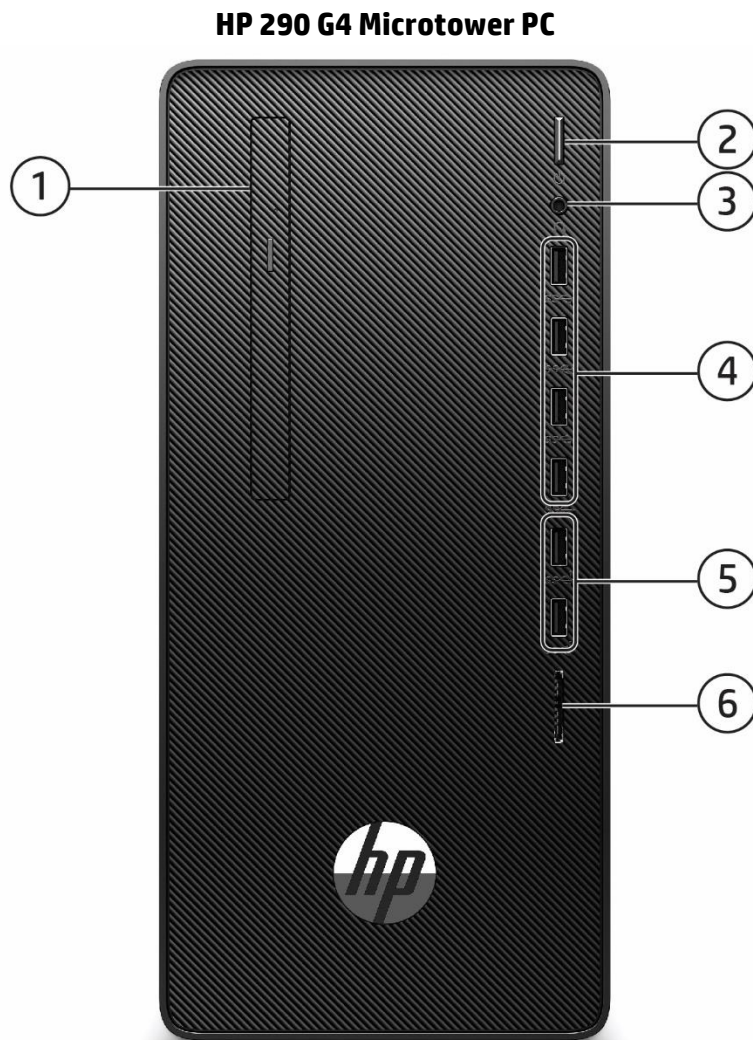


Overview



Front

1. Slim-height Bay - supporting an optical disk drive (Optional)
2. Power Button
3. Combo jack, Headphone/ Microphone
4. (4) SuperSpeed USB 5Gbps port²
5. (2) SuperSpeed USB 10Gbps port²
6. SD Card Reader (Optional)

