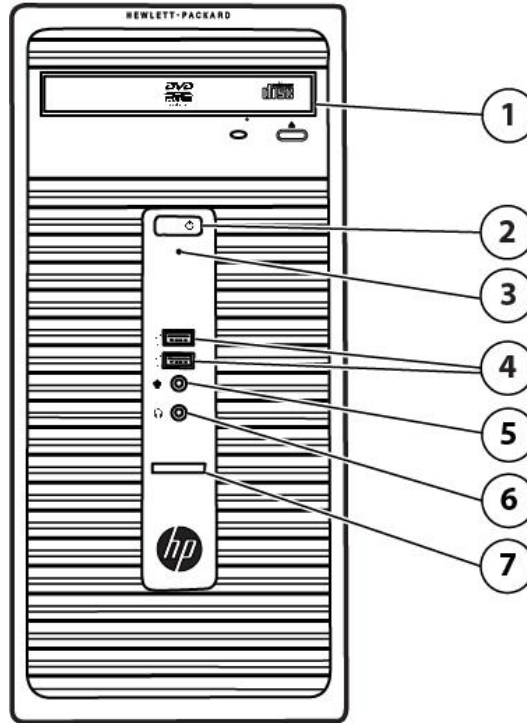


Overview

HP 280 G1 Microtower Business PC



Front

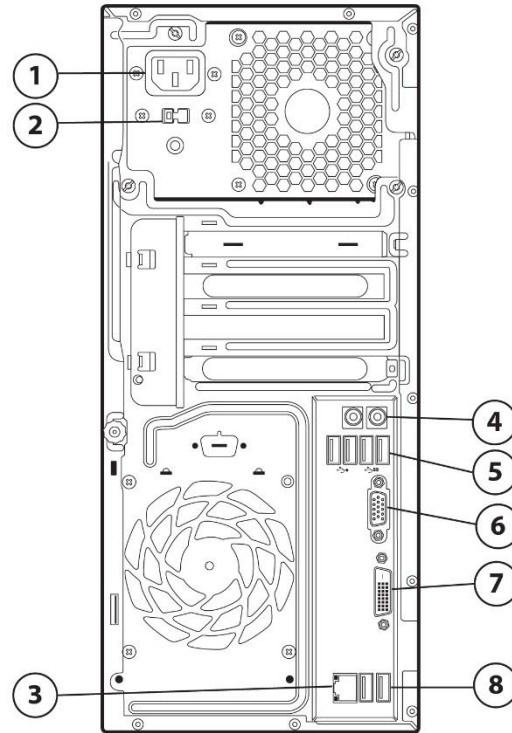
1. Half-height Bay - supporting an optical disk drive (optional)
2. Power Button
3. PC Status LED
4. (2) USB 2.0 Ports
5. 3.5mm Microphone Jack
6. 3.5mm Headphone Output
7. 6-in-1 Media Card Reader (optional)

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 G1 Microtower Business PC



Back

- | | |
|---|---|
| 1. Power Cord Connector | 5. (2) USB 3.0 Ports; (2) USB 2.0 Ports |
| 2. Voltage Select Switch (included on some models only) | 6. VGA Monitor Connector |
| 3. RJ-45 Network Connector | 7. DVI-D Monitor Connector |
| 4. Audio Line Out; Audio Line In | 8. (2) USB 2.0 Ports |

Not Shown

- Parallel Port (optional, select countries only)
- (2) RS-232 Serial Port (optional, select countries only)
- PS/2 Keyboard Connector (purple) (optional, select countries only)
- PS/2 Mouse Connector (green) (optional, select countries only)

