VAC, 60Hz	230VAC, 50Hz	100VAC, 50Hz
Normal Operation (Short idle)	40 BTU/hr	40 BTU/hr	40 BTU/hr
Normal Operation (Long idle)	36 BTU/hr	35 BTU/hr	38 BTU/hr
Sleep	4 BTU/hr	4 BTU/hr	4 BTU/hr
Off	1 BTU/hr	1 BTU/hr	1 BTU/hr
	NOTE: Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.		
Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)	Sound Power (L _{WAd} , bels)	Sound Pressure (L _{pAm} , decibels)	
Typically Configured – Idle	3.1	23	
Fixed Disk – Random writes	4.8	42	
Longevity and Upgrading	This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include: Spare parts are available throughout the warranty period and or for up to “3” years after the end of production.		
Batteries	This battery(s) in this product comply with EU Directive 2006/66/EC Batteries used in the product do not contain:		

Standard Features and Configurable Modules

	Mercury greater than 1ppm by weight Cadmium greater than 20ppm by weight Battery size: CR2032 (coin cell) Battery type: Lithium		
Additional Information	• This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC. • This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC. • This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986). • This product is in compliance with the IEEE 1680.1 (EPEAT) standard at the <Silver> level, see http://www.epeat.net • Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043. • This product contains 28.2% post-consumer recycled plastic (by wt.) • This product is 91.7% recycle-able when properly disposed of at end of life.		
Packaging Materials	External:	PAPER/Paperboard	1220 g
	Internal:	PAPER/Molded Pulp	520 g
		PLASTIC/Polyethylene low density - LDPE	53 g
Material Usage	This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf): • Asbestos • Certain Azo Colorants • Certain Brominated Flame Retardants – may not be used as flame retardants in plastics • Cadmium • Chlorinated Hydrocarbons • Chlorinated Paraffins • Formaldehyde • Halogenated Diphenyl Methanes • Lead carbonates and sulfates • Lead and Lead compounds • Mercuric Oxide Batteries • Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user. • Ozone Depleting Substances • Polybrominated Biphenyls (PBBs) • Polybrominated Biphenyl Ethers (PBEBs) • Polybrominated Biphenyl Oxides (PBBOs) • Polychlorinated Biphenyl (PCB) • Polychlorinated Terphenyls (PCT) • Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications. • Radioactive Substances • Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)		
Packaging Usage	HP follows these guidelines to decrease the environmental impact of product packaging: • Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials. • Eliminate the use of ozone-depleting substances (ODS) in packaging materials. • Design packaging materials for ease of disassembly. • Maximize the use of post-consumer recycled content materials in packaging materials. • Use readily recyclable packaging materials such as paper and corrugated materials. • Reduce size and weight of packages to improve transportation fuel efficiency. • Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.		

Standard Features and Configurable Modules

End-of-life Management and Recycling	HP Inc. offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/go/reuse-recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/recyclers. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment. Global Citizenship Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html Eco-label certifications http://www8.hp.com/us/en/hp-information/environment/ecolabels.html ISO 14001 certificates: http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf And http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf
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SERVICE AND SUPPORT

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

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

NOTE 2: On-site service may be provided pursuant to a service contract between HP and an authorized HP third-party provider, and is not available in certain countries. Global service response times are based on commercially reasonable best effort and may vary by country.

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

NOTE 4: HP Care Packs are sold separately. Service levels and response times for HP Care Packs may vary depending on your geographic location. Service starts on date of hardware purchase. Restrictions and limitations apply. For details, visit www.hp.com/go/cpc. HP Services are governed by the applicable HP terms and conditions of service provided or indicated to Customer at the time of purchase. Customer may have additional statutory rights according to applicable local laws, and such rights are not in any way affected by the HP terms and conditions of service or the HP Limited Warranty provided with your HP Product.

Technical Specifications - Graphics

GRAPHICS

AMD® Radeon™ Graphics

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

AMD® Radeon™ RX 550X 4 GB FH 2DP+HDMI

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

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

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

Technical Specifications - Graphics

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

NVIDIA® GeForce® GTX 1660 Super 6GB Graphics Card

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

Technical Specifications - Storage

STORAGE*

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

Technical Specifications - Storage

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

Drive Weight	< 10g
Capacity	128GB
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

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

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

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

Drive Weight	< 10g
Capacity	512GB
Height	2.38mm
Length	80mm
Width	22mm
Interface	PCIe Gen3x4
Maximum Sequential Read	Up to 2900MB/s
Maximum Sequential Write	Up to 1100MB/s
Logical Blocks	1,000,215,216
Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
Features	APST; ASPM L1.2; NVME spec 1.2