Not Shown

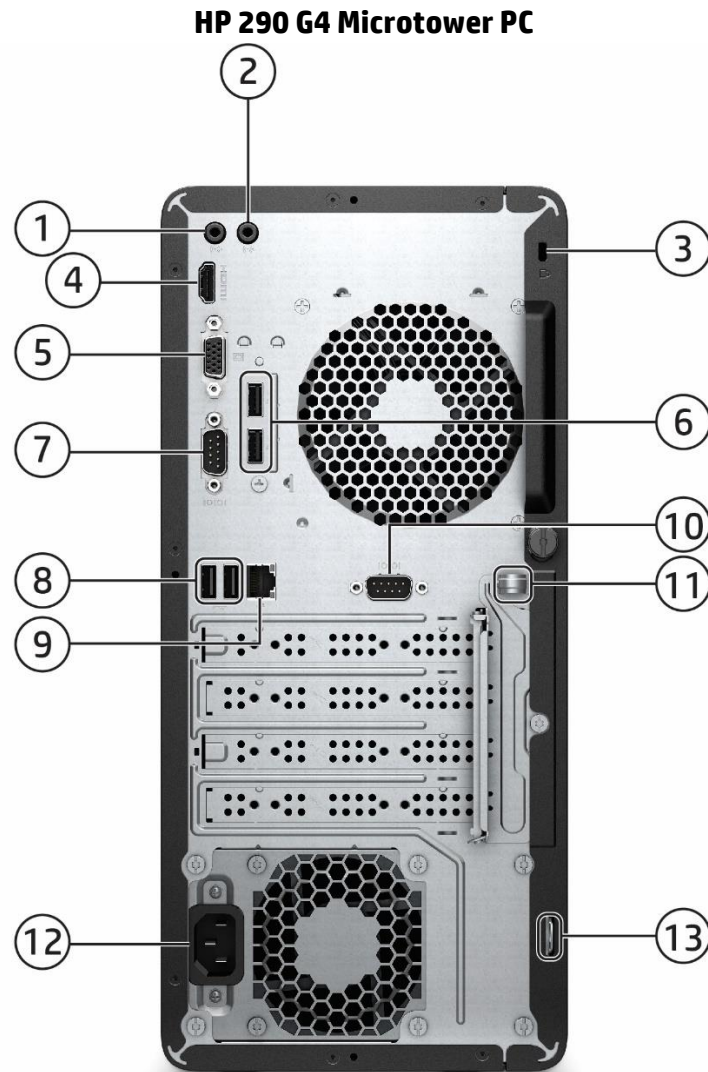
- Slots
- (1) PCI Express x16
 - (1) PCI Express x1
 - (1) PCI¹
 - (1) M.2 for WLAN
 - (1) M.2 2242/2280 storage

- Bays
- (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. Available on select skus only.

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

Overview



Back

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

Not Shown

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

1. Port will be covered up when configured with processor which is without internal graphics.

2. Available in select countries only.

3. Available On select skus only.

4. Power cord connector will be in different position, depends on which power supply configured.

Standard Features and Configurable Modules

AT A GLANCE

- Windows 10 Pro, Windows 10 Home or FreeDOS
- Intel® H470 chipset supporting Intel® 10th processors featuring Intel® UHD Graphics
- Supports an optional discrete graphics card
- Integrated 10/100/1000 Ethernet Controller or 802.11ac (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 (either dTPM or fTPM) ¹
- Supports both Hard Disk Drives and M.2 PCIe NVMe Solid State Drives
- Up to 10 USB Ports (including native 4 SuperSpeed USB 5Gbps ports and 2 SuperSpeed USB 10Gbps³ and 2 USB 2.0 ports)
- 180W/310W 90% HE power supply
- Security cable lock supported (sold separately)
- Intrusion sensor supported (Optional)
- Optional HP Care Services available; terms and conditions vary by country; certain restrictions and exclusions apply²

1. 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.

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

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

Standard Features and Configurable Modules

PRODUCT NAME

HP 290 G4 Microtower PC

OPERATING SYSTEM

Preinstalled	Windows 10 Pro 64 ¹ Windows 10 Home 64 ¹
Pre-installed (other)	FreeDOS

1. Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com/>

PROCESSORS

Intel® Celeron® Processors^{2,3}

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

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

Intel® Pentium® Processors^{2,3}

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

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

Intel 10th Processors

Intel® Core™ i3^{2,3}

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

Intel® Core™ i5^{2,3}

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

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

Intel® Core™ i7^{2,3}

CPU Intel Core i7-10700 8C 2.9GHz 2933MHz 65W (2.9GHz, Up to 4.8GHz with Intel® Turbo Boost⁴, 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 or 9th generation and forward processors or provide any Windows® 8 or Windows 7 drivers on <http://www.support.hp.com>

3. 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. 64-bit computing system required. 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. 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:** Only available on selected region

CHIPSET

Intel® H470 Chipset

Standard Features and Configurable Modules

GRAPHICS

Integrated^{5, 6}

Intel® UHD

Graphics 630 (integrated on 10th Core i processors and Pentium Gold G6600)

Intel® UHD

Graphics 610 (integrated on Pentium Gold G6400 and Celeron)

Discrete Graphics

AMD Radeon™ RX550X 4GB GFX

AMD Radeon™ 520 1GB GFX

NVIDIA® GeForce® GT730 2GB GFX

NVIDIA® GeForce® GTX1660 Super 6GB GFX*

5. HD content required to view HD images.

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

*NOTE: Available in select countries only

MEMORY⁷

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

7. 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: DDR4-2933 UDIMM is only available for 10th Gen i7 processor.

