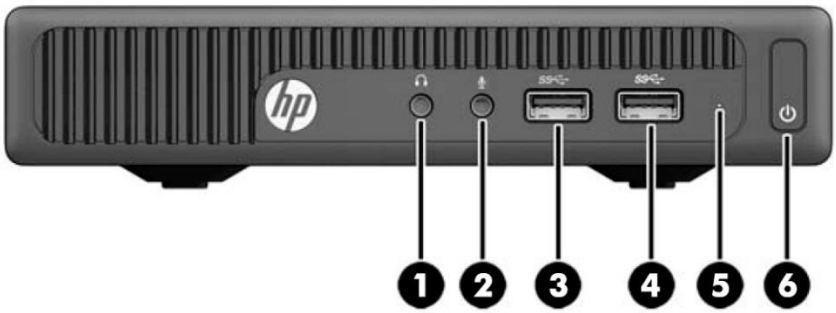
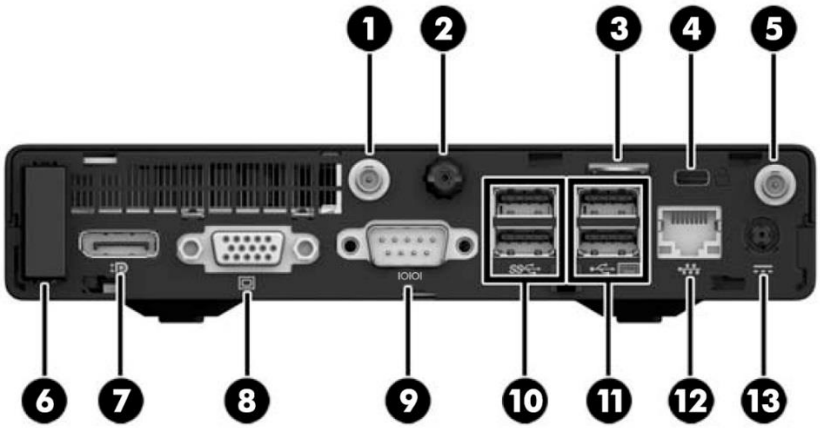
Overview

HP ProDesk 400 G2 Desktop Mini Business PC



1. Headphone Connector
2. Microphone
3. USB 3.0 Port
4. USB 3.0 Port
5. HDD Indicator
6. Dual-State Power Button



1. Optional External Antenna Connector
2. Thumbscrew
3. Padlock Loop
4. Ultra-slim Cable Lock Slot
5. Optional External Antenna Connector
6. WLAN Antenna
7. DisplayPort Monitor Connector
8. VGA Monitor Connector
9. Serial Port Connector
10. USB 3.0 Ports (2) blue
11. USB 2.0 Keyboard and Mouse Connectors (2) (black) with Wake from S4/S5
12. RJ-45 Network Connector
13. Power Connector

Not Shown

Slots	(1) internal M.2 PCIe x1 connector for optional wireless NIC (1) internal M.2 PCIe x4 connector for optional SSD drive
Bays	(1) 2.5” internal storage drive bay
VESA	Support for VESA 100 mounting system on bottom of PC chassis*

*Mounting hardware sold separately (see Accessories section).

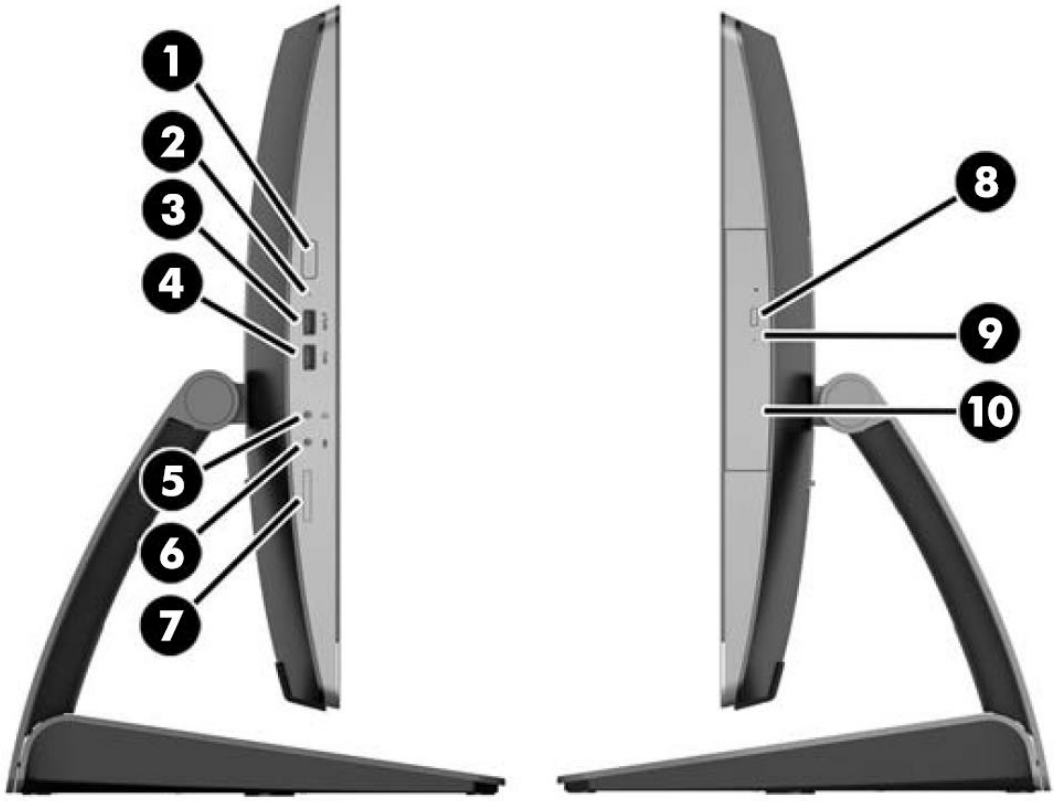
Overview

HP ProOne 400 G2 All-in-One Business PC

1. Dual-microphone array (with webcam)
2. Webcam activity LED (with webcam)
3. Webcam privacy shutter slide switch
4. Webcam (standard but deselectable)
5. 20" diagonal TN widescreen backlit LCD (1600 x 900); anti-glare non-touch or 10-point capacitive touch
6. Speakers (standard but deselectable)