256 GB M.2 2280 PCIe NVMe SSD

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

Technical Specifications - Storage

	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
512 GB M.2 2280 PCIe NVMe SSD	Drive Weight	< 10g
	Capacity	512 GB
	Height	2.38mm
	Length	80mm
	Width	22mm
	Interface	PCIe Gen3
	Maximum Sequential Read	Up to 1600MB/s
	Maximum Sequential Write	Up to 860MB/s
	Logical Blocks	1,000,215,216
	Operating Temperature	0° to 70°C (32° to 158°F) [ambient temp]
	Features	APST; ASPM L1.2; NVME spec 1.2
500 GB 7200RPM 2.5in SATA HDD	Capacity	500 GB
	Rotational Speed	7,200 rpm
	Interface	SATA 6 Gb/s
	Buffer Size	32 MB
	Logical Blocks	976,773,168
	Seek Time	12 ms (Average)
	Height	0.267 in/6.8 mm (nominal)
	Width (nominal)	2.75 in/70 mm (nominal)
	Operating Temperature	41° to 131° F (5° to 55° C)
1TB 7200RPM 2.5in SATA HDD	Capacity	1 TB
	Rotational Speed	7,200 rpm
	Interface	SATA 6 Gb/s
	Buffer Size	32 MB
	Logical Blocks	1,953,525,168
	Seek Time	12 ms (Average)
	Height	0.374 in/9.5 mm (nominal)
	Width (nominal)	2.75 in/70 mm (nominal)
	Operating Temperature	41° to 131° F (5° to 55° C)

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

Technical Specifications - Storage

OPTICAL DISC DRIVES

HP 9.5mm Desktop G2 Slim DVD Writer Drive	Height	9.5 mm height
	Orientation	Either horizontal or vertical
	Interface type	SATA/ATAPI
	Disc recording capacity	Up to 8.5 GB DL or 4.7 GB standard
	Dimensions (W x H x D)	5.04 x 0.37 x 5.0 in (128 x 9.5 x 127 mm) without bezel
	Weight (max)	0.31 lb (140 g)
	Read Speeds	DVD-R DL - Up to 6X DVD+R - Up to 8X DVD+RW - Up to 8X DVD+R DL - Up to 6X DVD-R - Up to 8X DVD-RW - Up to 6X CD-R - Up to 24X CD-RW - Up to 10X DVD-RW, DVD+RW - Up to 8X DVD-R DL, DVD+R DL - Up to 8X DVD+R, DVD-R - Up to 8X DVD-ROM DL, DVD-ROM - Up to 8X CD-ROM, CD-R - Up to 24X CD-RW - Up to 24X
	Access time (typical reads, including settling)	Random DVD-ROM: 170 ms (typical), CD-ROM: 170 ms (typical) 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)

HP 9.5mm Desktop G2 Slim DVD-ROM Drive	Height	9.5 mm height
	Orientation	Either horizontal or vertical
	Interface type	SATA/ATAPI
	Dimensions (W x H x D)	5.04 x 0.37 x 5.0 in (128 x 9.5 x 127 mm) without bezel
	Weight (max)	Up to 0.31 lb (140g) without bezel
	Read Speeds	DVD-R DL - Up to 6X DVD+R - Up to 8X DVD+RW - Up to 8X DVD+R DL - Up to 6X DVD-R - Up to 8X DVD-RW - Up to 6X CD-R - Up to 24X CD-RW - Up to 10X DVD-RW, DVD+RW - Up to 8X DVD-R DL, DVD+R DL - Up to 8X DVD+R, DVD-R - Up to 8X DVD-ROM DL, DVD-ROM - Up to 8X CD-ROM, CD-R - Up to 24X

Technical Specifications - Storage

	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)
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)

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

Technical Specifications - Audio

HIGH DEFINITION AUDIO

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

Technical Specifications - Networking

NETWORKING

Integrated 10/100/1000 NIC	Ethernet Features	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 802.3 clauses 40) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s
	Power Management	ACPI compliant – multiple power modes Situation-sensitive features reduce power consumption Advanced link down power saving for reducing link down power consumption
	Performance Features	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload and Giant send offload Receiving Side Scaling Jumbo Frame 9K
	Manageability	Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) 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
	Interface	PCIe + SMBus
	NIC Device Driver Name	PCIe GBE Ethernet Family Controller

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

Wireless LAN Standards¹	IEEE 802.11a
	IEEE 802.11b
	IEEE 802.11g
	IEEE 802.11n
	IEEE 802.11ac