STORAGE

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

Standard Features and Configurable Modules

Solid State Drives

128GB M.2 NVMe

256GB M.2 NVMe

512GB M.2 NVMe

SD Card Reader⁸

SD/SDHC/SDXC SD Card Reader

Intel Optane Memory⁸

SSD Intel 16GB 2280 Optane Memory

8. Optional per configuration

OPTICAL DISC DRIVES

DVD-ROM 9.5mm

DVD-Writer⁹ 9.5mm

9. HD-DVD disks cannot be played on this drive. No support for DVD-RAM. Actual speeds may vary. Don't copy copyright-protected materials. Double Layer discs can store more data than single layer discs. Discs burned with this drive may not be compatible with many existing single-layer DVD drives and players.

NETWORKING¹⁰

Ethernet (RJ-45)

Integrated 10/100/1000M GbE LAN

Wi-Fi® and Bluetooth®

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

10. 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.

Standard Features and Configurable Modules

AUDIO / MULTIMEDIA

Integrated Hi-Definition Audio
Combo Jack, Headphone / Microphone
Line-in / Line-out (3.5mm)

KEYBOARDS AND POINTING DEVICES¹¹

Keyboard

USB Business Slim Wired Keyboard
HP USB Wired Keyboard
Business Slim USB Antimicrobial Wired Keyboard (China)
Business Slim PS/2 Wired Keyboard (for machine configured with PS/2 port)
No KB Option

Mouse

Antimicrobial USB Mouse (China)
HP Optical USB Mouse
Universal Wired USB Mouse
USB Hardened Mouse (Specific region)
HP PS/2 Mouse (for machine configured with PS/2 port)
No Mouse Option

[11. Keyboards and mouse are optional or add-on features.](#)

PORTS

Front

Slim-height Bay - supporting an optical disk drive (Optional)
Power Button
Combo jack, Headphone / Microphone
SD Card Reader (Optional)
(2) SuperSpeed USB 10Gbps port**
(4) SuperSpeed USB 5Gbps port**

Not Shown

(1) PCI Express x16
(1) PCI Express x1
(1) Full-height PCI (Available on selected sku)
(1) M.2 for WLAN
(1) M.2 2242/2280 storage

Rear

Audio Line out
Audio Line in

Standard Features and Configurable Modules

- HDMI Port
- VGA Port
- Serial Port (Optional on selected sku)
- 2nd Serial Port (Optional)
- Standard Lock Slot
- (2) USB 2.0 port
- (2) USB 2.0 port (Optional on selected sku)
- RJ-45 Network connector
- Power cord connector
- Padlock loop
- Integrated accessories cable lock

Not Shown

- (1) PS/2 Port (Optional)
- (1) Parallel Port (Optional via PCIe x1 slot)
- (1) 4x Serial port (Optional via PCIe x1 slot)*
- (1) Internal Speaker (Optional)
- (1) Intrusion Sensor (Optional)

NOTE*: Available in select countries only.

NOTE:** SuperSpeed USB 10Gbps = USB 3.2 Gen2. SuperSpeed USB 5Gbps = USB 3.2 Gen1

BAYS

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

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® (90 days free trial offer)¹⁶

ODD Playback

sMedio True DVD for HP

Movies

Netflix¹⁴

App Stores and Content Purchasing

Amazon¹⁴

HP Utilities and Support

HP Documentation

HP JumpStarts

HP Audio Switch¹⁵

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. Internet access required and not included.

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

16. 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 90 days free trial period. See visit <https://http://www.xerox.com/docusharego> for details.

