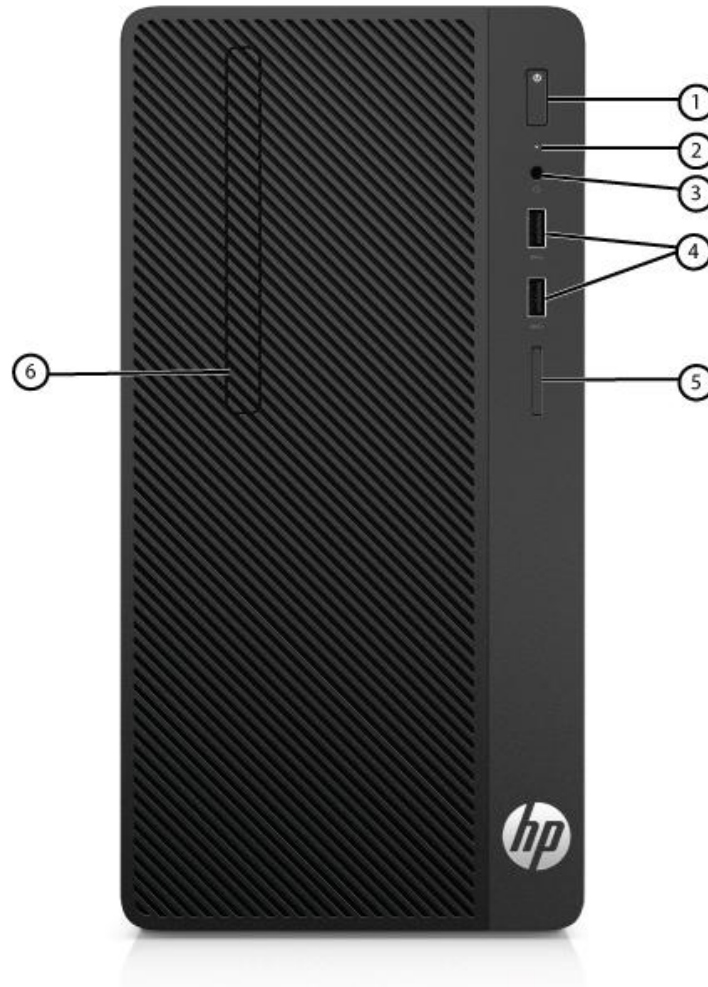


Overview

HP 280 G3 Microtower Business PC



Front

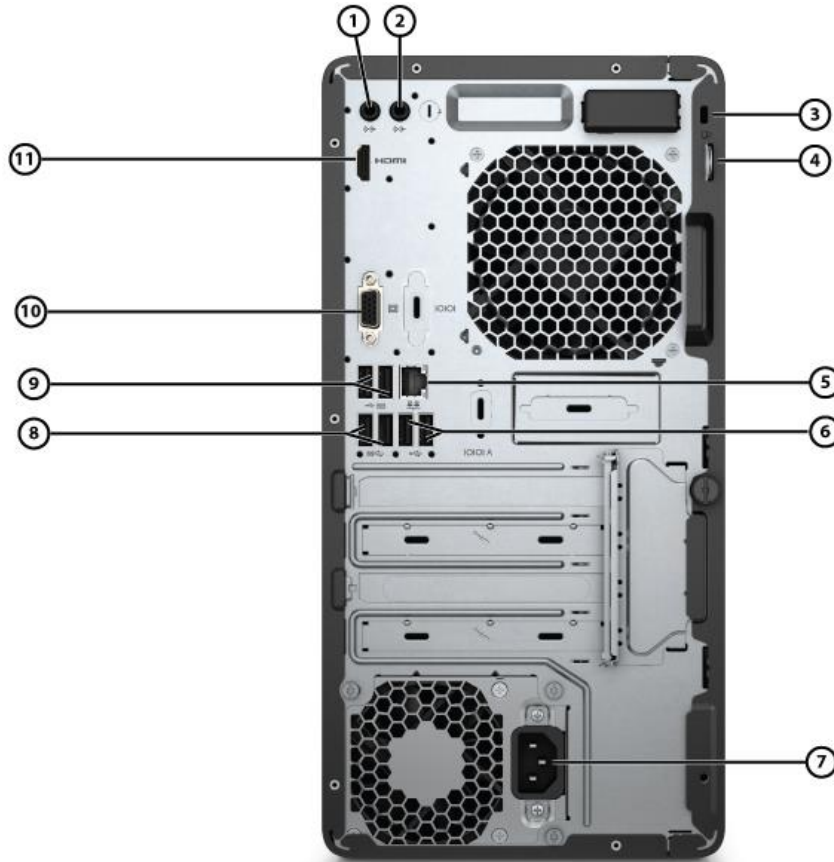
1. Power Button
2. PC Status LED
3. Microphone/Headphone Combo Jack
4. (2) USB 3.0 Ports
5. SD Media Card Reader (optional)
6. 5.25" Slim-height Bay - supporting an optical disk drive (optional)

Not Shown

- Slots (1) PCI Express x16 TLC 3.0 Graphics Connector
(1) PCI Express x1 2.0 Accessory Connector
(1) PCI 2.3 (optional, select countries only)
(1) M.2 for WLAN
- Bays (1) 3.5" internal storage drive bay
(1) 3.5" internal storage drive bay (optional)