Overview

AT A GLANCE

- Windows 10, Windows 8.1 Pro (64-bit), Windows 8.1 (64-bit), Neo Kylin Linux (selected countries only), Ubuntu Linux or FreeDOS 2.0
- Intel® H81 chipset supporting Intel® 4th generation Intel® processors featuring Intel® HD Graphics
- Supports an optional discrete graphics card
- Integrated 10/100/1000 Ethernet Controller
- Supports Wake-on-LAN (WOL)
- Up to 16GB DDR3/DDR3L Unbuffered Memory (UDIMM)
- Independent monitor support via VGA video interfaces
- TPM 1.2 support
- High definition audio
- 8 USB ports (including 2-USB 3.0 ports)
- Energy efficient internal power supply available (select models only)
- Security cable lock supported (sold separately)
- Protected by HP Services; terms and conditions vary by country; certain restrictions and exclusions apply

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

Standard Features and Configurable Modules

CHIPSET

Intel® 8 Series (H81 Express) Chipset

PROCESSOR*

Intel® Celeron

Intel® Celeron® G1840 with Intel HD Graphics (2.8 GHz, 2 MB cache, 2 cores)

Intel® Celeron® G1850 with Intel HD Graphics (2.9 GHz, 2 MB cache, 2 cores)

Intel® Pentium

Intel® Pentium® G3250 with Intel HD Graphics (3.2 GHz, 3 MB cache, 2 cores)

Intel® Pentium® G3260 with Intel HD Graphics (3.3 GHz, 3 MB cache, 2 cores)

Intel® Pentium® G3460 with Intel HD Graphics (3.5 GHz, 3 MB cache, 2 cores)

Intel® Pentium® G3470 with Intel HD Graphics (3.6 GHz, 3 MB cache, 2 cores)

Intel® Core i3

Intel® Core™ i3-4160 with Intel HD Graphics 4400 (3.6 GHz, 3 MB cache, 2 cores)

Intel® Core™ i3-4360 with Intel HD Graphics 4600 (3.7 GHz, 4 MB cache, 2 cores)

Intel® Core™ i3-4170 with Intel HD Graphics 4400 (3.7 GHz, 3 MB cache, 2 cores)

Intel® Core™ i3-4370 with Intel HD Graphics 4600 (3.8 GHz, 4 MB cache, 2 cores)

Intel® Core i5

Intel® Core™ i5-4590S with Intel HD Graphics 4600 (3.0 GHz, 6 MB cache, 4 cores)

Intel® Core™ i5-4690S with Intel HD Graphics 4600 (3.2 GHz, 6 MB cache, 4 cores)

Intel® Core™ i5-4590 with Intel HD Graphics 4600 (3.3 GHz, 6 MB cache, 4 cores)

Intel® Core™ i5-4690 with Intel HD Graphics 4600 (3.5 GHz, 6 MB cache, 4 cores)

Intel® Core i7

Intel® Core™ i7-4790 with Intel HD Graphics 4600 (3.6 GHz, 8 MB cache, 4 cores)

*Multi-Core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. 64-bit computing system required. Performance will vary depending on 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

NVIDIA GeForce 705 1GB DDR3 FH GFX 30W (optional)

AMD Radeon HD 8350 1GB FH PCIe GFX (Optional and Selected Countries Only)

AMD Radeon HD 8470 2GB FH PCIe GFX (Optional and Selected Countries Only)

NOTE: HD content required to view HD images.

MEMORY*

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

Form Factor	Type	Maximum	# of Slots
Microtower	1600MT/s DDR3	16 GB	2 UDIMM
	2GB DDR3-1600 UDIMM (1x2GB)		

Standard Features and Configurable Modules

- 4GB DDR3-1600 UDIMM (1x4GB)
- 6GB DDR3-1600 UDIMM (1x2GB + 1x4GB) (Dual Channel)
- 8GB DDR3-1600 UDIMM (2x4GB) (Dual Channel)

* 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 1600 MT/s; actual data rate is determined by the system's configured processor. See processor specifications for supported memory data rate.

STORAGE*

Supports SATA 3.5" 6Gb/s HDDs*

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

Removable

HP Multi-Format Digital 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.

FIXED OPTICAL DRIVES*

- SuperMulti DVD-RW Drive
- DVD-ROM

*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. Note that DVD-RAM cannot read or write to 2.6GB Single Sided/5.2 Double Sided-Version 1.0 Media.