***NOTE:** Available in Latin America countries only.

POWER SUPPLY¹⁷

180 W

ENERGY® STAR® Libra2 EPA90 (Gold) Full range 115V/230V

310 W

SFF ENTL EPA90 (Gold) Full range 115V/230V

500 W

EPA90 (Gold) Full range 115V/230V

17. All power supplies are not available in every region.

Standard Features and Configurable Modules

DIMENSIONS AND WEIGHT

Dimensions

6.12 x 11.93 x 13.28 in
(155 x 303 x 337 mm)

Weight

10.4 lbs / 4.7 kg

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° C¹⁸
Non-operating: -30° to 60° C¹⁸

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)

¹⁸. 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	<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"> • IT ECO declaration • US ENERGY STAR® • EPEAT® 2019 registered where applicable. EPEAT® registration varies by country. See http://www.epeat.net for registration status by country. Search keyword generator on HP's 3rd party option store for solar generator accessories at http://www.hp.com/go/options. <p>*Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. Status varies by country. Visit http://www.epeat.net for more information.</p>		
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 ENERGY STAR® test method)	115VAC, 60Hz	230VAC, 50Hz	100VAC, 50Hz

Standard Features and Configurable Modules

Normal Operation (Short idle)	28.12W	28.27W	28.27W
Normal Operation (Long idle)	26.34W	26.51W	26.51W
Sleep	1.66W	1.67W	1.67W
Off	0.29W	0.30W	0.30W
	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)	96 BTU/hr	96 BTU/hr	96 BTU/hr
Normal Operation (Long idle)	90 BTU/hr	90 BTU/hr	90 BTU/hr
Sleep	6 BTU/hr	6 BTU/hr	6 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	3.7		24.7
Fixed Disk – Random writes	4.1		29.8
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: Mercury greater the 1ppm by weight Cadmium greater than 20ppm by weight Battery size: CR2032 (coin cell) Battery type: Lithium		
Additional Information	<ul style="list-style-type: none"> • 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 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

Standard Features and Configurable Modules

	Internal:	PAPER/Molded Pulp	520 g
		PLASTIC/Polyethylene low density - LDPE	53 g
Material Usage	<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 http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf):</p> <ul style="list-style-type: none"> • 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 (PBBEs) • 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	<p>HP follows these guidelines to decrease the environmental impact of product packaging:</p> <ul style="list-style-type: none"> • 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. 		
End-of-life Management and Recycling	<p>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.</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: 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.</p> <p>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</p>		

Standard Features and Configurable Modules

	and http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf
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SERVICE AND SUPPORT

On-site Warranty 1: Available three-year (3-3-3) or one-year (1-1-1) limited warranty (varies by country) delivers on-site, next business day 2 service for parts and labor and complimentary limited technical support.³ Three-year onsite and labor are not available in all countries. Service offers terms up to 5 years by choosing an optional HP Care Pack.⁴ 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.

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

Technical Specifications - Graphics

GRAPHICS

Intel® UHD Graphics 630 (integrated on Core i7/i5/i3/Pentium G6500 and above processors) Intel® UHD Graphics 610 (integrated on Pentium G6400 and below/ and Celeron)	
DisplayPort™	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)
Memory	Additional 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.
Maximum Graphics Memory	Windows 10: >4 GB
Maximum Color Depth	32 bits/pixel
Graphics/Video API Support	10 th Generation Intel® Core Processors, Pentium and Celeron With Intel® UHD Graphics 630 Pentium® and Celeron® With Intel® UHD Graphics 610
Supported Display Resolutions and Refresh Rates	Max. Resolution (VGA) 2048 x 1536@60Hz Max. Resolution (HDMI) 4096 x 2160@60Hz
Note: The actual amount of maximum graphics memory can be less than the amounts listed above depending upon your computer's configuration. Note: other resolutions may be available but are not recommended as they may not have been tested and qualified by HP Only supported on displays connected to the external DisplayPort™ connector.	

