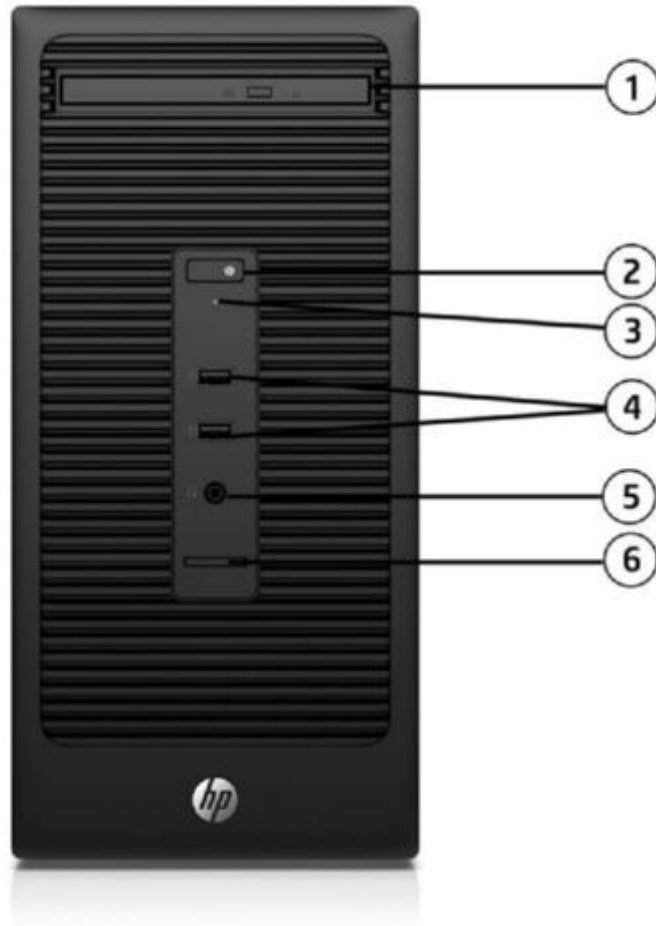


HP 280 G2 Microtower Business PC



Front

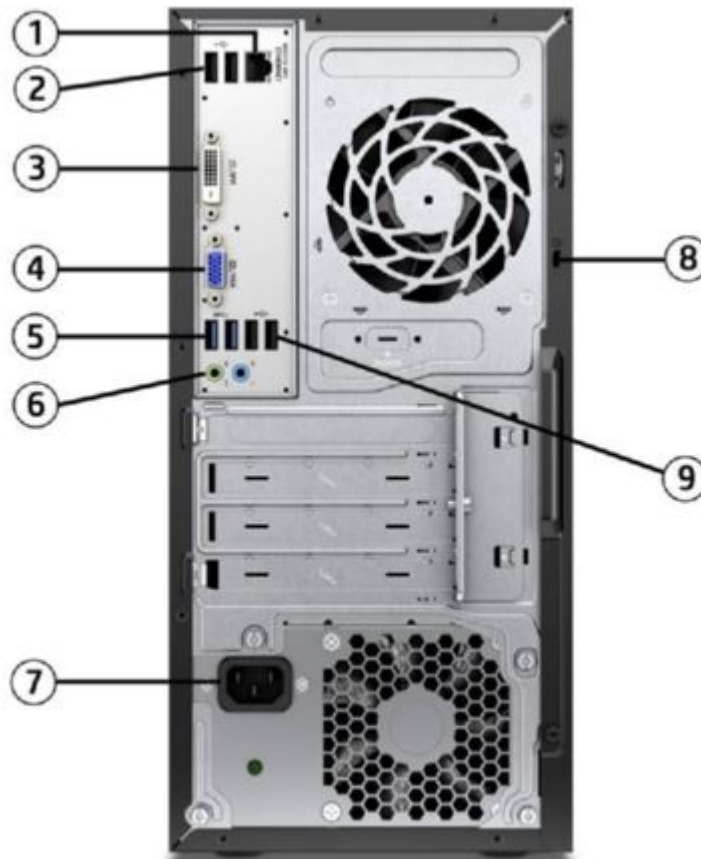
1. Slim-height Bay - supporting an optical disk drive (optional)
2. Power Button
3. PC Status LED
4. (2) USB 2.0 Ports
5. Microphone/Headphone Combo Jack
6. SD Media Card Reader (optional)

Not Shown

- Slots
- (1) PCI Express x16 Graphics Connector
 - (1) PCI Express x1 Accessory Connector
 - (1) PCI 2.1 (optional, select countries only)
- Bays
- (1) 3.5" internal storage drive bay
 - (1) 3.5" internal storage drive bay (optional)