Overview

HP 280 G3 Microtower Business PC

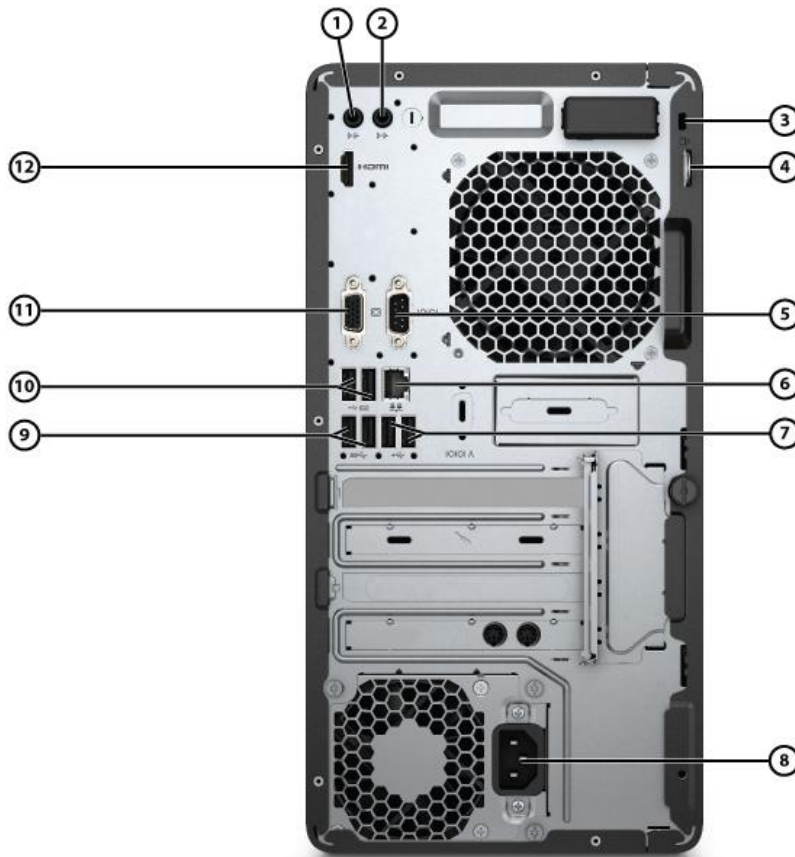


Back

- | | |
|----------------------------|---------------------------|
| 1. Audio Line In Connector | 7. Power Cord Connector |
| 2. Audio-out connector | 8. (2) USB 2.0 Ports |
| 3. Cable Lock Slot | 9. (2) USB 3.0 Ports |
| 4. Pad Lock Slot | 10. VGA monitor connector |
| 5. RJ-45 (network) jack | 11. HDMI connector |
| 6. (2) USB 2.0 Ports | |

Overview

HP 280 G3 Microtower Business PC (Legacy) - Available in selected countries only



Back

- | | |
|----------------------------|---------------------------|
| 1. Audio Line In Connector | 7. (2) USB 2.0 Ports |
| 2. Audio-out connector | 8. Power Cord Connector |
| 3. Cable Lock Slot | 9. (2) USB 2.0 Ports |
| 4. Pad Lock Slot | 10. (2) USB 3.0 Ports |
| 5. Serial port | 11. VGA monitor connector |
| 6. RJ-45 (network) jack | 12. HDMI connector |

Overview

AT A GLANCE

- Windows 10 Pro , Windows 10 Home, NeoKylin Linux (selected countries only) or FreeDOS 2.0
- Intel® H110 chipset supporting Intel® 6th and 7th 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 & HDMI video interfaces
- TPM 2.0 support
- High definition audio
- 8 USB ports (including 4 USB 3.0 ports)
- Security cable lock supported (sold separately)
- Protected by HP Services; terms and conditions vary by country; certain restrictions and exclusions apply

Standard Features and Configurable Modules

CHIPSET

Intel® H110 Chipset

PROCESSORS

NOTE: 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. Intel's numbering is not a measurement of higher performance.

Intel® 7th Generation Core™ i7 Processors*

Intel® Core™ i7-7700 Processor

65W

Up to 4.2 GHz Max. Turbo Frequency (3.6 GHz base frequency)

8 MB SmartCache cache, 4 cores, 8 threads

Intel® HD Graphics 630

Supports DDR4 memory up to 2400 MT/s data rate

Intel® 7th Generation Core™ i5 Processors*

Intel® Core™ i5-7600 Processor

65W

Up to 4.1 GHz Max. Turbo Frequency (3.5 GHz base frequency)

6 MB cache, 4 cores, 4 threads

Intel® HD Graphics 630

Supports DDR4 memory up to 2400 MT/s data rate

Intel® Core™ i5-7500 Processor

65W

3.4 GHz base frequency

6 MB cache, 4 cores, 4 threads

Intel® HD Graphics 630

Supports DDR4 memory up to 2400 MT/s data rate

Intel® Core™ i5-7400 Processor

65W

3.0 GHz base frequency

6 MB cache, 4 cores, 4 threads

Intel® HD Graphics 630

Supports DDR4 memory up to 2400 MT/s data rate

Intel® 7th Generation Core™ i3 Processors*

Intel® Core™ i3-7100 Processor

51W

3.9 GHz base frequency

3 MB cache, 2 cores, 4 threads

Intel® HD Graphics 630

Supports DDR4 memory up to 2400 MT/s data rate

Intel® 7th Generation Pentium® Processors*

Standard Features and Configurable Modules

Intel® Pentium® G4560 Processor

54W

3.5 GHz Base Frequency

3 MB cache, 2 cores, 4 threads

Intel® HD Graphics 610

Supports DDR4 memory up to 2400 MT/s data rate

Intel® 6th Generation Core™ i7 Processors

Intel® Core™ i7-6700 Processor

65W

Up to 4.0 GHz Max. Turbo Frequency (3.4 GHz base frequency)