Technical Specifications - Graphics

AMD Radeon™ R7 430 2GB Graphics Card

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

AMD® Radeon™ RX550X 4 GB FH PCIe x16

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, DPx2
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™ 520 1GB Graphics Card

Engine Clock	780 MHz
Memory Clock	1100 MHz
Memory Size(width)	1GB(32-bit)
Memory Type	256M x 32 GDDR5
Max. Resolution(VGA)	2048x1536
Max. Resolution(DP)	4096x2160@60Hz
Multi Display Support	2 displays
HDCP Compliance	yes
Rear I/O connectors(bracket)	VGA+DP
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

Technical Specifications - Graphics

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*

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

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

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

Capacity	1 TB
Rotational Speed	7,200 rpm
Interface	Serial ATA 3.0 (6.0 Gb/s)
Buffer Size	32 MB
Logical Blocks	1,953,525,168
Seek Time	Single Track: 2.0 ms Average: 11 ms Full-Stroke: 21 ms
Height	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)

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

Capacity	500 GB
Rotational Speed	7,200 rpm
Interface	Serial ATA 3.0 (6.0 Gb/s)
Buffer Size	32 MB
Logical Blocks	1,953,525,168
Seek Time	Single Track: 2.0 ms Average: 11 ms Full-Stroke: 21 ms
Height	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

Technical Specifications - Storage

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
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)

Technical Specifications - Storage

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

Technical Specifications – Optical Drives

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	
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

Technical Specifications – Optical 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 ± 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 – Networking

NETWORKING

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) Wi-Fi® 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.	
Interoperability	Wi-Fi® certified modules	
Frequency Bands	802.11b/g/n	2.402 – 2.482 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.
	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

Technical Specifications – Networking

Data Rates	<p>802.11b: 1, 2, 5.5, 11 Mbps</p> <p>802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps</p> <p>802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps</p> <p>802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)</p> <p>802.11ac : MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz)</p>
Modulation	<p>Direct Sequence Spread Spectrum</p> <p>BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM</p>
Security²	<p>IEEE and 64 / 128 bit WEP encryption for a/b/g mode only</p> <p>AES-CCMP: 128 bit in hardware</p> <p>802.1x authentication</p> <p>WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.</p> <p>WPA2 certification</p> <p>IEEE 802.11i</p> <p>Cisco Certified Extensions, all versions through CCX4 and CCX Lite</p> <p>WAPI</p> <p>2 Check latest software/driver release for updates on supported security features.</p>
Network Architecture Models	<p>Ad-hoc (Peer to Peer)</p> <p>Infrastructure (Access Point Required)</p>
Roaming	IEEE 802.11 compliant roaming between access points
Output Power³	<p>802.11b : +14dBm minimum</p> <p>802.11g : +12dBm minimum</p> <p>802.11a : +12dBm minimum</p> <p>802.11n HT20(2.4GHz) : +12dBm minimum</p> <p>802.11n HT40(2.4GHz) : +12dBm minimum</p> <p>802.11n HT20(5GHz) : +10dBm minimum</p> <p>802.11n HT40(5GHz) : +10dBm minimum</p> <p>802.11ac VHT80(5GHz) : +10dBm minimum</p> <p>3. Maximum output power may vary by country according to local regulations.</p>
Power Consumption	<ul style="list-style-type: none"> •Transmit mode2.0 W •Receive mode1.6 W •Idle mode (PSP)180 mW(WLAN Associated) •Idle mode50 mW(WLAN unassociated) •Connected Standby 10mW •Radio disabled8 mW
Power Management	<p>ACPI and PCI Express compliant power management</p> <p>802.11 compliant power saving mode</p>

Technical Specifications – Networking

Receiver Sensitivity ⁴	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 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).	
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth® communications	
Form Factors	PCI-Express M.2 MiniCard	
Dimensions	Type 2230 : 2.3 x 22.0 x 30.0 mm	
Weight	Type 2230 : 2.8g	
Operating Voltage	3.3v +/- 9%	
Temperature	Operating: Non-operating:	14° to 158° F (-10° to 70° C) -40° to 176° F (-40° to 80° C)
Humidity	Operating: Non-operating:	10% to 90% (non-condensing) 5% to 95% (non-condensing)
Altitude	Operating: Non-operating:	0 to 10,000 ft (3,048 m) 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.	