Overview

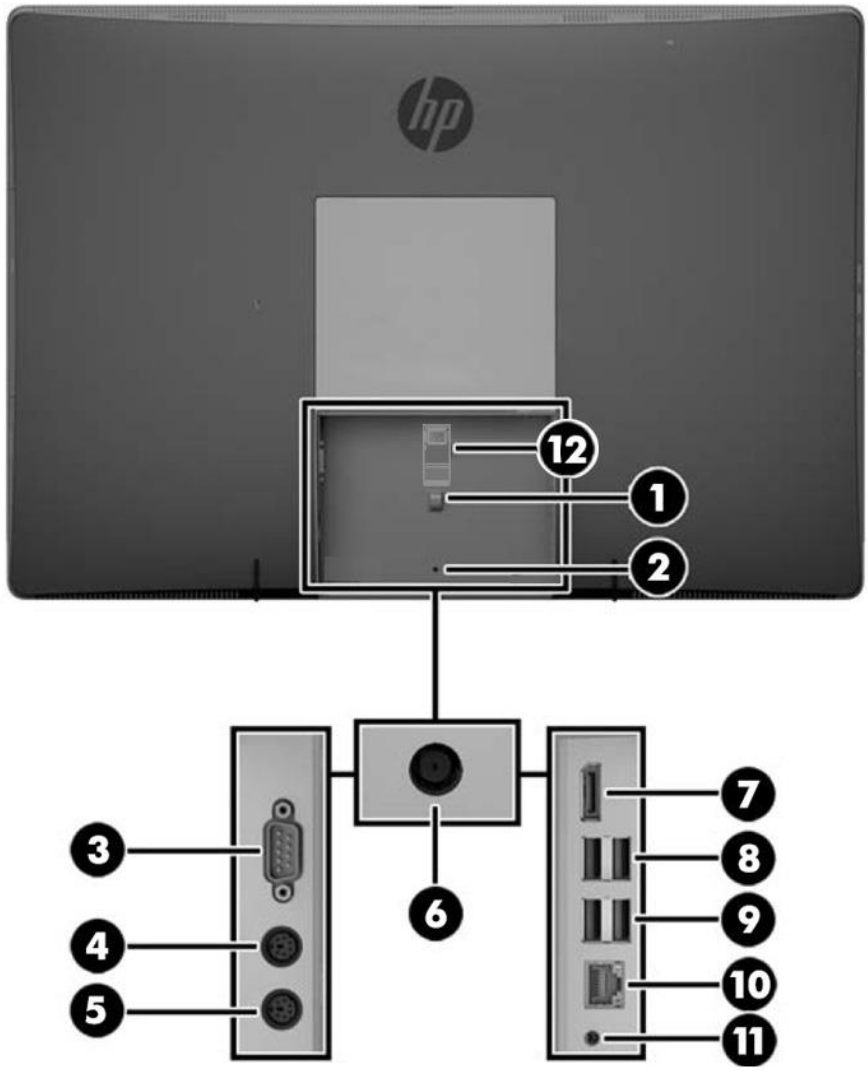
HP ProOne 400 G2 All-in-One Business PC



1. Power button
2. Hard disk drive activity LED
3. USB 3.0 fast-charging port
4. USB 3.0 port
5. Headphone jack
6. Microphone jack
7. HP SD 3.0 media card reader (optional)
8. Optical disc drive eject button
9. Optical disc drive activity LED
10. 9.5mm Slim Optical Drive (optional)

Overview

HP ProOne 400 G2 All-in-One Business PC



1. Cable retention loop
2. Port cover security screw hole
3. Serial port (optional)
4. PS/2 keyboard connector (optional)
5. PS/2 mouse connector (optional)
6. Power connector
7. DisplayPort connector
8. (2) USB 3.0 ports
9. (2) USB 2.0 ports with wake functionality
10. RJ-45 Gigabit Ethernet port
11. Stereo audio line out
12 Power cable retention clip

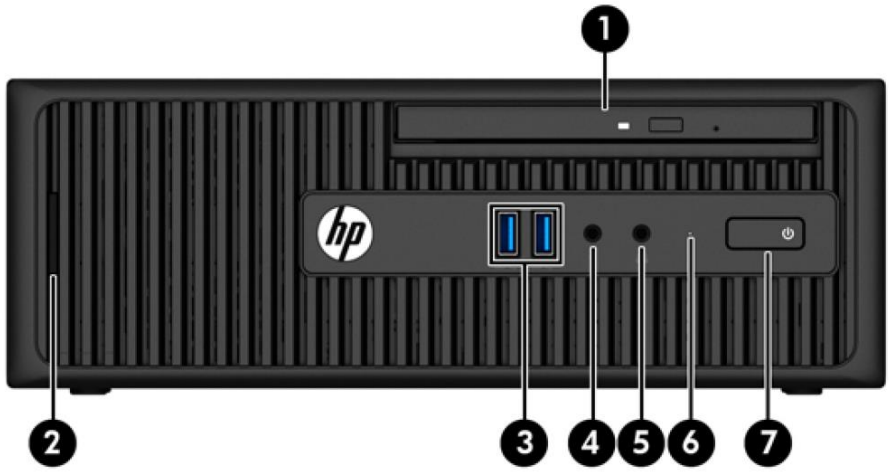
Not Shown

VESA Support for VESA 100 mounting system on bottom of PC chassis*

*Mounting hardware sold separately (see Accessories section).

Overview

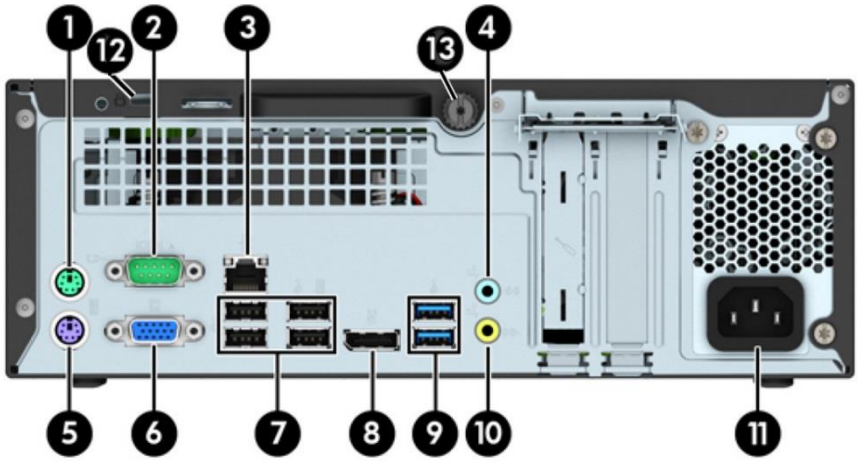
HP ProDesk 400 G3 Small Form Factor Business PC (available in December 2015)



1. 9.5mm Slim Optical Drive (optional)
2. SD 3 Card Reader (optional)
3. (2) USB 3.0 Ports (blue)
4. Microphone Connector
5. Headphone Connector
6. Hard Drive Activity Light
7. Dual-State Power Button

Overview

HP ProDesk 400 G3 Small Form Factor Business PC (available in December 2015)