8 MB cache, 4 cores, 8 threads

Intel® HD Graphics 530

Supports DDR4 memory up to 2133 MT/s data rate

Intel® 6th Generation Core™ i5 Processors

Intel® Core™ i5-6500 Processor

65W

Up to 3.6 GHz Max. Turbo Frequency (3.2 GHz base frequency)

6 MB cache, 4 cores, 4 threads

Intel® HD Graphics 530

Supports DDR4 memory up to 2133 MT/s data rate

Standard Features and Configurable Modules

Intel® 6th Generation Core™ i5 Processors

Intel® Core™ i5-6600 Processor

65W

Up to 3.9 GHz Max. Turbo Frequency (3.3 GHz base frequency)

6 MB cache, 4 cores, 4 threads

Intel® HD Graphics 530

Supports DDR4 memory up to 2133 MT/s data rate

Intel® 6th Generation Pentium® Processors

Intel® Core™ i3-6100 Processor

51W

3.7 GHz base frequency

3 MB cache, 2 cores, 4 threads

Intel® HD Graphics 530

Supports DDR4 memory up to 2133 MT/s data rate

Intel® 6th Generation Celeron® Processors

Intel® Pentium® G4500 Processor

51W

3.5 GHz Base Frequency

3 MB cache, 2 cores, 2 threads

Intel® HD Graphics 530

Supports DDR4 memory up to 2133 MT/s data rate

Intel® 6th Generation Celeron® Processors

Intel® Celeron® G3900 Processor

51W

2.8 GHz Base Frequency

2 MB cache, 2 cores, 2 threads

Intel® HD Graphics 510

Supports DDR4 memory up to 2133 MT/s data rate

Intel® 6th Generation Celeron® Processors

Intel® Celeron® G3930 Processor

51W

2.9 GHz Base Frequency

2 MB cache, 2 cores, 2 threads

Intel® HD Graphics 610

Supports DDR4 memory up to 2133 MT/s data rate

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

Standard Features and Configurable Modules

GRAPHICS

Integrated

Intel® Integrated HD Graphics Varies by Processor

Discrete (optional for selected countries only)

NVIDIA® GeForce® GT 730 1GB PCIe x8 HDMI

NVIDIA® GeForce® GT 730 2GB PCIe x8 DP & HDMI

AMD Radeon™ R5 420 Card

AMD Radeon™ R7 430 Card

MEMORY*

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

Form Factor	Type	Maximum	# of Slots
Microtower	DDR4-2400 (Transfer rates up to 2400 MT/s)	32 GB capacity	2 DIMM

4GB DDR4-2400 DIMM (1x4GB)

8GB DDR4-2400 DIMM (1x8GB)

16GB DDR4-2400 DIMM (1x16GB)

* Full availability of 4 GB or more of memory requires a 64-bit operating system. With Windows 32-bit operating systems, the amount of usable memory is dependent upon your configuration, so that above 3 GB all memory may not be available due to system resource requirements.

Memory modules support data transfer rates up to 2400 MT/s; actual data rate is determined by the system's configured processor. See processor specifications for supported memory data rate.

Standard Features and Configurable Modules

STORAGE*

SATA 3.5" 6Gb/s HDDs*

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

Solid State Drives 2.5" *

128GB SATA SSD
256GB SATA SSD

Multi-format Digital Media Card Reader (optional)**

HP 6-in-1 SD Media Card Reader (optional)

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

**Card sold separately

OPTICAL DISC DRIVES*

HP 9.5mm Desktop G3 Slim DVD-ROM Drive
HP 9.5mm Desktop G3 Slim DVD Writer Drive

*Optical drives are optional or add on features. HD-DVD disks cannot be played on this drive. No support for DVD-RAM. Duplication of copyrighted material is strictly prohibited. Actual speeds may vary. Double Layer discs can store more data than single layer discs. Double Layer media compatibility will widely vary with some home DVD players and drives.

AUDIO/MULTIMEDIA

Integrated Hi-Definition Audio: Internal amplifier (Conexant CX20632 Audio Codec)
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 - Realtek RTL8111HSH-CG GbE Ethernet
Optional : Intel® Ethernet I210-T1 PCIe x1 Gb Network Interface Card
Supports Wake-on-LAN (WOL)

Wireless (Optional)*

Intel® 3168 802.11AC 1x1 Wi-Fi +Bluetooth® M.2 Combo Card non-vPro™ (optional)

* Wireless access point and Internet service required and not included. Availability of public wireless access points limited.

Standard Features and Configurable Modules

PORTS

Front I/O Ports

Two (2) USB 3.0 ports

One (1) Microphone/Headphone Combo Jack (CTIA)

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) HDMI

Optional, select countries only

One (1) PS/2 port

One (1) Serial

One (1) Parallel

Internal I/O Ports

One (1) PCIe x 16 (3.0)

One (1) PCIe x 1 (2.0)

One (1) M.2 for WLAN

One (1) PCI 2.3 (optional, select countries only)

BAYS

One (1) 3.5" Hard Disc Drive Bay

One (1) 3.5" / 2.5" Hard Disc Drive Bay (no bracket required)

One (1) 9.5 mm Slim ODD Bay

One (1) SD Card Reader bay (Optional)

KEYBOARDS AND POINTING DEVICES**

Keyboards

Universal USB Wired Keyboard

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

Mice

HP USB Mouse (not available for India)

HP USB Hardened Mouse (India only)

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

HP USB Antimicrobial Mouse (China only)

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

Standard Features and Configurable Modules

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 telephone 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 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.