Overview

HP 280 G2 Microtower Business PC



Back

- | | |
|----------------------------|----------------------------------|
| 1. RJ-45 Network Connector | 6. Audio Line Out; Audio Line In |
| 2. (2) USB 2.0 Ports | 7. Power Cord Connector |
| 3. DVI-D Monitor Connector | 8. Security Lock Slot |
| 4. VGA port | 9. (2) USB 2.0 Ports |
| 5. (2) USB 3.0 Ports | |

HP 280 G2 Microtower Business PC Shown with serial and PS/2 ports (select models only)*

Overview



Back

- | | |
|----------------------------|--------------------------|
| 1. (2) USB 2.0 Ports | 8. (2) USB 3.0 Ports |
| 2. RJ-45 Network Connector | 9. Security Lock Slot |
| 3. PS/2 Keyboard Connector | 10. (2) USB 2.0 Ports |
| 4. PS/2 Mouse Connector | 11. Audio out jack |
| 5. DVI-D Monitor Connector | 12. Audio in jack |
| 6. Serial Port | 13. Power Cord Connector |
| 7. VGA port | |

Not Shown

Parallel Port (optional, select countries only)

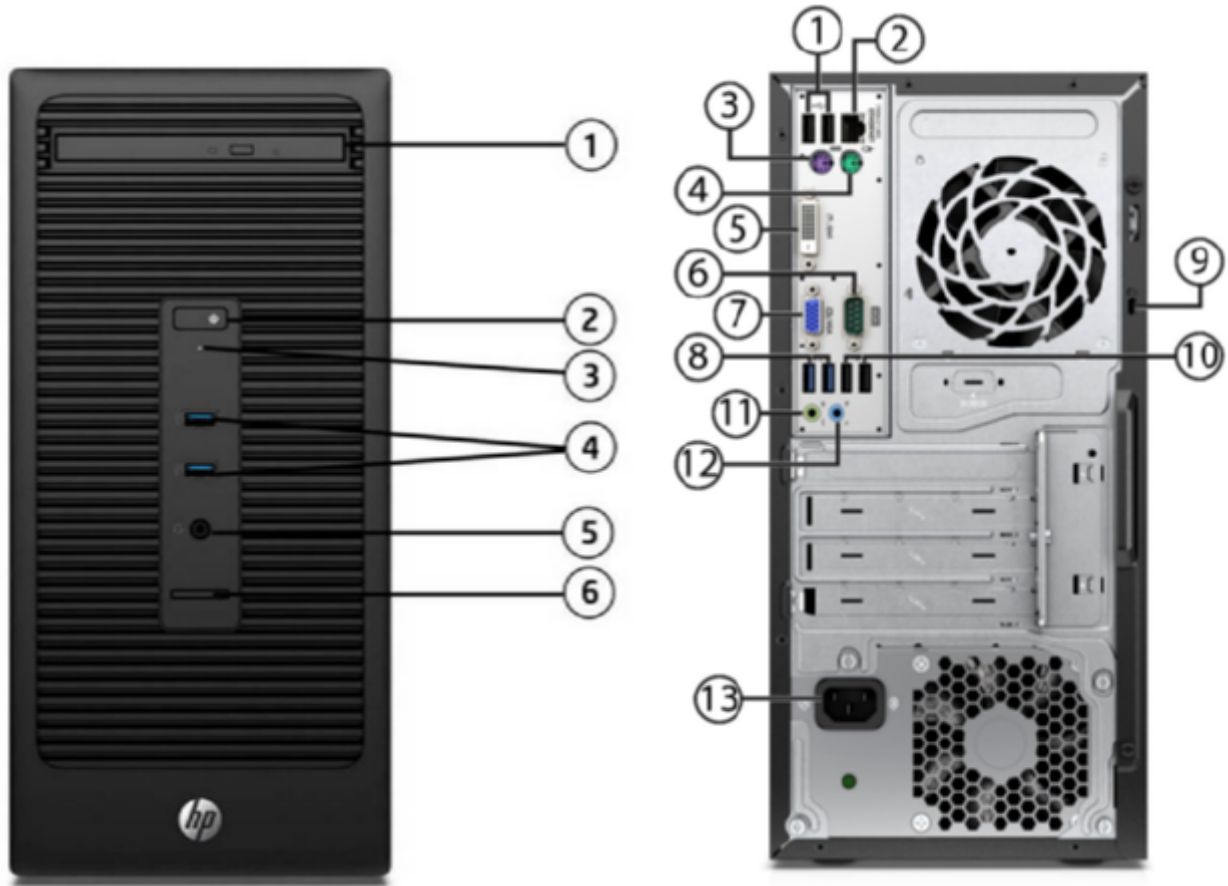
2nd Serial Port (optional, select countries only)

* Not all configuration components are available in all regions/countries.