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

Interoperability	Wi-Fi® certified
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Frequency Bands	802.11b/g/n	2.402 – 2.482 GHz
	802.11a/n	4.9 – 4.95 GHz (Japan) 5.15 – 5.25 GHz 5.25 – 5.35 GHz 5.47 – 5.725 GHz 5.825 – 5.850 GHz

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

Data Rates	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, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz)
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Technical Specifications - Networking

Modulation	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM
Security²	• IEEE and WiFi compliant 64/128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware • 802.1x authentication • WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification • IEEE 802.11i • Cisco Certified Extensions, all versions through CCX4 and CCX Lite • WAPI

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

Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output Power³	• 802.11b: +14dBm minimum • 802.11g: +12dBm minimum • 802.11a: +12dBm minimum • 802.11n HT20(2.4GHz): +12dBm minimum • 802.11n HT40(2.4GHz): +12dBm minimum • 802.11n HT20(5GHz): +10dBm minimum • 802.11n HT40(5GHz): +10dBm minimum • 802.11ac VHT80(5GHz): +10dBm minimum

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

Power Consumption	• Transmit mode 2.0 W • Receive mode 1.6 W • Idle mode (PSP) 180 mW (WLAN Associated) • Idle mode 50 mW (WLAN unassociated) • Connected Standby 10mW • Radio disabled 8 mW
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Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
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Receiver Sensitivity⁴	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: -84dBm maximum 802.11ac, MCS9: -59dBm maximum
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4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

Antenna type	High efficiency antenna. One embedded dual band 2.4/5 GHz antenna is provided to the card to support WLAN communications and Bluetooth communications
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Form Factors	PCI-Express M.2 MiniCard
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Technical Specifications - Networking

Dimensions	Type 2230 : 2.3 x 22.0 x 30.0 mm
Weight	Type 2230 : 2.8g
Operating Voltage	3.3v +/- 9%
Temperature	Operating: 14° to 158° F (–10° to 70° C) Non-operating: –40° to 176° F (–40° to 80° C)
Humidity	Operating: 10% to 90% (non-condensing) Non-operating: 5% to 95% (non-condensing)
Altitude	Operating: 0 to 10,000 ft (3,048 m) Non-operating: 0 to 50,000 ft (15,240 m)
LED Activity	LED Amber – Radio OFF; LED White – Radio ON
HP Integrated Module with Bluetooth 4.0/4.1/4.2 Wireless Technology	
Bluetooth® Specification	4.0/4.1/4.2 Compliant
Frequency Band	2402 to 2480 MHz
Number of Available Channels	Legacy: 0~79 (1 MHz/CH) BLE: 0~39 (2 MHz/CH)
Data Rates and Throughput	Legacy: 3 Mbps data rate; throughput up to 2.17 Mbps BLE: 1 Mbps data rate; throughput up to 0.2 Mbps Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)
Transmit Power	The Bluetooth® component shall operate as a Class II Bluetooth® device with a maximum transmit power of + 4 dBm for BR and EDR.
Receiver Sensitivity Legacy	
Power Consumption	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW
Range	Legacy : 0~79 (1 MHz/CH) BLE : 0~39 (2 MHz/CH)
Electrical Interface	USB 2.0 compliant
Bluetooth® Software Supported Link Topology	Microsoft Windows Bluetooth® Software
Power Management Certifications	ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark
Bluetooth® Profiles Supported	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
Power Management Certifications	Microsoft Windows ACPI, and USB Bus Support

Technical Specifications - Networking

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

Technical Specifications - Power

POWER SUPPLY

Operating Voltage Range	90 – 264 VAC
Rated Voltage Range	100-240V AC
Rated Line Frequency	50/60 HZ
Operating Line Frequency	47 – 63 Hz
Rated Input Current	180W: <2.3A; 310W: <4A
Rated Input Current with Energy Efficient* Power Supply	180W active PFC 87/90/87% efficient at 20/50/100% load (115V) 88/91/88% efficient at 20/50/100% load (230V); 310W active PFC 87/90/87% efficient at 20/50/100% load (115V) 88/91/88% efficient at 20/50/100% load (230V)
DC Output	+12.1V
Current Leakage (NFPA 99: 2102)	Less than 500 microamps of leakage current at 120 Vac with the ground wire disconnected, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1. Less than 100 microamps of leakage current at 120 Vac with the ground wire intact with normal polarity, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1.
Power Supply Fan	70*25mm (linear type)

Technical Specifications – Dimensions and weight

DIMENSIONS & WEIGHT

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

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

AFTER MARKET OPTIONS

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

Summary of Changes

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