Operating Systems & Software

OPERATING SYSTEMS

Preinstalled (Windows)

Windows 10 Pro 64¹

Windows 10 Pro 64 (National Academic License)³

Windows 10 Home 64¹

Windows 10 Home Single Language 64¹

Windows 7 Professional 64 (available through downgrade rights from Windows 10 Pro)^{2,4}

Pre-installed (Other)

FreeDOS 2.0

NeoKylin Linux 64 (Select countries only)

Web-supported

Windows 10 Enterprise 64¹

Windows 7 Enterprise 64⁴

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>.
2. This system is preinstalled with Windows 7 Pro software 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.
3. Some devices for academic use will automatically be updated to Windows 10 Pro Education with the Windows 10 Anniversary Update. Features vary; see <https://aka.ms/ProEducation> for Windows 10 Pro Education feature information.
4. Only available with 7th generation (Intel) processors.

Operating Systems & Software

SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS

Preinstalled (varies by country)

Multimedia

CyberLink Power Media Player CMIT (select platforms only)

CyberLink Power2Go (select platforms only)

Communication / Connectivity

HP Velocity (select platforms only)

HP Value Add Software

HP ePrint Driver + JetAdvantage¹

HP Hotkey Support - CMIT

HP Recovery Manager

HP Recovery Disc Creator (Windows 7 only)

HP Support Assistant

HP Jumpstart

Foxit PhantomPDF Express (Windows 7 only)

Microsoft Products

Buy Office

Skype²

Manageability

Discover HP Touchpoint Manager³

Security

Microsoft Security Essentials⁴ (Windows 7 only)

Microsoft Defender

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/eprintcenter>). Print times and connection speeds may vary.
2. Skype is not offered in China.
3. HP Touchpoint Manager requires purchase of a subscription and supports Android™, iOS and Windows 7 or higher operating systems and PCs, notebooks, tablets and smartphones from various manufacturers. Not available in all countries see <http://www.hp.com/touchpoint> for availability information.
4. 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: 32° to 104° F (0° to 40° C)* Non-operating: -22° to 140° F (-30° to 60° C)
Relative Humidity	Operating: 10% to 90% (non-condensing at ambient) Non-operating: 0% 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.

POWER SUPPLY*

- 180W HE (full range)
180W active PFC 82/85/82% efficient at 20/50/100% load(115V)
Operating Voltage Range: 90 - 264VAC
Rated Voltage Range: 100 - 240VAC
Rated Line Frequency: 50 - 60HZ
Operating Line Frequency: 47 - 63HZ
Rated Input Current: 180W/2.3A
Rated Input Current with Energy Efficient* Power Supply: 180W/2.3A
DC Output: +12V
Power Supply Fan: 70mm variable speed
Power cord length: 6.0 ft. (1.83 m)
- 310W HE (full range) – Selected countries only
310W active PFC 82/85/82% efficient at 20/50/100% load(115V)
Operating Voltage Range: 90 - 264VAC
Rated Voltage Range: 100 - 240VAC
Rated Line Frequency: 50 - 60HZ
Operating Line Frequency: 47 - 63HZ
Rated Input Current: 310W/4A
Rated Input Current with Energy Efficient* Power Supply: 310W/4A
DC Output: +12V
Power Supply Fan: 70mm variable speed
Power cord length: 6.0 ft. (1.83 m)

Technical Specifications

- The harmonic input current requirements must be met under the following operating conditions:
Load Requirements: 50% and 100%
Input Voltage: 230Vac/50Hz.
For active power factor correction the power factor at 50% & 100% loads shall be greater than 0.9 over the entire nominal input voltage range (100-127VAC and 200-240VAC).

Condition	87/90/87%	Input Voltage
10% of Rated Load	84%,	115Vac/60HZ
20% of Rated Load	87%	115Vac/60HZ
50% of Rated Load	90%	115Vac/60HZ
	PF>0.9	
100% of Rated Load	87%	115Vac/60HZ
	PF>0.9	230Vac/50HZ

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

Technical Specifications

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

Chassis
(WxDxH in vertical orientation) 6.69 x 10.79 x 13.31 in
17 x 27.4 x 33.8 cm

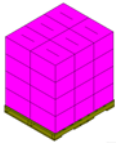
System Weight 12.02 lbs / 5.45 kg

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

Dimensions 19.65 x 15.35 x 11.73 in
49.9 x 39 x 29.8 cm

Weight 17.17 lbs / 7.79 kg

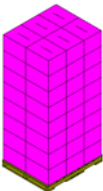
PACKAGING DIMENSIONS AND WEIGHT BY AIR PALLETIZATION



Dimensions 1200*1000*[120+298*4(height of units)=1312]mm

Weight 24(cartons)*7.79(kg per unit)+ 8.4 (kg for pallet) =195.36 (kg for palletization)

PACKAGING DIMENSIONS AND WEIGHT BY OCEAN/TRUCK PALLETIZATION



Dimensions 1200*1000*[120+298*8(height of units)=2504]mm

Weight 48(cartons)*7.79(kg per unit)+ 8.4 (kg for pallet) =382.32 (kg for palletization)

Technical Specifications

SECURITY FEATURES

Trusted Platform Module (TPM) 2.0

Security cable slot

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

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

CERTIFICATIONS

EPEAT® Silver* 1.0

CECP (China Only)

SEPA (China Only)

WEEE (Waste, Electric and electronic equipment)

ENERGY STAR® 6.1

EuP Lot 3

CEL Level 1

FCC

UL

RoHS 2.06 Compliance

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

Technical Specifications - Graphics

Intel® HD Graphics (integrated)			
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	The BIOS has options for selecting the dedicated memory size of 128MB, 256MB or 512MB 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	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. For All in One platforms, resolutions higher than the integrated panel resolution are not supported on the integrated panel.