HP 280 G2 Microtower Business PC

(Only available in APJ region - Launching September, 2016, select models only)*

Overview



Front

1. Slim-height Bay - supporting an optical disk drive (optional)
2. Power Button
3. PC Status LED
4. (2) USB 3.0 Ports
5. Microphone/Headphone Combo Jack
6. SD Media Card Reader (optional)

Back

1. (2) USB 2.0 Ports
2. RJ-45 Network Connector
3. PS/2 Keyboard Connector
4. PS/2 Mouse Connector
5. DVI-D Monitor Connector
6. Serial Port
7. VGA port
8. (2) USB 3.0 Ports
9. Security Lock Slot
10. (2) USB 2.0 Ports
11. Audio out jack
12. Audio in jack
13. Power Cord Connector

Not Shown

Parallel Port (optional, select countries only)

2nd Serial Port (optional, select countries only)

* Not all configuration components are available in all regions/countries.

Overview

AT A GLANCE

- Windows 10 Pro , Windows 10 Home, Windows 7 Professional, NeoKylin Linux (selected countries only) or FreeDOS 2.0
- Intel® H110 chipset supporting Intel® 6th generation Intel® Celeron, Pentium, Core™ i3, i5 and i7 processors featuring Intel® HD Graphics
- Supports an optional discrete graphics card
- Integrated 10/100/1000 Ethernet Controller
- Supports Wake-on-LAN (WOL)
- Up to 32GB DDR4 Unbuffered Memory (UDIMM)
- Supports both Hard Disk and Solid State Drives
- Independent monitor support via VGA video interfaces
- TPM 1.2 support
- High definition audio
- 8 USB ports (including 2-USB 3.0 ports)
- 8 USB ports (including 2-USB 3.0 in front and 2 USB-3.0 in back) - Available in APJ region only - launching Sep 2016 (select models only)*
- Energy efficient internal power supply available (select countries only)
- Security cable lock supported (sold separately)
- Protected by HP Services; terms and conditions vary by country; certain restrictions and exclusions apply
 - * Not all configuration components are available in all regions/countries.

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

Standard Features and Configurable Modules

CHIPSET

Intel® H110 Chipset

PROCESSOR*

Intel® Celeron®

Intel® Celeron® G3900 with Intel® HD Graphics 510 (2.8 GHz, 2 MB cache, 2 cores)
 Intel® Celeron® G3920 with Intel® HD Graphics 510 (2.9 GHz, 2 MB cache, 2 cores)

Intel® Pentium®

Intel® Pentium® G4400 with Intel® HD Graphics 510 (3.3 GHz, 3 MB cache, 2 cores)
 Intel® Pentium® G4500 with Intel® HD Graphics 530 (3.5 GHz, 3 MB cache, 2 cores)
 Intel® Pentium® G4520 with Intel® HD Graphics 530 (3.6 GHz, 3 MB cache, 2 cores)

Intel® Core™ i3

Intel® Core™ i3-6100 with Intel® HD Graphics 530 (3.7 GHz, 3 MB cache, 2 cores)
 Intel® Core™ i3-6300 with Intel® HD Graphics 530 (3.8 GHz, 4 MB cache, 2 cores)
 Intel® Core™ i3-6320 with Intel® HD Graphics 530 (3.9 GHz, 4 MB cache, 2 cores)

Intel® Core™ i5

Intel® Core™ i5-6500 with Intel® HD Graphics 530 (3.2 GHz, 6 MB cache, 4 cores)
 Intel® Core™ i5-6600 with Intel® HD Graphics 530 (3.3 GHz, 6 MB cache, 4 cores)

Intel® Core™ i7

Intel® Core™ i7-6700 with Intel® HD Graphics 530 (3.4 GHz, 8 MB cache, 4 cores)

*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 is not a measurement of higher performance.

GRAPHICS

Integrated

Intel® Integrated HD Graphics Varies by Processor

Discrete (optional for selected countries only)

AMD Radeon™ R5 320 1GB DH PCIe x8

NVIDIA® GeForce® GT 720 2GB PCIe x8

[NVIDIA® GeForce® GT730 2GB PCIe x8 DP GFX](#)

MEMORY*

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

Form Factor	Type	Maximum	# of Slots
Microtower	DDR4-2133 (Transfer rates up to 2133 MT/s)	32 GB capacity	2 DIMM
	4GB DDR4-2133 DIMM (1x4GB)		
	8GB DDR4-2133 DIMM (1x8GB)		
	8GB DDR4-2133 DIMM (2x4GB) (Dual Channel)		

Standard Features and Configurable Modules

*NOTE: For systems configured with more than 3 GB of memory and a 32-bit operating system, all memory may not be available due to system resource requirements. Addressing memory above 4 GB requires a 64-bit operating system. Memory modules support data transfer rates up to 2133 MT/s; actual data rate is determined by the system's configured processor. See processor specifications for supported memory data rate.