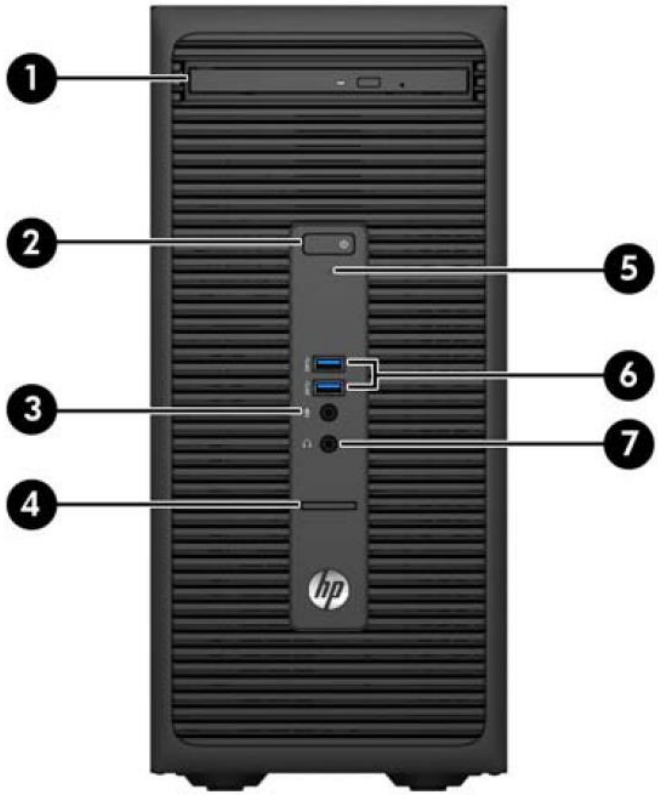


1. PS/2 Mouse Connector (green)
2. Serial Connector
3. RJ-45 Network Connector
4. Line-In Audio Connector (blue)
5. PS/2 Keyboard Connector (purple)
6. VGA Monitor Connector
7. USB 2.0 Ports (black); right two ports with Wake from S4/S5 feature (black)
8. DisplayPort Monitor Connector
9. USB 3.0 Ports (blue)
10. Line-Out Connector for powered audio devices (green)
11. Power Cord Connector
12. Security cable lock slot
13. Thumbscrew

NOTE: An optional second serial port (USB to Serial port adapter) and an optional parallel port are available

Overview

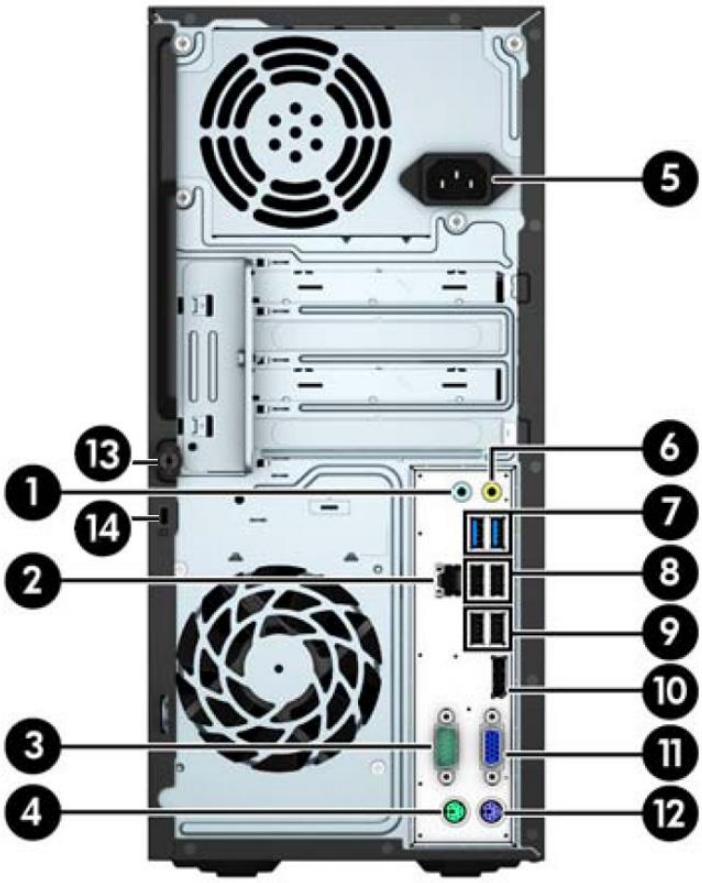
HP ProDesk 400 G3 Microtower Business PC



1. 9.5mm Slim Optical Drive (optional)
2. Dual-State Power Button
3. Microphone Connector
4. SD 3 Card Reader (optional)
5. Hard Drive Activity Light
6. (2) USB 3.0 Ports (blue)
7. Headphone Connector

Overview

HP ProDesk 400 G3 Microtower Business PC

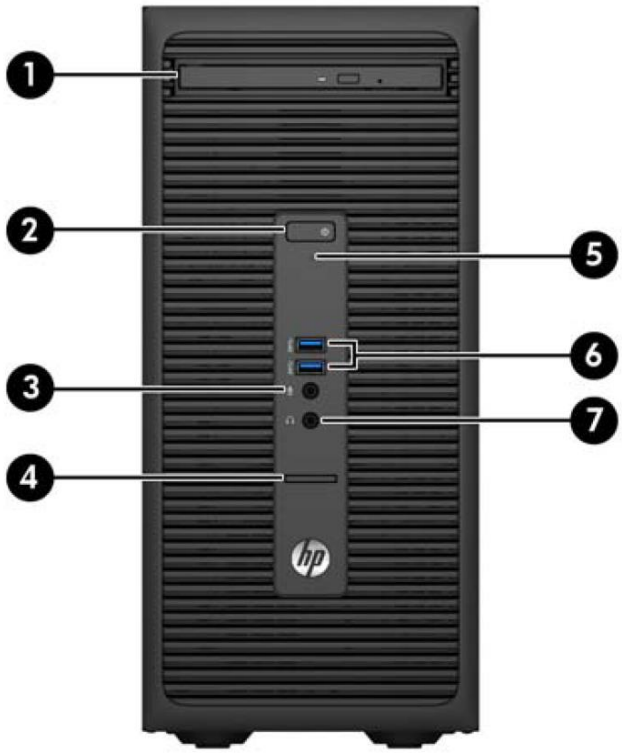


1. Line-In Audio Connector (blue)
2. RJ-45 Network Connector
3. Serial Connector
4. PS/2 Mouse Connector (green)
5. Power Cord Connector
6. Line-Out Connector for powered audio devices (green)
7. (2) USB 3.0 Ports (blue)
8. (2) USB 2.0 Ports (black)
9. (2) USB 2.0 Ports with Wake from S4/S5 feature (black)
10. DisplayPort Monitor Connector
11. VGA Monitor Connector
12. PS/2 Keyboard Connector (purple)
13. Thumbscrew
14. Security cable lock slot

NOTE: An optional second serial port and an optional parallel port are available.