Resolution	Refresh Rate	VGA	DisplayPort™	HDMI	Standard
640 x 480	60, 75, 85	X	X	X	VESA DMT, CVT 0.31M3
720 x 400	70	X	X	X	IBM VGA
800 x 600	60, 75, 85	X	X	X	VESA DMT, CVT0.48M3
1024 x 768	60, 75, 85	X	X	X	VESA DMT, CVT 0.79M3
1152 x 864	60, 75, 85	X	X	X	VESA DMT, CVT 0.83MA

Technical Specifications - Graphics

1280 x 720	60, 75, 85	X	X	X	VESA DMT, CVT 0.92M9, CEA-770.3
1280 x 768	60, 60RB, 75, 85	X	X	X	VESA DMT, CVT 0.98M9/0.98M9-R
1280 x 800	60, 75, 85	X	X	X	VESA DMT
1280 x 960	60, 75, 85	X	X	X	VESA DMT
1280 x 1024	60, 75, 85	X	X	X	VESA DMT, CVT 1.31M4
1366 x 768	60, 60RB	X	X	X	VESA DMT
1440 x 900	60, 60RB	X	X	X	VESA DMT
1600 x 900	60, 60RB, 75, 85	X	X	X	VESA DMT
1680 x 1050	60, 60RB, 75	X	X	X	VESA DMT, CVT 1.76MA/1.76MA-R
1920 x 1080	60	X	X	X	VESA DMT, CVT 2.07M9, SMPTE 274M
1920 x 1200	60, 60RB, 75, 85	X*	X	X	DMT, CVT 2.30MA/2.30MA-R
1600 x 1200	60, 75, 85	X*	X	X	VESA DMT, 1.92M3
1920 x 1440	60, 75, 85		X	X	VESA DMT, CVT 2.76M3
2048 x 1536	60,75		X	X	CVT 3.15M3
2560 x 1440	59.951		X	X	CVT 3.69M9-R
2560 x 1600	60, 60RB		X	X	VESA DMT, CVT 4.10MA/4.10MA-R
3840 x 2160	24		X	X	CVT-RBv1/v2 (8.29M9-R), SMPTE 274M
3840 x 2160	25		X	X	CVT-RBv1/v2 (8.29M9-R), SMPTE 274M
3840 x 2160	30		X	X	CVT-RBv1/v2 (8.29M9-R), SMPTE 274M
3840 x 2160	50		X	X	CVT-RBv1/v2 (8.29M9-R), SMPTE 274M
3840 x 2160	60		X	X	CVT-RBv1/v2 (8.29M9-R), SMPTE 274M
4096 x 2160	24		X	X	CVT-RBv1/v2 (8.85M-R), SMPTE 274M
4096 x 2160	25		X	X	CVT-RBv1/v2 (8.85M-R), SMPTE 274M
4096 x 2160	30		X	X	CVT-RBv1/v2 (8.85M-R), SMPTE 274M
4096 x 2160	50		X	X	CVT-RBv1/v2 (8.85M-R), SMPTE 274M
4096 x 2160	60		X	X	CVT-RBv1/v2 (8.85M-R), SMPTE 274M
1920 x 1080	60		X	X	VESA (SMPTE 274M)
1920 x 1080	50		X	X	SMPTE 274M
1920 x 1080	30		X	X	SMPTE 274M
1920 x 1080	24		X	X	SMPTE 274M
1280 x 720	60		X	X	VESA (CEA-770.3)
1280 x 720	50		X	X	SMPTE 296M
720 x 480	60		X	X	MHL (CEA-770.2)
720 x 576	50		X	X	ITU-R BT.1358

Technical Specifications - Graphics

640 x 480	60		X	X	CEA (VESA DMT)
* 60Hz refresh rate only on VGA					

NVIDIA® GeForce® GT 730 1GB PCIe x8 HDMI Graphics Card

Memory	1GB GDDR5 64-bit wide frame buffer operating at 2.5GHz.
Controller Clock Speed	NVIDIA® Kepler™ GPU operating at 901 MHz
Multi-display Support	A maximum of 2 displays are supported by the card
Graphics /API support	Supports Microsoft DirectX 12, OpenGL 4.4 and OpenCL 2 API, Shade Model 5 and DirectCompute 11
Output Connectors	1 x Dual-Link DVI-I; 1x HDMI; Includes DVI to VGA adapter

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 Rate*	VGA (DVI-VGA adapter)	DVI-D	HDMI	Standard
640 x 480	60, 75, 85	X	X	X	VESA DMT, CVT 0.31M3
720 x 400	70	X	X	X	IBM VGA
800 x 600	60, 75, 85	X	X	X	VESA DMT, CVT0.48M3
1024 x 768	60, 75, 85	X	X	X	VESA DMT, CVT 0.79M3
1152 x 864	60, 75, 85	X	X	X	VESA DMT, CVT 0.83MA
1280 x 720	60, 75, 85	X	X	X	VESA DMT, CVT 0.92M9, CEA-770.3
1280 x 768	60, 60RB, 75, 85	X	X	X	VESA DMT, CVT 0.98M9/0.98M9-R
1280 x 800	60, 75, 85	X	X	X	VESA DMT
1280 x 960	60, 75, 85	X	X	X	VESA DMT
1280 x 1024	60, 75, 85	X	X	X	VESA DMT, CVT 1.31M4
1366 x 768	60, 60RB	X	X	X	VESA DMT
1440 x 900	60, 60RB	X	X	X	VESA DMT
1600 x 900	60, 60RB, 75, 85	X	X	X	VESA DMT
1680 x 1050	60, 60RB, 75	X	X	X	VESA DMT, CVT 1.76MA/1.76MA-R
1920 x 1080	60	X	X	X	VESA DMT, CVT 2.07M9, SMPTE 274M
1920 x 1200	60, 60RB, 75, 85	X	X	X	DMT, CVT 2.30MA/2.30MA-R