STORAGE*

SATA 3.5" 6Gb/s HDDs*

500GB 7200 RPM SATA Hard Disk Drive

1TB 7200 RPM SATA Hard Disk Drive

2TB 7200 RPM SATA Hard Disk Drive

2TB 7200 RPM SATA Hard Disk Drive (2nd HDD) (selected countries only)

Solid State Drives 2.5"? *

128GB SATA 3D SSD

SD Card Reader (optional)**

HP SD Media Card Reader (optional)

*NOTE: For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 16 GB (for Windows 7) and 36 GB (for Windows 8.1/10) of system disk is reserved for the system recovery software.

**Card sold separately

OPTICAL DISC DRIVES*

HP 9.5mm Desktop G2 Slim DVD-ROM Drive

HP 9.5mm Desktop G2 Slim DVD Writer Drive

*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.

AUDIO/MULTIMEDIA

HD audio with Realtek ALC221

Combo Microphone/Headphone Jack

Line-out and Line-in rear port (3.5mm)

Standard internal speaker

NETWORKING

Ethernet (RJ-45)

Integrated 10/100/1000M Gigabit Ethernet Controller with Realtek RTL8111G-CG

Supports Wake-on-LAN (WOL)

Intel® Ethernet I210-T1 PCIe x1 Gb Network Interface Card (optional, available in select countries only)

Wireless*

Broadcom BCM943228Z 802.11n No Bluetooth® NIC

* 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

PORTS

Front I/O Ports

Two (2) USB 2.0 ports or Two (2) USB 3.0 ports*

One (1) Microphone/Headphone Combo Jack

Rear I/O Ports

Four (4) USB 2.0 ports

Two (2) USB 3.0 ports

One (1) RJ45 network connection

One (1) Audio Line out

One (1) Audio Line in

One (1) VGA

One (1) DVI-D

Two (2) PS/2 ports (Keyboard and Mouse) (optional, select countries only)

Two (2) Serial (optional, select countries only)

One (1) Parallel (optional, select countries only)

Internal I/O Ports

One (1) PCIe x 16 (3.0)

One (1) PCIe x 1 (2.0)

One (1) PCI 2.1 (optional, select countries only)

BAYS

One (1) 1st 3.5" Hard Disc Drive Bay

One (1) 2nd 3.5" Hard Disc Drive Bay (optional)

One (1) 9.5 mm Slim Drive Bay

KEYBOARDS AND POINTING DEVICES**

Keyboards

HP PS/2 Business Slim Keyboard (optional, select countries only)

HP PS/2 Keyboard (optional, select countries only)

HP USB Antimicrobial Keyboard (China only)

HP USB Business Slim Keyboard

HP USB Keyboard

Universal USB Wired Keyboard

Mice

HP PS/2 Mouse (optional, select countries only)

HP USB Antimicrobial Mouse (China only)

HP USB Hardened Mouse

HP USB Mouse

Universal USB Wired Optical Mouse

* Select models only

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

Standard Features and Configurable Modules

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 5 years by choosing an optional HP Care Pack. To choose the right level of service for your HP product, visit HP Care Pack Central: 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.

Operating Systems & Software

OPERATING SYSTEMS

Preinstalled (Windows)

Windows 10 Pro 64*

Windows 10 Home 64*

Windows 7 Professional 64 (available through downgrade rights from Windows 10 Pro)**

Windows 7 Professional 32 (available through downgrade rights from Windows 10 Pro)

Windows 7 Professional 32***

Windows 7 Professional 64***

Pre-installed (Other)

FreeDOS 2.0

NeoKylin Linux 32

Web-supported

Windows 10 Pro 64

Windows 10 Home 64

Windows 7 Professional 64

Windows 7 Professional 32

*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.microsoft.com>.

**This system is preinstalled with Windows 7 Pro software and also comes with a license and media for Windows 10 Pro software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.

SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS

Preinstalled (varies by country)

BIOS

Power On Authentication

Multimedia

Cyberlink Power DVD, BD

Cyberlink Power2Go (Secure Burn)

HP Value Add Software

HP ePrint Driver¹

HP Recovery Manager

HP Support Assistant

Windows 10 Welcome App

3rd Party

Foxit PhantomPDF Express for HP (optional, US only)

Microsoft Products

Buy Office

Bing Search

Skype

Client Security Software

Operating Systems & Software

Microsoft Security Essentials²

Microsoft Defender

TPM 1.2

NOTE 1: TPM feature will not be supported on machines pre-configured with FreeDOS/Linux

NOTE 2: In selected countries, machines pre-configured with Windows OS will be shipped with TPM disabled.

1. Requires an Internet connection to HP web-enabled printer and HP ePrint account registration (for a list of eligible printers, supported documents and image types and other HP ePrint details, see <http://www.hp.com/go/businessmobileprinting>).
2. Opt in and internet connection required for updates.

Technical Specifications

UNIT ENVIRONMENT AND OPERATING CONDITIONS

General Unit Operating Guidelines

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

Temperature Range	Operating: 50° to 95° F (10° to 35° C)* Non-operating: -22° to 140° F(-30° to 60° C)
Relative Humidity	Operating: 10% to 90% (non-condensing at ambient) Non-operating: 5% to 95% (non-condensing at ambient)
Maximum Altitude (unpressurized)	Operating: 10,000 ft (3048 m) Non-operating: 30,000 ft (9144 m)

* 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.