Overview

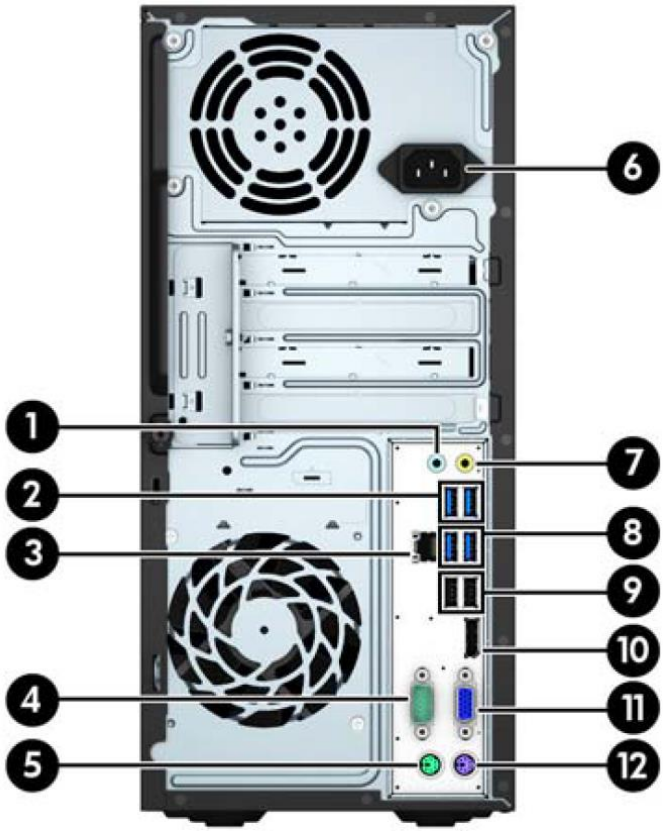
HP ProDesk 490 G3 Microtower Business PC (EMEA and APJ only)



1. 9.5mm Slim Optical Drive (optional)
2. Dual-State Power Button
3. Microphone Connector
4. SD Card 4 Reader (optional)
5. Hard Drive Activity Light
6. (2) USB 3.0 Ports (blue)
7. Headphone Connector

Overview

HP ProDesk 490 G3 Microtower Business PC (EMEA and APJ only)



1. Line-In Audio Connector (blue)
2. (2) USB 3.0 Ports (blue)
3. RJ-45 Network Connector
4. Serial Connector
5. PS/2 Mouse Connector (green)
6. Power Cord Connector
7. Line-Out Connector for powered audio devices (green)
8. (2) USB 3.0 Ports (blue)
9. (2) USB 2.0 Ports with Wake from S4/S5 feature (black)
10. DisplayPort Monitor Connector
11. VGA Monitor Connector
12. PS/2 Keyboard Connector (purple)

NOTE: An optional second serial port, optional parallel port and optional DisplayPort are available.

Overview

AT A GLANCE

- Choice of four form factors: Desktop Mini, Small Form Factor (available in December 2015), Microtower and All-in-One (touch and non-touch configurations available)
- HP-developed and engineered UEFI BIOS supporting security, manageability and software image stability
- Intel® 100 series chipsets supporting Intel® 6th generation Core™ processors
- Integrated Intel® HD Graphics; optional discrete graphics option available for MT and SFF form factors
- Processor support up to 65W (MT/SFF/AiO); up to 35W (Desktop Mini)
- Realtek RTL8111HSH-CG GbE integrated network connection
- Up to 32GB DDR4 Synchronous Dynamic Random Access Memory (SDRAM) (490 MT up to 64 GB)
- Multi-independent monitor support via VGA and digital DisplayPort video interfaces with multi-stream
- DTS Sound+™ audio management software on MT, SFF, and DM; DTS Studio Sound™ on 400 G2 AiO[1]
- Standard and high efficiency energy saving power supply options
- 490 MT model can be configured with multiple data drives in a RAID array (EMEA and APJ only)
- ENERGY STAR® certified models available
- EPEAT® Gold registered in the United States. See http://www.epeat.net for registration status in your country.
- Arsenic-free

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

1 For DTS patents, see http://patents.dts.com. Manufactured under license from DTS Licensing Limited. DTS, the Symbol, & DTS and the Symbol together are registered trademarks, and DTS Studio Sound is a trademark of DTS, Inc. © DTS, Inc. All Rights Reserved.

STANDARD FEATURES AND CONFIGURABLE COMPONENTS

Please note the ProDesk 400 G3 SFF will be available in December, 2015.

CHIPSET

	400 G2 DM	400 G2 AiO	400 G3 SFF	400 G3 MT	490 G3 MT
Intel® 100 Series H110 Chipset	X	X	X	X	
Intel® 100 Series H170 Chipset					X

PROCESSORS*

Intel® 6th Generation Core™ i7 Processors	400 G2 DM	400 G2 AiO	400 G3 SFF	400 G3 MT	490 G3 MT
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		X	X	X	X
Intel® Core™ i7-6700T Processor 35W Up to 3.6 GHz Max. Turbo Frequency (2.8 GHz base frequency) 8 MB cache, 4 cores, 8 threads Intel® HD Graphics 530 Supports DDR4 memory up to 2133 MT/s data rate	X	X			

Intel® 6th Generation Core™ i5 Processors	400 G2 DM	400 G2 AiO	400 G3 SFF	400 G3 MT	490 G3 MT
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		X	X	X	X
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		X	X	X	X
Intel® Core™ i5-6600T Processor 35W Up to 3.5 GHz Max. Turbo Frequency (2.7 GHz base frequency) 6 MB cache, 4 cores, 4 threads Intel® HD Graphics 530 Supports DDR4 memory up to 2133 MT/s data rate	X	X			
Intel® Core™ i5-6500T Processor 35W	X	X			

Standard Features and Configurable Components

Up to 3.1 GHz Max. Turbo Frequency (2.5 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 Core™ i3 Processors	**400 G2 DM**	**400 G2 AiO**	**400 G3 SFF**	**400 G3 MT**	**490 G3 MT**
Intel® Core™ i3-6320 Processor 51W 3.9 GHz base frequency 4 MB cache, 2 cores, 4 threads Intel® HD Graphics 530 Supports DDR4 memory up to 2133 MT/s data rate		X	X	X	X
Intel® Core™ i3-6300 Processor 51W 3.8 GHz base frequency 4 MB cache, 2 cores, 4 threads Intel® HD Graphics 530 Supports DDR4 memory up to 2133 MT/s data rate		X	X	X	X
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		X	X	X	X
Intel® Core™ i3-6300T Processor 35W 3.3 GHz base frequency 4 MB cache, 2 cores, 4 threads Intel® HD Graphics 530 Supports DDR4 memory up to 2133 MT/s data rate	X	X			
Intel® Core™ i3-6100T Processor 35W 3.2 GHz base frequency 3 MB cache, 2 cores, 4 threads Intel® HD Graphics 530 Supports DDR4 memory up to 2133 MT/s data rate	X	X			

Intel® 6th Generation Pentium® Processors	**400 G2 DM**	**400 G2 AiO**	**400 G3 SFF**	**400 G3 MT**	**490 G3 MT**
Intel® Pentium® G4520 Processor 51W 3.6 GHz Base Frequency 3 MB cache, 2 cores, 2 threads Intel® HD Graphics 530 Supports DDR4 memory up to 2133 MT/s data rate		X	X	X	X
Intel® Pentium® G4500 Processor 51W		X	X	X	X

Standard Features and Configurable Components

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® Pentium® G4400 Processor 51W/54W** 3.3 GHz Base Frequency 3 MB cache, 2 cores, 2 threads Intel® HD Graphics 510 Supports DDR4 memory up to 2133 MT/s data rate		X	X	X	X
Intel® Pentium® G4500T Processor 35W 3.0 GHz Base Frequency 3 MB cache, 2 cores, 2 threads Intel® HD Graphics 530 Supports DDR4 memory up to 2133 MT/s data rate	X	X			
Intel® Pentium® G4400T Processor 35W 2.9 GHz Base Frequency 3 MB cache, 2 cores, 2 threads Intel® HD Graphics 510 Supports DDR4 memory up to 2133 MT/s data rate	X	X			

*__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. 64-bit computing system required. 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® Pentium® G4400 has a source die of 2+2 and 4+2. The 2+2 will run at 51W, while the 4+2 fused-down version will run at 54W.