Technical Specifications - Graphics

1600 x 1200	60, 75, 85	X	X	X	VESA DMT, 1.92M3
1920 x 1440	60, 75, 85	X	X	X	VESA DMT, CVT 2.76M3
2048 x 1536	60,75	X	X	X	CVT 3.15M3
2560 x 1440	59.951		X	X	CVT 3.69M9-R
2560 x 1600	60, 60RB		X	X	VESA DMT, CVT 4.10MA/4.10MA-R
3840 x 2160	24			X	CVT-RBv1/v2 (8.29M9-R), SMPTE 274M
3840 x 2160	25			X	CVT-RBv1/v2 (8.29M9-R), SMPTE 274M
3840 x 2160	30		X	X	CVT-RBv1/v2 (8.29M9-R), SMPTE 274M
3840 x 2160	50				CVT-RBv1/v2 (8.29M9-R), SMPTE 274M
3840 x 2160	60				CVT-RBv1/v2 (8.29M9-R), SMPTE 274M
4096 x 2160	24			X	CVT-RBv1/v2 (8.85M-R), SMPTE 274M
4096 x 2160	25			X	CVT-RBv1/v2 (8.85M-R), SMPTE 274M
4096 x 2160	30			X	CVT-RBv1/v2 (8.85M-R), SMPTE 274M
4096 x 2160	50				CVT-RBv1/v2 (8.85M-R), SMPTE 274M
4096 x 2160	60				CVT-RBv1/v2 (8.85M-R), SMPTE 274M
1920 x 1080	60		X	X	VESA (SMPTE 274M)
1920 x 1080	50		X	X	SMPTE 274M
1920 x 1080	30		X	X	SMPTE 274M
1920 x 1080	24		X	X	SMPTE 274M
1280 x 720	60		X	X	VESA (CEA-770.3)
1280 x 720	50		X	X	SMPTE 296M
720 x 480	60		X	X	MHL (CEA-770.2)

* >60 refresh rates only for analog (VGA) signaling

NVIDIA® GeForce® GT 730 2GB PCIe x8 DP Graphics Card

Memory	2GB GDDR5 64-bit wide frame buffer operating at 2.5GHz.
Controller Clock Speed	NVIDIA® Kepler™ GPU operating at 902 MHz
Multi-display Support	A maximum of 2 displays are supported by the card
Graphics /API support	Supports Microsoft DirectX 12, OpenGL 4.4
Output Connectors	1 x Dual-Link DVI-I; 1x DP; Includes DVI to VGA adapter
Max. Resolution (DVI)	2560 x 1600 x 30 bpp @ 60Hz (Dual Link)
Max. Resolution (DP)	4096 x 2160 x 24 bpp @ 60 Hz (DP1.2)

NVIDIA® GeForce® GT 730 2GB PCIe x8 HDMI Graphics Card

Memory	2GB GDDR5 64-bit wide frame buffer operating at 2.5GHz.
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Technical Specifications - Graphics

Controller Clock Speed	NVIDIA® Kepler™ GPU operating at 902 MHz
Multi-display Support	A maximum of 2 displays are supported by the card
Graphics /API support	Supports Microsoft DirectX 12, OpenGL 4.4
Output Connectors	1 x Dual-Link DVI-I; 1x HDMI; Includes DVI to VGA adapter
Max. Resolution (DVI)	2560 x 1600 x 30 bpp @ 60Hz (Dual Link)
Max. Resolution (DP)	4096 x 2160 x 24 bpp @ 60 Hz (DP1.2)

Technical Specifications – Hard Disk and Solid State Storage

500GB* 7.2K rpm SATA 6.0Gb/s 3.5" Hard Disk Drive		
Formatted Capacity	500,107,862,016 bytes	
Spindle Speed	7,200 rpm	
Interface	Serial ATA 3.0 (6.0 Gb/s)	
Buffer Size	16 MB	
Logical Blocks	976,773,168	
Seek Time (average)	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)	
<p>*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.</p>		

HP 1 TB* 7.2K rpm SATA 6.0Gb/s 3.5" Hard Disk Drive*		
Formatted 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 (average)	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

* 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.

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

Formatted Capacity	2 TB	
Rotational Speed	7,200 rpm	
Interface	SATA 6Gb/s NCQ	
Cache, Multisegmented (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	32° to 140° F (0° to 60° C)	

*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.

128GB SATA 2.5" Value (Non-SED) Solid State Drive

Unformatted Capacity	128 GB	
Architecture	TLC NAND Flash	
Interface	SATA 3.2 (6.0 Gb/s)	
Form Factor	2.5 inch	
Dimensions (W x H x D)	6.98 x 0.7 x 10.05 cm	
Weight	31g	
Bandwidth Performance	Sustained Sequential Read:	Up to 510 MB/s
	Sustained Sequential Write:	Up to 330 MB/s
	Random Read:	Up to 38K IOPs

Technical Specifications – Hard Disk and Solid State Storage

	Random Write:	Up to 70K IOPs
Power	DC power requirement:	5 VDC 5%-100 mV ripple p-p
	Total power consumption:	50mW (active); 20mW (idle)
Useful Drive Life	72TB written, up to 40GB/day for 5 years	
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
<p>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."</p>		

256GB SATA 2.5" Value (Non-SED) Solid State Drive		
Unformatted Capacity	256 GB	
Architecture	TLC NAND Flash	
Interface	SATA 3.2 (6.0 Gb/s)	
Form Factor	2.5 inch	
Dimensions (W x H x D)	6.98 x 0.7 x 10.05 cm	
Weight	31g	
Bandwidth Performance	Sustained Sequential Read:	Up to 510 MB/s
	Sustained Sequential Write:	Up to 330 MB/s
	Random Read:	Up to 38K IOPs
	Random Write:	Up to 70K IOPs
Power	DC power requirement:	5 VDC 5%-100 mV ripple p-p
	Total power consumption:	50mW (active); 20mW (idle)

Technical Specifications – Hard Disk and Solid State Storage

Useful Drive Life	72TB written, up to 40GB/day for 5 years	
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
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."		