Environmental Data	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: <ul style="list-style-type: none"> • IT ECO declaration • US ENERGY STAR® • EPEAT® Silver registered in the United States. See http://www.epeat.net for registration status in your country. 		
	System Configuration	The configuration used for the Energy Consumption and Declared Noise Emissions data for the Ultra-slim Desktop model is based on a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.		
	Energy Consumption (in accordance with US ENERGY STAR® test method)	115VAC, 60Hz	230VAC, 50Hz	100VAC, 60Hz
	Normal Operation (Short idle)	22.35 W	23.09 W	22.54 W
	Normal Operation (Long idle)	20.77 W	20.94 W	20.96 W
	Sleep	1.12 W	1.18 W	1.12 W
	Off	0.35 W	0.47 W	0.34 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.

Technical Specifications

Heat Dissipation*	115VAC, 60Hz	230VAC, 50Hz	100VAC, 60Hz
Normal Operation (Short idle)	76 BTU/hr	79 BTU/hr	77 BTU/hr
Normal Operation (Long idle)	71 BTU/hr	72 BTU/hr	72 BTU/hr
Sleep	4 BTU/hr	4 BTU/hr	4 BTU/hr
Off	1 BTU/hr	2 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	3.8
Fixed Disk - Random writes	4.0	29

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:

- 8 USB ports
- 2 memory slots
- 1 PCIe x16 slot and 1 PCIe x1 slot
- 1 PCI slot available on selected models
- 2 3.5" internal bay supporting up to Two 3.5" hard drives (HDD) or one 3.5" hard drive (HDD) and one 2.5" hard drive (SSD)
- 1 9.5mm Slim line external supporting optical drive

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**
- 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 (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 10% post-consumer recycled plastic (by wt.)
 - This product is 92.4% recycle-able when properly disposed of at end of life.

Technical Specifications

Packaging Materials	External:	PAPER/Corrugated	1254 g
	Internal:	PLASTIC/EPE (Expanded Polyethylene) PLASTIC/EPS (Expanded Polystyrene)	38 g 235 g
Material Usage	<p>The EPE foam packaging material is made from 10.5% recycled content. The corrugated paper packaging materials contains at least 43.8% recycled content. 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>Hewlett-Packard 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>		
Hewlett-	<p>For more information about HP's commitment to the environment:</p>		

Technical Specifications

Packard Corporate Environmental Information

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/](http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.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)

and

<http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf>

POWER SUPPLY*

- 180 W standard efficiency
- 180 W standard efficiency, active PFC
- 180 W, up to 85% efficient, active PFC
- 300W standard efficiency, active PFC (China only)

*Note: All power supplies are not available in every region.

DIMENSIONS AND WEIGHT (configured with 1 HDD and 1 ODD)

Chassis (H x W x D)	14.13 x 6.69 x 13.98 in 35.88 x 17 x 35.5 cm
System Weight	13.47 lbs / 6.11 kg

PACKAGING DIMENSIONS AND WEIGHT

Dimensions	18.82 x 11.77 x 20.35 in 47.8 x 29.9 x 51.7 cm
Weight	18.98 lbs / 8.61 kg

SECURITY FEATURES

Trusted Platform Module
(TPM) 1.2
Security cable slot

CERTIFICATIONS

EPEAT® Silver*
CECP
SEPA
WEEE (Waste, Electric and electronic equipment)
ENERGY STAR® 6.0
CEL
FCC
UL

*EPEAT® registered where applicable/supported. EPEAT registration varies by country. See www.epeat.net for registration status by country.

Technical Specifications - Graphics

GRAPHICS			
Intel® HD Graphics (integrated)			
DisplayPort	Multimode capable; supports HDCP, Display Port Audio (2 streams), HBR2 link rates and Multi-Stream Technology for a maximum of 3 displays (including the integrated panel)		
Maximum Graphics Memory	Microsoft Windows 7	Windows 8.1	Windows 10
	Up to 1.7GB	Up to 1.8GB	>4 GB
	Note: the actual amount of maximum graphics memory can be less than the amounts listed above depending upon your computer's configuration.		
Maximum Color Depth	32 bits/pixel		
Graphics/Video API Support	6th Generation Core™ processors:		
	<ul style="list-style-type: none"> • Next Generation Intel® Clear Video Technology HD Support is a collection of video playback and enhancement features that improve the end user's viewing experience <ul style="list-style-type: none"> ◦ Encode/transcode HD content ◦ Playback of high definition content including Blu-ray Disc ◦ Superior image quality with sharper, more colorful images • DirectX Video Acceleration (DXVA) support for accelerating video processing <ul style="list-style-type: none"> ◦ Full AVC/VC1/MPEG2/HEVC HW Decode • Advanced Scheduler 2.0, 1.0 • Windows 7, Windows 8.1, Windows 10, Linux OS Support • DirectX 12.1 • OpenGL 4.4 • Open CL 1.2 (Intel® HD Graphics 510) • Open CL 1.2/2.0 (Intel® HD Graphics 530) 		
Supported Display Resolutions and Refresh Rates			
Note: other resolutions may be available but are not recommended as they may not have been tested and qualified by HP			
Resolution		Refresh Rates	
800x600		60 Hz	
1024x768		60 Hz	
1152x864		60 Hz	
1280x600		60 Hz	
1280x720		60 Hz	
1280x800		60 Hz	
1280x960		60 Hz	
1280x1024		60 Hz	
1360x768		60 Hz	
1366x768		60 Hz	
1400x1050		60 Hz	
1440x900		60 Hz	
1600x900		60 Hz	
1600x1200*		60 Hz	
1680x1050		60 Hz	