AUDIO/MULTIMEDIA

- Integrated Realtek ALC221 High Definition audio (all ports are stereo)
- Microphone and Headphone front ports (3.5mm)
- Line-out and Line-in rear port (3.5mm)
- Standard internal speaker

NETWORKING

Ethernet (RJ-45)

- Integrated 10/100/1000M Gigabit Ethernet Controller
- Supports Wake-on-LAN (WOL)

Wireless*

HP 802.11a/g/n 2x2 Wireless Dual Band PCIe (optional)

* 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.

PORTS

Front I/O Ports

- Two (2) USB 2.0 ports
- One (1) Microphone in
- One (1) Headphone out

Standard Features and Configurable Modules

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
- One (1) PCIe x 1
- 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) 5.25" Optical Disc Drive Bay

KEYBOARDS AND POINTING DEVICES*

- Universal USB Wired Windows 8 Keyboard
- Universal USB Wired Optical Mouse
- HP PS/2 Keyboard
- HP PS/2 Mouse
- HP USB Mouse

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

SERVICE AND SUPPORT

On-site Warranty: One-year (1-1-1) limited warranty delivers, next business day 2 service for parts and labor and includes free telephone 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 telephone support applies only to HP-configured and third-party HP qualified hardware and software. Toll-free calling and 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 8.1 Pro 64*
Windows 8.1 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 64 (available through downgrade rights from Windows 8.1 Pro)***
Windows 7 Professional 32 (available through downgrade rights from Windows 8.1 Pro)***
Windows 7 Professional 64*
Windows 7 Professional 32*
Windows 7 Home Basic 32*

Pre-installed (Other)

FreeDOS 2.0
Novell SUSE Linux Enterprise Desktop 11

Web-supported

Windows 10 Pro 64*
Windows 10 Home 64*
Windows 8.1 Pro 64*
Windows 8.1 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 64 (available through downgrade rights from Windows 8.1 Pro)***
Windows 7 Professional 32 (available through downgrade rights from Windows 8.1 Pro)***
Windows 7 Professional 64*
Windows 7 Professional 32*
Windows 7 Home Basic 32*

*Note: 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.

***This system is preinstalled with Windows 7 Pro software and also comes with a license and media for Windows 8.1 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.

Operating Systems & Software

SOFTWARE

Preinstalled (varies by country)

Browser and Toolbars

- Internet Explorer 11

Optical Disc Drive Read/Write

- CyberLink PowerDVD
- CyberLink Power2Go

Utilities and Support

- HP Recovery Manager
- HP Support Assistant
- HP ePrint (driver)¹

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 www.hp.com/go/businessmobileprinting)

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.

POWER SUPPLY

180 W standard efficiency; 180 W standard efficiency, active PFC; 180 W, up to 85% efficient, active PFC

WEIGHTS & DIMENSIONS (configured with 1 HDD and 1 ODD)

Chassis (H x W x D)	14.13 x 6.5 x 13.98 in 35.88 x 16.5 x 35.5 cm
System Weight	15.51 lbs / 7.05 kg

PACKAGING DIMENSIONS AND WEIGHT

Dimensions	19.5 x 10.1 x 20.5 in 4.96 x 2.40 x 5.20 cm
Weight	21 lbs / 9.5 kg

SECURITY FEATURES

Trusted Platform Module (TPM) 1.2
Security cable slot

Technical Specifications

CERTIFICATIONS

EPEAT® Silver*
CECP (for 2015 cycle)
SEPA (for 2015 cycle)
WEEE (Waste, Electric and electronic equipment)
ENERGY STAR® 6.0
CEL level1
FCC
UL