ADAPTERS AND CABLES

HP DisplayPort Cable	X	X	X	X	X
HP DisplayPort Cable 2nd (for discrete graphics configurations)	X		X	X	X
HP DisplayPort to DVI-D Adapter	X	X	X	X	X
HP DisplayPort to DVI-D Adapter 2nd (for discrete graphics configurations)	X		X	X	X
HP DisplayPort to HDMI 4K Adapter	X	X	X	X	X
HP DisplayPort to HDMI 4K Adapter 2nd (for discrete graphics configurations)	X		X	X	X
HP DisplayPort to VGA Adapter	X	X	X	X	X
HP DisplayPort to VGA Adapter 2nd (for discrete graphics configurations)	X		X	X	X
HP USB to Serial Port Adapter	X		X	X	X
HP 700mm DisplayPort Cable	X				

Standard Features and Configurable Components

STORAGE*, **

SATA Hard Disk Drives	400 G2 DM**	400 G2 AiO	400 G3 SFF	400 G3 MT	490 G3 MT
2TB SATA 7.2k RPM			X	X	X
2TB SATA 7.2k RPM 2nd				X	X
1TB SATA 7.2k RPM		X	X	X	X
1TB SATA 7.2k RPM 2nd				X	X
500GB SATA 7.2k RPM	X	X	X	X	X
500GB SATA 7.2k RPM 2nd	X			X	X
500GB SATA 7.2k RPM SED Opal2			X	X	X
500GB SATA 7.2k RPM 2nd w/ caddy SED Opal2				X	X

Hybrid Drives	400 G2 DM**	400 G2 AiO	400 G3 SFF	400 G3 MT	490 G3 MT
1TB SATA 6G 2.5 8G SSHD	X	X	X	X	X
1TB SATA 6G 2.5 8G SSHD 2nd	X			X	X
500GB SATA 6G 2.5 8G SSHD	X	X	X	X	X
500GB SATA 6G 2.5 8G SSHD 2nd	X			X	X

Solid State Drives	400 G2 DM**	400 G2 AiO	400 G3 SFF	400 G3 MT	490 G3 MT
512GB SATA 3D SSD	X	X	X	X	X
512GB SATA 3D SSD 2nd	X			X	X
256GB SATA SSD	X	X	X	X	X
256GB SATA SSD 2nd	X			X	X
256GB SATA 3D SSD	X	X	X	X	X
256GB SATA 3D SSD 2nd	X			X	X
180GB SATA (Intel® Pro 2500)	X	X	X	X	X
180GB SATA (Intel® Pro 2500) 2nd	X			X	X
128GB SATA SSD	X	X	X	X	X
128GB SATA SSD 2nd	X			X	X
128GB SATA 3D SSD	X	X	X	X	X
128GB SATA 3D SSD 2nd	X			X	X
120GB SATA SSD (Intel® Pro 2500)	X	X	X	X	X
120GB SATA SSD (Intel® Pro 2500) 2nd	X			X	X
128GB Turbo Drive SSD M.2 PCIe	X				
256GB Turbo Drive SSD M.2 PCIe	X				
128GB Turbo Drive G2 SSD-PCIe Card					X
256GB Turbo Drive G2 SSD-PCIe Card					X
512GB Turbo Drive G2 SSD-PCIe Card					X
128GB SATA Value SSD	X	X	X	X	X
256GB SATA Value SSD	X	X	X	X	X
128GB SATA 2.5 TLC SSD	X	X	X	X	X
256GB SATA 2.5 TLC SSD	X	X	X	X	X
512GB SATA 2.5 TLC SSD	X	X	X	X	X

SED Solid State Drives	400 G2 DM**	400 G2 AiO	400 G3 SFF	400 G3 MT	490 G3 MT
256GB SATA Opal2 SED SSD	X	X	X	X	X
256GB SATA Opal2 SED SSD 2nd	X			X	X

Standard Features and Configurable Components

180GB SATA Opal2 SED SSD (Intel® Pro 2500)	X	X	X	X	X
180GB SATA Opal2 SED SSD (Intel® Pro 2500) 2nd	X			X	X
128GB SATA Opal2 SED SSD	X	X	X	X	X
128GB SATA Opal2 SED SSD 2nd	X			X	X
120GB SATA Opal2 SED SSD (Intel® Pro 2500)	X	X	X	X	X
120GB SATA Opal2 SED SSD (Intel® Pro 2500) 2nd	X			X	X

***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.
****NOTE:** Desktop Mini second HDD only available when the first storage drive is an M2 drive.

Optical Disc Drives	**400 G2 DM**	**400 G2 AiO**	**400 G3 SFF**	**400 G3 MT**	**490 G3 MT**
HP 9.5mm Desktop G2 Slim DVD-ROM Drive			X	X	X
HP 9.5mm Desktop G2 Slim SATA BDXL Blu-Ray Writer			X	X	X
HP 9.5mm Desktop G2 Slim DVD Writer Drive			X	X	X
HP 9.5mm 400 AiO G2 Slim 400 G2 AIO DVD-ROM ODD		X			
HP 9.5mm 400 AiO G2 Slim 400 G2 DVD Writer Drive		X			

SD Card Reader (optional)*	**400 G2 DM**	**400 G2 AiO**	**400 G3 SFF**	**400 G3 MT**	**490 G3 MT**
SD3 with 4-in-1. Interface from SD option to PCA is USB.		X	X	X	
SD4 with 5-in-1. Interface from SD option to PCA is USB.					X

*Card sold separately

MEMORY

Form Factor	**Type**	**Maximum**	**# of Slots**
400 G2 DM	DDR4-2133 (Transfer rates up to 2133 MT/s)	32 GB	2 SODIMM
400 G2 AiO	DDR4-2133 (Transfer rates up to 2133 MT/s)	32 GB	2 SODIMM
400 G3 MT	DDR4-2133 (Transfer rates up to 2133 MT/s)	32 GB	2 DIMM
490 G3 MT	DDR4-2133 (Transfer rates up to 2133 MT/s)	64 GB	4 DIMM
400 G3 SFF	DDR4-2133 (Transfer rates up to 2133 MT/s)	32 GB	2 DIMM

Both slots are customer accessible / upgradeable.