Technical Specifications - Graphics

1920x1080	60 Hz
1920x1200*	60 Hz
1920x1440*	60 Hz
2560x1440*	60 Hz
2560x1600*	60 Hz
3840x2160*	60 Hz

* Only supported on displays connected to the external DisplayPort connector.

AMD® Radeon™ R5 320 1GB DH PCIe x8 Graphics Card (China only)

Engine Clock	775MHz
Memory Clock	800 MHz
Memory Size(width)	1GB (64-bit)
Memory Type	128 M x 32 GDDR5 @2
Max. Resolution(Analog VGA)	2048x1536x32bpp@75Hz
Max. Resolution(HDMI)	1920x1080 @60Hz(HDMI1.4)
Max. Resolution(DP)	3840x2160x30bpp@30Hz(DP1.2)
Multi Display Support	DP+HDMI+VGA
HDCP Compliance	Yes
Rear I/O connectors(bracket)	DP+HDMI+VGA (Fly cable)
Cooling(active/passive)	Active fan-sink(Active cooling with dynamic speed)
Total power consumption(W)	<35Wmax
PCB form-factor with bracket	PCIex16LP(half height)PCB with FH bracket

NVIDIA® GeForce® GT 720 2GB PCIe x8 Graphics Card (China only)

Engine Clock	797MHz
Memory Clock	900 MHz
Memory Size(width)	2GB (64-bit)
Memory Type	256Mx16 DDR3(Micron) @4pcs
Max. Resolution(Analog VGA)	2048x1536x32bpp @75Hz
Max. Resolution(HDMI)	1920x1080 @60Hz (HDMI1.4)
Max. Resolution(DP)	3840x2160x30bpp @30Hz (DP1.2)
Multi Display Support	DP+HDMI+VGA
HDCP Compliance	Yes

Technical Specifications - Graphics

Rear I/O connectors(bracket)	DP+HDMI+VGA (Fly cable)
Cooling(active/passive)	Active fan-sink(Active cooling with dynamic speed)
Total power consumption(W)	<25W max
PCB form-factor with bracket	PCIex8LP(half height) PCB with FH bracket

Technical Specifications – Hard Disk and Solid State Storage

2TB 7.2K rpm SATA 6.0Gb/s 3.5" Hard Disk Drive		
Unformatted Capacity	2 TB	
Rotational Speed	7,200 rpm	
Interface	SATA 6 Gb/s	
Cache, Multi-segmented (MB)	64 MB	
Seek Time (average)	Read	<8.5 ms
	Write	<9.5 ms
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)	

1TB 7.2K rpm SATA 6.0Gb/s 3.5" Hard Disk Drive		
Capacity	1,000,204,886,016 bytes	
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 (typical reads, includes controller overhead, including settling)	Single Track:	2.0 ms
	Average:	11 ms
	Full-Stroke:	21 ms
Height (nominal)	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)	

Technical Specifications – Hard Disk and Solid State Storage

500GB 7.2K rpm SATA 6.0Gb/s 3.5" Hard Disk Drive	
Capacity	500,107,862,016 bytes
Rotational Speed	7,200 rpm
Interface	Serial ATA 3.0 (6.0 Gb/s)
Buffer Size	16 MB
Logical Blocks	976,773,168
Seek Time (typical reads, includes controller overhead, including settling)	Single Track: 2.0 ms
	Average: 11 ms
	Full-Stroke: 21 ms
Height (nominal)	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)