*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		
VGA Controller	Integrated	
DisplayPort	Multimode capable; supports HDCP, Display Port Audio (2 streams), HBR2 link rates and Multi-Stream Technology for a maximum of 2 displays (including the integrated panel)	
Bus Type	N/A	
RAMDAC	N/A	
Memory	<p>Intel graphics do not have dedicated memory but utilizes some of the computer's system memory. The amount of memory used for graphics depends on the amount of system memory installed, BIOS settings, operating system, and system load. 32 MB is pre-allocated for graphics use at system boot time. Additional memory can be allocated at boot time by the BIOS for PAVP (Protected Audio Video Playback) support for playback of protected video content.</p> <p>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.</p>	
Maximum Graphics Memory	Microsoft Windows 7	Windows 8.1
	Up to 1.7GB	Up to 1.8GB
	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	<p>4th Generation Core processors:</p> <ul style="list-style-type: none"> • The Processor Graphics contains a refresh of the seventh generation graphics core enabling substantial gains in performance and lower power consumption. Up to 16 EU support. • 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 HW Decode • Advanced Scheduler 2.0, 1.0 • Windows 7, Windows 8.1, Linux OS Support • DirectX 11.1 • OpenGL 4.3 • Open CL 1.2 	
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

Technical Specifications - Graphics

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

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

NVIDIA® GeForce® GT 705 FH 1GB DDR3 PCIe x16

Features	<ul style="list-style-type: none"> • NVIDIA GF119-400-A1 GPU engine running at 873 MHz. • 1 GB DDR3 DRAM 64-bit wide frame buffer running at 825 MHz. • PCI Express 2.0 interface with 16 lanes, supporting lane swapping and polarity inversion. • DVI-I and HDMI output connectors. • All digital outputs support HDCP (High-Bandwidth Digital Content Protection) • Cards with HDMI output(s) must be HDMI certified • Supplier is responsible for costs associated with the certification of the card along with any license fees or royalties. • 4 layer, double sided PCB. • Half Height form factor PCA with full height bracket. • HDMI port outputs support audio. • Active heat sink for quiet operation or Thermally controlled fan on the heatsink • 512 kB on-board serial FLASH memory
Form Factor	<p>Half Height form factor PCA with full height bracket.</p> <p>PCI Express 2.0 interface with 16 lanes, supporting lane swapping and polarity inversion.</p>
Graphics Controller	NVIDIA GF119-400-A1 GPU
Core Clock	873 MHz
Memory Clock	825 MHz
Memory Size	1 GB DDR3
Display Max. Resolution	2560 x 1600 digital, 2048 x 1536 analog

Technical Specifications - Graphics

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	Maximum Refresh Rates (Hz)	
	Analog Connection	Digital Connection
640 x 480	60, 75	60
720 x 480	60, 75	60
720 x 576	50, 60, 75	60
800 x 600	60, 75	60
1024 x 768	60, 75	60
1152 x 864	60, 75	60
1280 x 720	60, 75	60
0.98M9 (1280 x 768)	60, 75	60
1280 x 960	60, 75	60
1280 x 1024	60, 75	60
1.30MA (1440 x 900)	60, 75	60, 75
1600 x 900	60, 75	60
1.64MA (1600 x 1024)	60, 75	60
1600 x 1200	60, 75	60
1.76MA (1680 x 1050)	N/A	60
1.76MA-R (1680 x 1050)	60, 75	75-R
2.07M9-R (1920 x 1080)	60, 75	60-R
2.30MA-R (1920 x 1200)	60, 75	60-R
1920 x 1440	60, 75	N/A
2048 x 1536	60, 75	N/A
2560 x 1600	N/A	60

Technical Specifications - Hard Disk and Solid State Storage

Introduction:

HP Serial Advanced Technology Attachment (SATA) Hard Drives maximize the performance of HP Business PCs by providing the technologies to meet your increasing storage demands with high-capacity drives offering superior reliability and performance.

SATA provides faster data transfer speeds, better system cooling airflow, more bandwidth, more headroom for speed increases in future generations and better data integrity. A next-generation technology, the SATA interface connects hard drives to the PC platform enabling easy aggregation of multiple hard drives into a single PC. This offers you the additional benefits of dedicated bandwidth, the ability to more easily identify device failures and scalability. The HP ProDesk 400 G2 Series Business PC supports the latest SATA 6.0Gb/s specification.