Technical Specifications - Removable Storage

HP 9.5mm Desktop G3 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)
*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.		

Technical Specifications - Removable Storage

HP 9.5mm Desktop G3 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	Conexant CX20632
Audio I/O Ports	Headset connector supports a CTIA style headset and is re-taskable as a Line-in, Line-out, Microphone-in or Headphone-out port
	Rear Line-In can be retasked to function as a microphone input
	Rear Line-Out
	Front Headphone-Out
	All ports are 3.5mm and support stereo (see above tables for system configurations)
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.
Sampling	Independent sampling rates for DAC's and ADC's; supports resolutions from 16 to 24-bit; 44.1 kHz to 192 kHz for DAC and 44.1 kHz to 96 kHz for ADC
Wavetable Syntheses	Yes – Uses OS soft wavetable
Analog Audio	Yes
# of Channels on Line-Out	Stereo (Left & Right channels)
Internal Speaker	Yes
External Speaker Jack	2W class D mono amplifier for the internal speaker only. External speakers must be powered externally.

Technical Specifications - Networking

Realtek RTL8111HSH-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

Technical Specifications - Networking

Intel® 3168 802.11AC 1x1 Wi-Fi +Bluetooth® M.2 Combo Card non-vPro™*	
Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac
Interoperability	Wi-Fi certification
Frequency Bands	802.11b/g/n 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 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 only supports 5.725 - 5.825 GHz (CH149 - CH161)
Data Rates	<ul style="list-style-type: none"> • 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 ~ MCS7, (1SS) (20MHz, 40MHz, and 80MHz)
Modulation	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-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
¹ Check latest software/driver release for updates on supported security features.	

Technical Specifications - Networking

Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	802.11r Fast Roaming
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) : +14dBm minimum • 802.11n HT40(2.4GHz) : +12dBm minimum • 802.11n HT20(5GHz) : +14dBm minimum • 802.11n HT40(5GHz) : +12dBm minimum • 802.11ac 80MHz(5GHz) : +11dBm minimum <p>² Maximum output power may vary by country according to local regulations.</p>
Power Consumption	Transmit: 2.0 W (max) Receive: 1.6 W (max) Idle mode (PSP): 180 mW (WLAN Associated) Idle mode: 50 mW (WLAN unassociated) Connect Standby: 10 mW (WLAN+BT) Radio disabled: 5 mW
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity³	802.11b, 1Mbps : -94dBm maximum 802.11b, 11Mbps : -86dBm maximum 802.11g, 6Mbps : -88dBm maximum 802.11g, 54Mbps : -74dBm maximum 802.11a, 6Mbps : -88dBm maximum 802.11a, 54Mbps : -74dBm maximum 802.11n, MCS07 : -69dBm maximum 802.11n, MCS15 : -66dBm maximum 802.11ac, 1SS, MCS-0 : -86dBm maximum 802.11ac, 1SS, MCS-9 : -61dBm maximum 802.11ac, 2SS, MCS-0 : -83dBm maximum 802.11ac, 2SS, MCS-9 : -58dBm maximum
	³ 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 Or Type 1630 : 2.3 x 16.0 x 30.0 mm

Technical Specifications - Networking

Weight	Type 2230 : 2.8g Or Type 1630 : 2g													
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													
* Wireless access point and Internet service required and not included. Availability of public wireless access points limited.														
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	<table border="1"> <thead> <tr> <th>Modulation</th> <th>0.01% BER</th> <th>0.001% BER</th> </tr> </thead> <tbody> <tr> <td>GFSK</td> <td>-80 dBm</td> <td>-70 dBm</td> </tr> <tr> <td>π/4-DQPSK</td> <td>-80 dBm</td> <td>-70 dBm</td> </tr> <tr> <td>8DPSK</td> <td>-80 dBm</td> <td>-70 dBm</td> </tr> </tbody> </table>		Modulation	0.01% BER	0.001% BER	GFSK	-80 dBm	-70 dBm	π/4-DQPSK	-80 dBm	-70 dBm	8DPSK	-80 dBm	-70 dBm
Modulation	0.01% BER	0.001% BER												
GFSK	-80 dBm	-70 dBm												
π/4-DQPSK	-80 dBm	-70 dBm												
8DPSK	-80 dBm	-70 dBm												
Power Consumption	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW													

Technical Specifications - Networking

Range	Legacy Up to 33 ft (10 m) BLE Up to 99 ft (30 m)
Electrical Interface	USB 2.0 compliant
Bluetooth® Software Supported Link Topology	Microsoft Windows Bluetooth® Software
Electrical Interface Bluetooth® Software Supported Security	Point to Point, Multipoint Pico Nets up to 7 slaves
	Full support of Bluetooth® Security Provisions
Power Management Certifications	Microsoft Windows ACPI, and USB Bus Support
	Self-configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff
Security	All necessary regulatory approvals for supported countries, including:
Certifications Bluetooth® Profiles Supported	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
Power Management Certifications	ETS 300 328, ETS 300 826
	Low Voltage Directive IEC950
Certifications Bluetooth® Profiles Supported	UL, CSA, and CE Mark
	Serial Port Profile (SPP) ¹ Service Discovery Application Profile (SDAP) Dial-Up Networking (DUN) ^{1,2} Generic Object Exchange Profile (GOEP) ^{1,2} Object Push Profile (OPP) ^{1,2} Hard Copy Cable Replacement (HCRP) ^{1,2} Personal Area Networking Profile (PAN) ^{1,2} Human Interface Device Profile (HID) ^{1,2} Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP)
	Audio Video Remote Control Profile (AVRCP)
Bluetooth® V4.1/V4.2 support feature	V4.1: ESR5/6/7 compliant
	V4.2: ESR8 compliant, LE Secure Connection – Basic.