128GB SATA 2.5" 3D Non-SED Solid State Drive	
Unformatted Capacity	128 GB 250,069,680 (User Addressable Sectors)
Architecture	Solid State Drive with 3D NAND Flash and SATA interface. Fully complies with ATA/ATAPI-7 Standard (Partially Complies with ATA/ATAPI-8) Power Saving Modes: DIPM (Partial / Slumber mode) Support NCQ : Up to 32 depth Synchronous Signal Recovery
Interface	Serial ATA (6.0 Gb/s)
Form Factor	2.5 inch
Height	6.80 mm ± 0.20
Width	69.85 mm ± 0.25
Length	100.20 mm ± 0.25
Weight	Up to 54 g
Bandwidth Performance	Sustained Sequential Read: Up to 530 MB/s
	Sustained Sequential Write: Up to 140 MB/s
Power	Power consumption: Active: Typical 250mW; Idle: Typical 50mW
Mean Time Between Failure (MTBF)	1,500,000 hours

Technical Specifications – Hard Disk and Solid State Storage

Environmental (all conditions, non-condensing)	Operating Temperature:	32° to 158° F (0° to 70° C)
	Relative Humidity:	5% to 95%
	Shock:	1,500 G/0.5 ms

Technical Specifications - Removable Storage

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)	
	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 ± 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 - Removable Storage

HP 9.5mm Desktop G2 Slim DVD-ROM Drive		
Height	9.5mm	
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/-R/+RW/-RW/+R DL /-R DL	Up to 8X
	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)
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 (all conditions non-condensing)	Temperature	41° to 122° F (5° to 50° C)
	Relative Humidity	10% to 80%
	Maximum Wet Bulb Temperature (operating)	84° F (29° C)

Technical Specifications - Audio

High Definition Audio

Type	Integrated
HD Stereo Codec	Realtek 2-channel ALC221 codec
Audio I/O Ports	Front microphone-In (150-K ohm Input Impedance)
	Rear Line-In/Microphone input (150-K ohm Input Impedance, function is configurable by audio driver)
	Rear Line-Out* (190 ohms Output Impedance, expects at least a 10-K ohm load)
	Front Headphone-Out (0.5 Ohm Output Impedance, expects at least a 32 ohm load) Front Microphone/Headphone jack is re-task able to provide Microphone input, line-in or Headphone output to support connecting two headphones to the front of the system. When configured as a second front headphone output, both front headphone outputs are always driven with the same signal.
	All ports are 3.5mm
Internal Speaker Amplifier	1.5W amplifier for the internal speaker only. External speakers must be powered externally. Rear Line-in audio port is re-taskable as either Line-in or Microphone-In.
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	8 kHz - 192 kHz
Wavetable Syntheses	Yes - Uses OS soft wavetable
Analog Audio	Yes
# of Channels on Line-Out	Stereo (Left & Right channels)
Internal Speaker	Yes
External Speaker Jack	Yes

Technical Specifications - Networking/Communication

Realtek RTL8111G-CG GbE		
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 8023 clauses 40) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE (Energy Efficient Ethernet) Jumbo Frame 9K Auto MDI/MDIX Crossover cable detection
	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
	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	PCI Express 1.1 x1 to fully support ASPM L0s/L1 and CLKREQ
	NIC Device Driver Name	PCIe GbE Ethernet Family Controller

Broadcom BCM943228Z 802.11n 2x2 DualBand No Bluetooth® NIC PCIe x1 Card		
	Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n
	Interoperability	Wi-Fi certified
	Frequency Band	802.11b/g/n <ul style="list-style-type: none"> • 2.402 - 2.482 GHz 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.
		802.11a/n <ul style="list-style-type: none"> • 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: Indonesia no support this band)
	Antenna Structure	2 transmit; 2 receive (2x2)

Technical Specifications - Networking/Communication

Data Rates	802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)	
Modulation	Direct Sequence Spread Spectrum CCK, BPSK, QPSK, 16-QAM, 64-QAM	
Security¹	<ul style="list-style-type: none"> • 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 	
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.	
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)	
Roaming	IEEE 802.11 compliant roaming between band Access Points	
Output Power²	<ul style="list-style-type: none"> • 802.11b : +16dBm minimum • 802.11g : +14dBm minimum • 802.11a : +14dBm minimum • 802.11n HT20(2.4GHz) : +13dBm minimum • 802.11n HT40(2.4GHz) : +13dBm minimum • 802.11n HT20(5GHz) : +12dBm minimum • 802.11n HT40(5GHz) : +12dBm minimum 	
Power Consumption	Transmit: 2.0 W (max) Receive: 1.6 W (max) Idle mode (PSP): 180 mW (WLAN Associated) Idle mode: 60 mW (WLAN unassociated) Radio disabled: 30 mW	
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode	
Receiver Sensitivity⁴	802.11b, 1Mbps : -94dBm maximum 802.11b, 11Mbps : -86dBm maximum 802.11g, 6Mbps : -88dBm maximum 802.11g, 54Mbps : -74dBm maximum 802.11a, 6Mbps : -86dBm maximum 802.11a, 54Mbps : -72dBm maximum 802.11n, MCS07 : -69dBm maximum 802.11n, MCS15 : -66dBm maximum	
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 and Bluetooth® communications	
Form Factor	PCI-Express M.2 MiniCard	
Dimensions	Type 2230 : 2.3 x 22.0 x 30.0 mm Or Type 1630 : 2.3 x 16.0 x 30.0 mm	
Weight	Type 2230 : 2.8g Or Type 1630 : 2g	
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)

Technical Specifications - Networking/Communication

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	
<ol style="list-style-type: none"> 1. Check latest software/driver release for updates on supported security features. 2. Maximum output power may vary by country according to local regulations. 3. In Power Save Polling mode and on battery power. 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). 5. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista. 		