SMART IV Technology

Self Monitoring Analysis and Reporting Technology (SMART) hard drive technology allows hard drives to monitor their own health and to raise flags if imminent failures are predicted. If the drive determines that a failure is imminent, the SMART hard drive technology enables the intelligent manageability or management software to generate a fault alert. While the current versions of SMART hard drives do a good job monitoring the data on the hard drive media, the ever increasing emphasis on reliability and quality has promoted HP to implement SMART IV technology which constantly checks that the data flow from host interface to media and media to host interface is not compromised. This is accomplished by inserting a 2 byte parity code into every 512 byte block in the data path of the hard drive's Cache RAM. This unique parity checking performed by HP's SMART IV technology hard drives, allows for more complete error detection coverage encompassing the entire data path between the host and the hard drive.

Smart IV is also known as IOEDC: I/O Error Detection Code.

Native Command Queuing

NCQ or Native Command Queuing is a SATA protocol extension that allows the hard drive to have several write or read commands outstanding at the same time. In contrast, normal non-queued operation requires each command to be completed before the next command is issued by the host system. Queuing allows the drive to complete the commands in the order that allows for best overall throughput. It also involves an advanced method of transferring data to or from the host, called First Party Direct Memory Access (FPDMA), which allows the hard drive and the host controller to manage the data transfers for multiple outstanding commands, without involving the host processor. NCQ can contribute to better performance but the results are dependent on many factors, including the access patterns of the various applications and operating system functions that are initiating drive accesses. Enabling NCQ features in the hard drive requires AHCI support from the host system BIOS, controller, and driver. AHCI support is typically implemented in RAID configurations.

Note: GB = 1 billion bytes. Actual available capacity is less.

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	
	Single Track:	2.0 ms

Technical Specifications - Hard Disk and Solid State Storage

Seek Time (typical reads, includes controller overhead, including settling)	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)	

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)	

Technical Specifications - Removable Storage

HP SuperMulti DVD Writer Drive			
Height	5.25-inch, half-height, tray-load		
Orientation	Either horizontal or vertical		
Interface type	Serial ATA		
Dimensions (W x H x D)	5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)		
Weight	2.6 lb (1.2 kg)		
Performance	CD Media Read Access	Random	< 120 ms typical
		Full Stroke	< 200 ms typical
	DVD Media Read Access	Random	< 130 ms typical
		Full Stroke	< 240 ms typical
	CD Media Read Transfer	CD-ROM, CD-R Read	Up to 6000 KB/s (40X)
		CD-RW Read	Up to 4800 KB/s (32X)
		Digital/Analog Audio Playback	Up to 2400 KB/s (16X)
		Digital Audio Extraction (CD-ROM, CD-R)	Up to 6000 KB/s (40X)
		Digital Audio Extraction (CD-RW)	Up to 4800 KB/s (32X)
		Video CD Playback	Up to 2400 KB/s (16X)
	DVD Media Read Transfer	DVD-ROM SL Read	Up to 21600 KB/s (16X)
		DVD-ROM DL Read	Up to 10800 KB/s (8X)
		DVD Video Playback	Up to 10800 KB/s (8X)
		DVD Video SL (other than playback)	Up to 21600 KB/s (16X)
		DVD Video DL (other than playback)	Up to 10800 KB/s (8X)
		DVD-R	Up to 21600 KB/s (16X)
		DVD+R	Up to 21600 KB/s (16X)
DVD-RW		Up to 10800 KB/s (8X)	