Technical Specifications – Networking

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
Certifications Bluetooth® Profiles Supported	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
Power Management Certifications	Microsoft Windows ACPI, and USB Bus Support
Certifications Bluetooth® Profiles Supported	BT4.1-ESR 5/6/7 Compliance LE Link Layer Ping LE Dual Mode LE Link Layer LE Low Duty Cycle Directed Advertising LE L2CAP Connection Oriented Channels Train Nudging & Interlaced Scan BT4.2 ESR08 Compliance LE Secure Connection- Basic/Full LE Privacy 1.2 –Link Layer Privacy LE Privacy 1.2 –Extended Scanner Filter Policies LE Data Packet Length Extension FAX Profile (FAX) Basic Imaging Profile (BIP)2 Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP)

Technical Specifications - Audio

HIGH DEFINITION AUDIO

Type	Integrated
HD Stereo Codec	Realtek ALC3601
Audio I/O Ports	Front side Combo jack for supporting CTIA, Rear side Line-in/ Line-out/ Mic-in jacks
Internal Speaker Amplifier	2W class D mono amplifier for the internal speaker only. External speakers must be powered externally.
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.
HD Audio Codec	Realtek ALC3601
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 44.1K/ 48K/ 96K/ 192K Hz Hz for ADC
Wavetable Syntheses	Yes
Analog Audio	Yes
# of Channels on Line-Out	Stereo
Internal Speaker	Yes
External Speaker Jack	2W class D mono amplifier for the internal speaker only. External speakers must be powered externally.

NOTE*: Optional

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 500W: <6A
Rated Input Current with Energy Efficient* Power Supply	180W active PFC 87/90/87% efficient at 20/50/100% load (115V) 88/92/88% efficient at 20/50/100% load (230V); 310W active PFC 87/90/87% efficient at 20/50/100% load (115V) 88/92/88% efficient at 20/50/100% load (230V) 500W active PFC 87/90/87% efficient at 20/50/100% load (115V) 88/92/88% 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	180W/310W: 70*25mm (linear type) 500W: 70*25mm (PWM type)

Technical Specifications – Weights and Dimensions

WEIGHT AND DIMENSIONS

Chassis (W x D x H)	6.12 x 11.93 x 13.28 in (155 x 303 x 337 mm) (w/ bezel)
System Volume	15.1 L
System Weight*	10.4 lbs / 4.7 kg
Packaged (H x W x D)	11.3 x 15.75 x 19.65 in 287 x 400 x 499 mm
Shipping Weight	17.64lb / 8 kg
Palletization Profile	6 units per layer 7layer max 42 per pallet Footprint -85.31x39.37x47.24 in (2167 x 1000 x1200 mm)

After-Market Options (availability may vary by region)

AFTERMARKET OPTIONS

Type	Description	Part #
Memory	HP 4GB DDR4-2666 DIMM	3TK85AA
	HP 8GB DDR4-2666 DIMM	3TK87AA
	HP 16GB DDR4-2666 DIMM	3TK83AA
Storage	HP 500GB SATA 6.0Gb/s Hard Drive	QK554AA
	HP 1TB 7200rpm SATA 6Gbps Hard Drive	QK555AA
	HP PCIe NVME TLC 256GB SSD M.2 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
Graphics	NVIDIA® GT 730 2GB DP Card	Z9H51AA
	AMD Radeon™ R7 430 2GB 2DP Card	5JW82AA
Security	HP Business PC Security Lock V3 Kit	3XJ17AA
	HP Keyed Cable Lock 10mm kit	T1A62AA
Adapters	HP HDMI Standard Cable Kit	T6F94AA
	HP USB to Serial Port Adapter	J7B60AA
	HP PCIe x1 Parallel Port Card	N1M40AA
Networking	Intel Ethernet I210-T1 GbE NIC Card	E0X95AA
Input	HP USB Mouse	QY777AA
	HP USB Hardened Mouse	P1N77AA
	HP USB Grey v2 Mouse	Z9H74AA
	HP USB Keyboard	QY776AA
	HP PS/2 Business Slim Keyboard	N3R86AA
	HP USB Business Slim Keyboard	N3R87AA
	HP Backlit USB Mechanical Keyboard	4RV35AA
	HP USB Antimicrobial Slim Keyboard and Mouse	Z9H50AA
Others	HP Business Headset v2	T4E61AA
	HP S101 Speaker bar	5UU40AA

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