- 2,048 MB (2048 MB x 1)
- 4,096 MB (4096 MB x 1)
- 8,192 MB (4096 MB x 2)
- 8,192 MB (8192 MB x 1)
- 16,384 MB (8192 MB x 2)
- 32,768 (16,384 MB x 2) – Maximum for 400/480 G3 MT and 400 G2 AiO/DM
- 65,536 (16,384 MB x 2)– Maximum for 490 G3 MT

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

NETWORKING/COMMUNICATIONS

Ethernet (RJ-45)	400 G2 DM	400 G2 AiO	400 G3 SFF	400 G3 MT	490 G3 MT
Realtek RTL8111HSH-CG GbE Ethernet Controller (standard)	X	X	X	X	X
Intel® Ethernet I210-T1 PCIe x1 Gb Network Interface Card (optional)			X	X	X
Wireless*	**400 G2 DM**	**400 G2 AiO**	**400 G3 SFF**	**400 G3 MT**	**490 G3 MT**
Broadcom BCM943228Z 802.11n Bluetooth® NIC			X	X	X
Broadcom BCM943228Z 802.11n No Bluetooth® NIC			X	X	X
Broadcom BCM943228Z 802.11n M.2 Bluetooth® NIC	X	X			
Broadcom BCM943228Z 802.11n M.2 Bluetooth® Disabled NIC	X	X			
Broadcom 802.11n M.2 Bluetooth® Indonesia NIC	X	X			
Intel® 7265 802.11AC Bluetooth®		X	X	X	X
Intel® 7265 802.11AC Bluetooth® Disabled		X	X	X	X
Intel® 7265 802.11AC M.2 Bluetooth®	X				
Intel® 7265 802.11AC M.2 Bluetooth® Disabled	X				
Intel® 3165 802.11AC M.2 Bluetooth®	X				

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

AUDIO/MULTIMEDIA

HD audio with Realtek ALC221VB			X	X	X
Realtek ALC221 Audio	X				
HD audio with Realtek ALC3228 codec		X			
DTS Sound+™	X		X	X	X
DTS Studio Sound™		X			
Microphone and headphone ports (3.5mm)	X	X	X	X	X
Line-out and Line-in ports (3.5mm)		X	X	X	X
Multi-streaming capable	X		X	X	X
Internal mono speaker (standard)	X		X	X	X
Internal stereo speaker		X			

DTS Studio Sound™ Technology (AiO form factor)

Introduction

DTS Studio Sound™ provides an outstanding audio and entertainment experience for all PC applications related to music, movies and games. Utilizing DTS' revolutionary 3D audio technology, DTS Studio Sound™ provides an immersive and realistic listening experience for a two speaker playback environment. DTS Studio Sound™ offers a wide surround effect and natural positioning of audio for both 2D and 3D content and delivers immersive surround complete with deep, rich enveloping bass and crystal clear dialog. It also delivers high-frequency definition for crisp detail in any listening environment, ensuring users a premium and natural entertainment experience across any speaker configuration (desktop speakers or headphones).
DTS Studio Sound™

Features

- Outstanding multimedia audio experience
- Immersive surround sound from two speakers or headphones

Standard Features and Configurable Components

- Extracts acoustic placement cues from original audio signal and adds near and far depth to the sound field to maximize 3D surround effect
- Custom-tuned solutions to provide superior natural sound from desktop speakers and headphones
- Maximum volume from small speakers
- Deep, rich bass and crystal clear dialog

DTS Sound+™ Technology (DM, SFF and MT form factors)

Introduction
DTS Sound+™ is a complete audio solution that delivers immersive surround sound, deeper bass, clear dialog, crisp audio details and intelligent volume leveling and maximization to all multimedia applications, including music, movies, streaming and games.

Features

- Virtual surround sound from stereo speakers or headphones
- Broad sweet spot with elevated sound image for a more realistic listening experience
- Delivers maximum volume output without creating clipping or distortion
- Dialog enhancement for clear and intelligible vocals
- Bass enhancement for rich, low frequency production
- Locates and restores audio cues buried in the original source material during the compression process
- High frequency definition for audio with crisp, clear details
- Consistent volume level across content

DISPLAY (ALL-IN-ONE MODELS ONLY)

20" diagonal TN widescreen WLED backlit anti-glare LCD display
Orientation designed to operate in portrait or landscape mode
Non-touch or optional touch
Projected Capacitive Touch supports up to 10 touch-points

Display Panel	Type	TN WLED Backlit LCD
	Viewable image area (mm)	442.8 x 249.075
	Touch Active Area (mm)	442.8 x 249.075*
	Screen opening (mm)	444.8 x 251.2**
	Native Resolution (HxV)	1600 x 900
	Aspect ratio	16:9
	Pixel pitch (HxV)(mm)	0.276 x 0.276
	Contrast ratio (typical)	1000:1
	Brightness (typical)	Touch - 225nits (cd/m2)/ Non-Touch 250nits (cd/m2)
	Viewing angle (typical) (HxV)	170 ° x 160 °
	Backlight lamp life (to half brightness)	30,000 hours minimum
	Color support	Over 16 million colors
	Color gamut (typical)	72%
	Anti-glare	Yes (non-touch model only)
	Default color temperature	Warm (6500K)
	*With Projected Capacitive Touch Panel **Without Projected Capacitive Touch Panel NOTE: All performance specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower.	
Easel Stand	Tilt Angle	+10° to +70°
Adjustable Height Stand:	Vertical/Landscape Adjustment	125 mm (±3 mm)
	Portrait Adjustment	34 mm (±3 mm)
	Tilt Angle	-5° to +20°(±3°) in landscape and portrait
	Rotation	360° swivel and portrait or landscape orientation
Recline Stand:	Vertical Adjustment	25 mm (±3 mm)
	Tilt Angle	-5° to +65° (+/-3°)
	Rotation	360° swivel

WEBCAM & MIC (ALL-IN-ONE MODELS ONLY)

Optional integrated 1 MP webcam with dual-microphone array; maximum resolution of 1920 x 1080

KEYBOARDS AND POINTING DEVICES

Keyboards	400 G2 DM	400 G2 AiO	400 G3 SFF	400 G3 MT	490 G3 MT
HP USB Business Slim Keyboard	X	X	X	X	X
HP Wireless Business Slim Keyboard and Mouse	X	X	X	X	X
HP Wireless Keyboard and Mouse	X	X	X	X	X
HP USB Conferencing Keyboard	X	X	X	X	X
HP USB Keyboard (APJ only)	X	X	X	X	X
HP PS/2 Business Slim Keyboard		X	X	X	X
HP PS/2 Keyboard	X		X	X	X
HP USB Antimicrobial Keyboard (China only)	X		X	X	X
HP USB and PS/2 Washable Keyboard and Mouse	X	X	X	X	X
HP USB Smart Card (CCID) Keyboard	X	X	X	X	X

Mice	400 G2 DM	400 G2 AiO	400 G3 SFF	400 G3 MT	490 G3 MT
HP USB Mouse	X	X	X	X	X
HP PS/2 Mouse			X	X	X
HP USB 1000dpi Laser Mouse	X	X	X	X	X
HP USB Hardened Mouse	X	X	X	X	X
HP USB Antimicrobial Mouse (China only)			X	X	X
HP USB Optical Mouse	X		X	X	X
HP Wireless Laser Mouse Brazil	X	X	X	X	X

HP BIOSPHERE

Key features of the HP BIOS include:

- Deployment and manageability – HP BIOS provides several technologies that help integrate the HP ProDesk G3 and ProOne G2 Business PC into the enterprise, such as PXE, remote configuration, remote control, and F10 Setup support for 12 languages.
- Update your BIOS via the cloud or standardize on a BIOS version hosted on Enterprise network.
- BIOS Integrity checking – HP BIOS provides verification to ensure that only trusted BIOS code is executed and not rootkits, viruses and malware. Verification is done upon boot up and shutdown and if compromised the user is notified by a series of blinking LED lights that the BIOS was compromised and that a boot will not occur. F10 BIOS whitepaper is available on platform support pages with additional information.
- Stability – HP BIOS supports the HP stable product roadmap by releasing only critical BIOS changes to the factory and advanced change notification.
- UEFI specification 2.4
- Absolute Persistence agent – For tracking and tracing services, available in select countries, separate software and purchase of a subscription is required.
- Thermal and power management – The HP BIOS provides and enables thermal and power management technologies so component temperatures are managed for high reliability and to assist in operating the HP Business Desktop computer in any enterprise environment.
- Acoustic performance – Industry leading acoustic emissions across the range of operating conditions.
- Serviceability – HP BIOS provides diagnostic and detailed service information.
- Upgrades and recovery – HP BIOS provides numerous ways to upgrade HP Business Desktop computers, including BIOS updates from within DOS (DOSFlash), BIOS updates from within Windows (HPQFlash), HP Client Manager, and fail-safe

recovery. In addition, the HP Business Desktop BIOS Utilities tool enables replicated BIOS setup throughout the Enterprise; it is available from within the BIOS software and from the support website.

- HP BIOS uses PKI signing of the BIOS for trusted BIOS upgrades and recovery.

Additional HP BIOS Features:

- Power-On password – Helps prevent an unauthorized user from powering on the system.
- Administrator password – Also known as the setup password, this helps prevent unauthorized changes to the system configuration. If the administrator password is not known, the BIOS version cannot be changed and changes cannot be made to BIOS settings using F10 setup or under the OS.
- Advanced Configuration and Power Interface (ACPI) – Represents a significant innovation in power and configuration management, allowing operating systems and applications to manage power based on activity and usage. HP Elite models use ACPI to provide power conservation features.
- Master Boot Record Security - Helps to prevent changes and/or infections to the Master Boot Record caused by viruses or malicious code.
- HP BIOS Protection – prevents unauthorized updates or changes to the BIOS due to malware, viruses, or malicious BIOS updates. Based on NIST SP800-147 policy guidelines.
- S5 Max Power Savings setting supports EU Lot6 requirement and allows the computer to power down below 1W is S5 (when turned off). When S5 Max Power Savings feature is enabled power to slots is turned off along with WOL functionality

SECURITY

	400 G2 DM	400 G2 AiO	400 G3 SFF	400 G3 MT	490 G3 MT
Trusted Platform Module, SLB9670TT1.2FW4.40 (TPM) 1.2 (Common Criteria EAL4+ certified), Field upgradeable to 2.0	X	X	X	X	X
SATA port disablement (via BIOS)	X	X	X	X	X
Drive Lock					
RAID configurations					X
Intel® Identify Protection Technology (IPT)*					
Serial, parallel, USB enable/disable (via BIOS)	X	X	X	X	X
Optional USB Port Disable at factory (user configurable via BIOS)	X	X	X	X	X
Removable media write/boot control	X	X	X	X	X
Power-On password (via BIOS)	X	X	X	X	X
Setup password (via BIOS)	X	X	X	X	X
HP Chassis (1 bay) Security Kit	X		X	X	X
Solenoid Hood Sensor	X				
Support for chassis padlocks and cable lock devices	X	X	X	X	X
Support Port cable cover	X	X			

*Models configured with Intel® Core™ processors have the ability to utilize advanced security protection for online transactions. IPT, used in conjunction with participating web sites, provides double identity authentication by adding a hardware component in addition to the usual user name and password. IPT is initialized through an HP Client Security module.

ENVIRONMENTAL & REGULATORY

ENERGY STAR® certified configurations available
EPEAT® registered where applicable/supported. EPEAT registration varies by country. See http://www.epeat.net for registration status by country.
TAA-compliant models available

For accessibility information on HP products, please visit: http://www.hp.com/accessibility.

PORTS

I/O Ports

	400 G2 DM	400 G2 AiO	400 G3 SFF	400 G3 MT	490 G3 MT
USB 3.0 (Front)	2	N/A	2	2	2
USB 3.0 (Side)	N/A	2 (1-charging)	N/A	N/A	N/A
USB 2.0 (Rear)	2	2	4	4	2
USB 3.0 (Rear)	2	2	2	2	4
Serial (RS-232)	1	(optional)*	1	1	1
Second serial	N/A	N/A	(optional USB to Serial port adapter)	(optional)	(optional)
HDMI	N/A	N/A	N/A	N/A	N/A
PS/2	N/A	(optional)*	1 keyboard (purple) 1 mouse (green)	1 keyboard (purple) 1 mouse (green)	1 keyboard (purple) 1 mouse (green)
Video	1 VGA 1 DisplayPort with multi-stream	1 DisplayPort	1 VGA 1 DisplayPort with multi-stream	1 VGA 1 DisplayPort with multi-stream	1 VGA 1 DisplayPort with multi-stream
Audio	Front: headphone/mic	Side: headphone/mic Rear: line out 3.5mm diameter	Front: headphone/mic Rear: line in/out 3.5mm diameter	Front: headphone/mic Rear: line in/out 3.5mm diameter	Front: headphone/mic Rear: line in/out 3.5mm diameter
Network Interface	RJ-45	RJ-45	RJ-45	RJ-45	RJ-45
Parallel	N/A	N/A	(optional)	(optional)	(optional)
DisplayPort Expansion Card	N/A	N/A	N/A	N/A	(optional)

NOTE: The H110 chipset (ProDesk 400 G2 DM, 400 G3 MT and 400 G3 SFF) support two independent displays whereas the H170 chipset supports three (ProDesk 490 G3 MT).

I/O Ports — Internal ports

	DM	SFF	TWR	AiO
DM SATA storage connector	1	N/A	N/A	N/A
AiO SATA storage connector	N/A	N/A	N/A	1
	480 MT G3	**400 G3 SFF**	**400 MT G3**	**490 G3 MT**
Internal SATA storage connector(s)	3	2	3	3

Standard Features and Configurable Components

SLOTS

	400 G2 DM	400 G2 AiO	400 G3 SFF	400 G3 MT	490 G3 MT
PCI Express Mini Card	N/A	N/A	N/A	N/A	N/A
MXM Graphics	N/A	N/A	N/A	N/A	N/A
mSATA	N/A	N/A	N/A	N/A	N/A
Turbo Drive G2 (M.2 PCIe)	1 - M.2 PCIe x4-2230 (for WLAN) 1 - M.2 PCIe x4-2280 (for storage)	N/A	N/A	N/A	N/A
PCI Express x1 (v2.0)	N/A	N/A	1 - 2.5" low profile 6.6" length 10W max. power	3 - 4.2" full height 6.6" length 10W max. power	N/A
PCI Express x1 (v3.0)	N/A	N/A	N/A	N/A	2 - 4.2" full height 6.6" length 10W max. power
PCI Express x16 (v3.0) (wired as a x4)	N/A	N/A	N/A	N/A	1 - 4.2" full height 6.6" length 35W max. power
PCI Express x16 (v3.0)	N/A	N/A	1 - 2.5" low profile 6.6" length 35W max. power	1 - 4.2" full height 6.6" length 75W max. power	1 - 4.2" full height 6.6" length 75W max. power

BAYS

	400 G2 DM	400 G2 AiO	400 G3 SFF	400 G3 MT	490 G3 MT
9.5mm Slim ODD	N/A	1	1	1	1
Secure Digital (SD) Reader	N/A	1 (optional)	1 (optional)	1 (optional)	1 (optional)
2.5" internal storage drive	1	1	N/A	N/A	N/A
3.5" internal storage drive	N/A	N/A	N/A	1	1
2.5"/3.5" internal storage drive	N/A	N/A	1	1	1

SERVICE AND SUPPORT

On-site Warranty [1]: One-year (1-1-1) or three-year (3-3-3) limited warranty (depending on country) delivers on-site, next business day [2] service for parts and labor and includes free support [3] 24 x 7. One-year and three-year on-site and labor are not available in all countries. Service offers terms up to 5 years by choosing a Care Pack.[4] 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.