Technical Specifications - Removable Storage

		DVD-R DL	Up to 10800 KB/s (8X)
		DVD+RW	Up to 10800 KB/s (8X)
	CD Media Write Transfer	CD-R Write	UP to 6000 KB/s (40X)
		CD-RW	600 KB/s (4X)
		CD-RW (High speed)	1500 KB/s (10X)
		CD-RW (Ultra speed)	Up to 3600 KB/s (24X)
		CD-RW (Ultra speed+)	Up to 4800 KB/s (32X)
	DVD Media Write Transfer	DVD+R	Up to 21600 KB/s (16X)
		DVD+R DL (v1.2)	Up to 16200 KB/s (12X)
		DVD+R DL (v1.1)	Up to 10800 KB/s (8X)
		DVD+RW (Volume 2 v1.0)	Up to 10800 KB/s (8X)
		DVD+RW (Volume 1 v1.3)	Up to 5400 KB/s (4X)
		DVD-R (v2.1 rev. 6.0)	Up to 21600 KB/s (16X)
		DVD-R (v2.1 rev. 4.0)	Up to 10800 KB/s (8X)
		DVD-R DL (v3.0 rev. 5.0)	Up to 16200 KB/s (12X)
		DVD-R DL (v3.0 rev. 3.0)	Up to 10800 KB/s (8X)
		DVD-RW (v1.2 rev. 3.0)	8100 KB/s (6X)
		DVD-RW (v1.2 rev. 2.0)	Up to 5400 KB/s (4X)
		DVD-RAM (v2.2 rev. 5.0)	Up to 16200 KB/s (12X)
DVD-RAM (v2.2 rev. 2.0)	Up to 6750 KB/s (5X)		
Media Compatibility	Media	Read	Write
	CD-ROM	Yes	No
	CD-R	Yes	No
	CD-RW	Yes	No
	DVD-ROM	Yes	No
	DVD-ROM DL	Yes	No

Technical Specifications - Removable Storage

	DVD-RAM	Yes	No
	DVD+R	Yes	No
	DVD+R DL	Yes	No
	DVD+RW	Yes	No
	DVD-R	Yes	No
	DVD-RW	Yes	No
	DVD-R DL	Yes	No
Power Supply	Source	SATA DC power receptacle	
	DC Power Requirement	5 VDC \pm 5%	100 mV ripple p-p
		12 VDC \pm 5%	200 mV ripple p-p
	DC Current	5 VDC	<1000 mA (typical)
			1600 mA (max.)
		12 VDC	1200 mA (typical)
2000 mA (max.)			
Total Drive Power (Standby Mode)	< 2.5W		
Rear Panel	SATA Power Connector, 15-pin SATA Data Connector, 7-pin Markings to identify each connector		
Environmental (all conditions non-condensing)	Operating Temperature	41° to 122° F (5° to 50° C)	
	Storage Temperature	-22° F to 140° F (-30° C to 60° C)	
	Relative Humidity	10% to 90%	
	Maximum Wet Bulb Temperature	86° F (30° C)	
	Altitude	0 to 10,171 ft. (0 to 3,100 meters)	

HP DVD-ROM Drive	
AMO Part Number	AR629AA
Height	5.25-inch, half-height, tray-load

Technical Specifications - Removable Storage

Orientation	Either horizontal or vertical		
Interface type	Serial ATA		
Dimensions (W x H x D)	5.8 x 1.7 x 6.9 in (14.8 x 4.2 x 17.5 cm)		
Weight	2.1 lb (950 kg)		
Performance	CD Media Read Access	Random	< 120 ms typical
		Full Stroke	< 200 ms typical
	DVD Media Read Access	Random	< 130 ms typical
		Full Stroke	< 240 ms typical
	CD Media Read Transfer	CD-ROM, CD-R Read	Up to 6000 KB/s (40X)
		CD-RW Read	Up to 4800 KB/s (32X)
		Digital/Analog Audio Playback	Up to 2400 KB/s (16X)
		Digital Audio Extraction (CD-ROM, CD-R)	Up to 6000 KB/s (40X)
		Digital Audio Extraction (CD-RW)	Up to 4800 KB/s (32X)
		Video CD Playback	Up to 2400 KB/s (16X)
	DVD Media Read Transfer	DVD-ROM SL Read	Up to 21600 KB/s (16X)
		DVD-ROM DL Read	Up to 10800 KB/s (8X)
		DVD Video Playback	Up to 10800 KB/s (8X)
		DVD Video SL (other than playback)	Up to 21600 KB/s (16X)
		DVD Video DL (other than playback)	Up to 10800 KB/s (8X)
		DVD-R	Up to 21600 KB/s (16X)
		DVD+R	Up to 21600 KB/s (16X)
		DVD-RW	Up to 10800 KB/s (8X)
		DVD-R DL	Up to 10800 KB/s (8X)
DVD+RW	Up to 10800 KB/s (8X)		