Technical Specifications - Networking

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 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, 50Hz
Normal Operation (Short idle)	18.70 W	17.00 W	16.89 W
Normal Operation (Long idle)	16.57 W	16.16 W	15.97 W
Sleep	1.13 W	1.12 W	1.12 W
Off	0.49 W	0.54 W	0.52 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)	64 BTU/hr	58 BTU/hr	58 BTU/hr
Normal Operation (Long idle)	57 BTU/hr	55 BTU/hr	55 BTU/hr
Sleep	4 BTU/hr	4 BTU/hr	4 BTU/hr
Off	2 BTU/hr	2 BTU/hr	2 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	3.4	24	
Fixed Disk – Random writes	3.5	25	
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: <ul style="list-style-type: none"> • 6 USB ports • 2 memory slots • 1 Mini PCIe half-length slot • 1 MXM 3.0 Type A - 35W slot • 1 M.2 slot • 1 2.5" internal bay supporting up to Two 2.5" hard drives (HDD/SSD/SED/SSHD) • 1 5.25" external supporting optical drive Spare parts are available throughout the warranty period and or for up to "5" years after the end of production.		

Technical Specifications - Networking

Batteries	<p>This battery(s) in this product comply with EU Directive 2006/66/EC</p> <p>Batteries used in the product do not contain: Mercury greater the 1ppm by weight Cadmium greater than 20ppm by weight</p> <p>Battery size: CR2032 (coin cell) Battery type: Lithium</p>		
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 (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 8.1% post-consumer recycled plastic (by wt.) • This product is 93.5% recycle-able when properly disposed of at end of life. 		
Packaging Materials	External:	PAPER/Corrugated	1122 g
	Internal:	PLASTIC/Polystyrene Expanded – EPS	176 g
		PLASTIC/Polyethylene low density - LDPE	24 g
	The Plastic packaging material is made from 0% recycled content.		
	The paper packaging materials contains at least 25% recycled content.		
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) 		

Technical Specifications - Networking

	<ul style="list-style-type: none"> • 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>
HP, Inc. Corporate Environmental Information	<p>For more information about HP's commitment to the environment:</p> <p>Global Citizenship Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html</p> <p>Eco-label certifications http://www8.hp.com/us/en/hp-information/environment/ecolabels.html</p> <p>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</p>

After-Market Options (availability may vary by region)

Type	Description	Part #
Displays	HP v194 18.5-inch Display	V5E94AA V5E94A6 V5E94A8
	HP v197 18.5 –inch Display	V5J61AA
	HP v214a 20.7 –inch Display	1FR84AA
Memory	HP 4GB DDR4-2400 DIMM	Z9H59AA
	HP 8GB DDR4-2400 DIMM	Z9H60AA
	HP 16GB DDR4-2400 DIMM	Z9H57AA
Storage	HP 500GB 3.5" SATA 6.0Gb/s Hard Drive	QK554AA
	HP 1TB 7200rpm SATA 6Gbps Hard Drive	QK555AA
	HP 9.5mm G3 8/4 SFF G4 400 SFF/MT DVD-Writer	1CA53AA
Graphics	NVIDIA GeForce GT730 1&2GB PCIe x8 DP GFX	N3R90AA
	AMD Radeon R5 420	1MX31AA
	AMD Radeon R7 430	1MX32AA
Security	HP UltraSlim Cable Lock Kit	H4D73AA
	HP Business PC Security Lock Kit	PV606AA
Adapters	HP USB to Serial Adapter	J7B60AA
Networking	Intel® 7265 802.11ac PCIe x1 Card	N4G85AA
	Intel Ethernet I210-T1 GbE NIC Card	E0X95AA
Multimedia	HP Business Headset v2	T4E61AA
	HP USB Business Speaker v2	N3R89AA
Input	HP USB Keyboard	QY776AA
	HP Conferencing Keyboard	K8P74AA
	HP USB Antimicrobial Keyboard and Mouse (China Only)	K7X25AA
	HP USB Mouse	QY777AA

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Change Log

Date of change:	Version History:	Change	Description of change:
May 25, 2017	From v1 to v2	Update	Parallel Port removed from "PORTS"
August 8, 2017	From v2 to v3	Update	Graphics & Networking section updated
September 27, 2017	From v3 to v4	Update	i5-7500 CPU processor and optional parallel port added
October 24, 2017	From v4 to v5	Update	Processor i5-7500 frequency updated
October 26, 2017	From v5 to v6	Update	Intel® 3168 802.11AC fixed from 2x2 to 1x1 on the networking section
October 30, 2017	From v6 to v7	Update	Power Supply section updated, Intel® Core™ i3-6100 Processor added
November 27, 2017	From v7 to v8	Update) PCI 2.1 changed to) PCI 2.3 on Not shown call outs
December 11, 2017	From v8 to v9	Update	Hard disk drive added to storage section, chart included
January 16, 2018	From v9 to v10	Update	Optional 2nd Ethernet added to Networking section
January 22, 2018	From v10 to v11	Update	<u>Intel® Core™ i5-7600 Processors added</u>
March 13, 2018	From v11 to v12	Update	<u>Environmental data added</u>