Intel® Ethernet I210-T1 Gigabit Network Adapter (selected countries only)

Connector	RJ-45
System Interface	PCI Express x1
Controller	Intel® I210 Gigabit Ethernet Controller
Memory	Integrated Dual 48K configurable transmit receive FIFO Buffers
Data rates supported	10/100/1000 Mbps
IEEE Compliance	802.1P 802.1Q 802.2 802.3 802.3AB 802.3u 802.3x flow control
Bus architecture	PCI-E 2.1
Data path width	X1, 250 MB/s, Bi-directional interface
Data transfer mode	Bus-master DMA
Hardware certifications	FCC, B, CE, TUV-c, TUVus Mark Canada and United States, TUV-GS Mark for European Union
Power requirement	Aux 3.3 V, 3.0 Watts in 1000 base-T and 1.0 Watts in 100 Base-T
Boot ROM support	Yes 10BASE-T (half-duplex) 10 Mbps 10BASE-T (full-duplex) 20 Mbps

Technical Specifications - Networking/Communication

Network transfer rate	10BASE-T (half-duplex) 10 Mbps	
	10BASE-T (full-duplex) 20 Mbps	
	100BASE-TX (half-duplex) 100 Mbps	
	100BASE-TX (full-duplex) 200 Mbps	
	1000BASE-T (full-duplex) 2000 Mbps (actual rate limited by PCI bus)	
Environmental	Operating Temperature:	32° to 132° F (0° to 55° C)
	Operating Humidity:	85% at 131° F (55° C)
Management	WOL, PXE, DMI, WFM 2.0	

After-Market Options (availability may vary by region)

Type	Description	Part #
Memory	HP 4GB DDR4-2133 DIMM	P1N51AA
	HP 8GB DDR4-2133 DIMM	P1N52AA
Storage	HP 500GB SATA 6.0Gb/s Hard Drive	QK554AA
Graphics	NVIDIA GeForce GT 720 2GB PCIe x8 Card (select countries only)	T4E57AA
	AMD Radeon R5 320 1GB GDDR5 PCIe x8 Card (select countries only)	T9F48AA
Security	HP UltraSlim Cable Lock Kit	H4D73AA
	HP Business PC Security Lock Kit	PV606AA
Adapters	HP Serial Port Adapter (Available in APJ only)	PA716A
	HP USB to Serial Adapter	J7B60AA
	HP Parallel Port Adapter (Available in APJ only)	KD061AA
Networking	Intel Ethernet I210-T1 GbE NIC Card (select countries only)	E0X95AA
Multimedia	HP Business Headset	QK550AA
	HP USB Business Speakers	D9J19AA
	HP USB HD 720P v2 Business Webcam	D8Z08AA
Input	HP USB Keyboard	QY776AA
	HP Conferencing Keyboard	K8P74AA
	HP USB Conferencing Keyboard	N8N57AA
	HP USB Business Slim Keyboard	N3R87AA
	HP USB Business Slim Keyboard and Mouse and Mousepad	T4E63AA
	HP PS/2 Business Slim Keyboard and Mouse and Mousepad	T4E66AA
	HP USB Antimicrobial Keyboard and Mouse (China Only)	K7X25AA
	HP USB Grey Mouse	K7W54AA
	HP PS/2 Mouse	QY775AA
	HP USB Hardened Mouse	P1N77AA

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Change Log

Date of change:	Version History:		Description of change:
March 1, 2016	From v1 to v2	Added	Environmental Data.
March 24, 2016	From v2 to v3	Added	Image of version with Serial Port and PS/2 Keyboard and Mouse inputs
July 19, 2016	From v3 to v4	Update	Updated EPEAT from Gold to Silver
August 24, 2016	From v4 to v5	Update	Updated note on accessories availability
November 3, 2016	From v5 to v6	Update	Adding in support for new APJ model
December 5, 2016	From v6 to v7	Update	SuperMulti references deleted
January 4, 2017	From v7 to v8	Update	Bays Section updated
February 1, 2017	From v8 to v9	Update	Software Components and Applications with Windows Section updated. HP BIOS Config Utility (BCU) deleted
July 25, 2017	From v9 to v10	Update	SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS section updated. / Manageability deleted
March 8, 2018	From v10 to v11	Update	A couple of notes added to (TPM) 2.0 (firmware) in Security Features section
May 3, 2018	From v11 to v12	Update	Graphics Section