Technical Specifications - Removable Storage

	Media	Read	Write
Media Compatibility	CD-ROM	Yes	No
	CD-R	Yes	No
	CD-RW	Yes	No
	DVD-ROM	Yes	No
	DVD-ROM DL	Yes	No
	DVD-RAM	Yes	No
	DVD+R	Yes	No
	DVD+R DL	Yes	No
	DVD+RW	Yes	No
	DVD-R	Yes	No
	DVD-RW	Yes	No
	DVD-R DL	Yes	No
	Power Supply	Source	SATA DC power receptacle
DC Power Requirement		5 VDC \pm 5%	100 mV ripple p-p
		12 VDC \pm 5%	200 mV ripple p-p
DC Current		5 VDC	1000 mA (typical)
			1600 mA (max.)
		12 VDC	1200 mA (typical)
	2000 mA (max.)		
Total Drive Power (Standby Mode)	< 2.5W		
Rear Panel	SATA Power Connector, 15-pin SATA Data Connector, 7-pin Markings to identify each connector		
Environmental (all conditions non-condensing)	Operating Temperature	41° to 122° F (5° to 50° C)	
	Storage Temperature	-22° F to 140° F (-30° C to 60° C)	
	Relative Humidity	10% to 90%	

Technical Specifications - Removable Storage

	Maximum Wet Bulb Temperature	86° F (30° C)
	Altitude	0 to 10,171 ft. (0 to 3,100 meters)

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 RTL8151GH-CG GbE LOM Network Adapter		
Connector	RJ-45	
System Interface	Integrated on PCA	
Controller	Realtek RTL8151GH-CG Gigabit Ethernet Controller	
Memory	16 KB FIFO packet buffer memory	
Data rates supported	10/100/1000 Mbps	
IEEE Compliance	802.1P 802.1Q 802.3 802.3ab 802.3az 802.3u	
Bus architecture	PCI Express	
Data transfer mode	PCIe-based interface for active state operation (S0 state)	
Power requirement	Requires 3.3V and 1V or just 3.3V with integrated regulators Power consumption 0.425 W	
Network transfer mode	Full-duplex	
	Half-duplex (not supported for the 1000BASE-T transceiver)	
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	
Environmental	Operating Temperature:	32° to 158° F (0° to 70° C)
	Operating Humidity:	60% RH
Management	WOL, auto MDI crossover, PXE, Multi-port teaming, Advanced cable diagnostic	

Options and Accessories

Type	Description	Part #
Memory	HP 2GB DDR3-1600 DIMM	B4U35AA
	HP 4GB DDR3-1600 DIMM	B4U36AA
Security	HP Chassis Security Kit	AR639AA
	HP UltraSlim Cable Lock Kit	H4D73AA
	HP Business PC Security Lock Kit	PV606AA
Adapters	HP USB to Serial Adapter	J7B60AA
Input	HP Business Headset	QK550AA
	HP USB Business Speakers	D9J19AA
	HP USB HD 720P v2 Business Webcam	D8Z08AA
	HP USB Mouse	QY777AA
	HP USB Keyboard	QY776AA

Options and Accessories

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Options and Accessories

Date of change:	Version History:		Description of change:
November, 25 2014	V1 to v2	Remove	Remove the sentence “three years on on-site” from the “On-site Warranty”
		Addition	Added the section “Accessories”
May 15, 2015	V2 to V3	Addition	Adding detail for configurable options. Adding support for Wake-on-LAN (WOL)
July 7, 2015	From v3 to v4	Addition	Added a note under the Storage
		Changed	Change the OS
July 21, 2015	From v4 to v5	Added	Added new spec for product and dimensions packaging