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.

Technical Specifications – Operating Systems and 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*
Windows 7 Professional 32*

Pre-installed (Other)
FreeDOS 2.0

Web Support Only
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
Windows 7 Professional 32
Windows 10 Enterprise 64
Windows 8.1 Enterprise 64
Windows 7 Enterprise 64
Windows 7 Enterprise 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.

Technical Specifications – Operating Systems and Software

SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS

BIOS

HP BIOSphere[1]
HP DriveLock
HP BIOS Protection[2]
BIOS Update via Network
Master Boot Record Security
Power On Authentication
Secure Erase[3]
Hybrid Boot (Windows 8.1 & higher)
Measured Boot (Windows 8.1 & higher)
Secure Boot (Windows 8.1 & higher
Absolute Persistence Module[4]

Multimedia

Cyberlink Power DVD, BD
Cyberlink Power2Go (Secure Burn)

Communication

Intel® Wireless Display (WiDi) Software for Windows[5]
Native Miracast Support[6]

HP Value Add Software

HP ePrint Driver[7]
HP Recovery Disc Creator (Windows 7 only)
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

Manageability

HP SoftPaq Download Manager (SDM)
HP System Software Manager (SSM)[8]
HP BIOS Config Utility (BCU)[8]
HP Client Catalog[8]
HP CIK for Microsoft SCCM[8]

Technical Specifications – Operating Systems and Software

LANDESK Management[8]
HP BIOS Config Utility (BCU)[8]

For more information on HP Client Management Solutions refer to: http://www.hp.com/go/clientmanagement.

Client Security Software

HP Client Security Manager
Microsoft Security Essentials[9]
Microsoft Defender
TPM 1.2/2.0

For more information on HP Client Security Software Suite, refer to http://www.hp.com/go/clientsecurity.

Footnotes:

1 Available only on business PCs with HP BIOS.
2 May require a manual recovery step if all copies of BIOS are compromised or deleted
3 For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88.
4 Absolute agent is shipped turned off, and will be activated when customers activate a purchased subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. The Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit: http://www.absolute.com/company/legal/agreements/ computrace-agreement. Data Delete is an optional service provided by Absolute Software. If utilized, the Recovery Guarantee is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens from Absolute Software.
5 Integrated Intel® Wi-Di Display is available on select configurations only and requires a separate projector, TV or monitor with an integrated or external Wi-Di receiver. For more information on Intel® Wi-Di Display visit http://www.intel.com/go/wirelessdisplay
6 Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming media players that also support Miracast. You can use Miracast to share what you're doing on your PC and present a slide show. For more information: http://windows.microsoft.com/en-us/windows-8/project-wireless-screen-miracast
7 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). Requires optional broadband module. Broadband use requires separately purchased service contract. Check with service provider for coverage and availability in your area. Separately purchased data plans or usage fees may apply. Print times and connection speeds may vary.
8 Not preinstalled, however available for download at http://www.hp.com/go/clientmanagement
9 Opt in and internet connection required for updates.

GRAPHICS

System Integrated Graphics	400 G2 DM	400 G2 AiO	400 G3 SFF	400 G3 MT	490 G3 MT
Intel® HD Graphics on all models (integrated on processor)*	X	X	X	X	X

***HD content required to view HD images.**

Discrete (optional)

Not allowed when 180W chassis and 65W processor both are selected on 400/480/490/498 MT

	400 G2 DM	400 G2 AiO	400 G3 SFF	400 G3 MT	490 G3 MT
AMD Radeon™ R9 350 2GB DH PCIe x16				X	X
NVIDIA® GeForce® GT 730 2GB PCIe x8			X	X	X
NVIDIA GeForce GT 720 2GB PCIe x8 (China only)				X	X
NVIDIA® NVS 310 1GB PCIe x16			X	X	X
AMD Radeon R5 320 1GB PCIe x16 (China only)					X

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)		
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:
	• 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
	  ○ 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
	  ○ 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			

Technical Specifications – Graphics

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
1920x1080	60 Hz
1920x1200*	60 Hz
1920x1440*	60 Hz
2560x1440*	60 Hz
2560x1600*	60 Hz
3840x2160*	60 Hz
4096x2304*	24 Hz
* Only supported on displays connected to the external DisplayPort connector.	

AMD® Radeon™ R9 350 1GB PCIe x16 Graphics Card

Not allowed when 180W chassis and 65W processor both are selected on 400/480/490/498 MT.

Memory	2GB 128-bit wide frame buffer operating at 1150MHz.
Controller Clock Speed	AMD® Radeon™ R9 350 GPU operating at 925 MHz
Multidisplay Support	A maximum of 4 displays are supported by the card. A maximum of 2 legacy displays (Native VGA, DVI, or displays connected with passive DisplayPort adapters are considered as legacy)
Graphics /API support	DIRECTX 12, Open GL 4.3, Open CL1.2, UVD 3
Output Connectors	1 x Dual-Link DVI-I, 2x DisplayPort; 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	DisplayPort	Standard
640 x 480	60, 75, 85	X	X	X	VESA DMT, CVT 0.31M3
720 x 400	70	X	X	X	IBM VGA

Technical Specifications – Graphics

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
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			X	CVT-RBv1/v2 (8.29M9-R), SMPTE 274M
3840 x 2160	60			X	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			X	CVT-RBv1/v2 (8.85M-R), SMPTE 274M
4096 x 2160	60			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)

Technical Specifications – Graphics

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 Graphics Card	
Introduction	Get impressive graphics and high resolution dual-display performance in a low profile, PCI Expr x8 graphics add-in card based on the NVIDIA® Kepler™ Graphics Processor. Improve your everyc PC, Web conferencing, and video or photo editing.
Memory	2GB DDR3 64-bit wide frame buffer operating at 900 MHz
Controller Clock Speed	NVIDIA® Kepler™ GPU operating at 902 MHz
Multi-display Support	A maximum of 4 displays are supported by the card.
Graphics /API support	Supports Microsoft DirectX 12, OpenGL 4.4 and OpenCL 2 APIs, Shade Model 5, UVD 4.2, VCE 2.0 DirectCompute 11
Output Connectors	1 x Dual-Link DVI-I, 1x DisplayPort; Includes DVI to VGA adapter Display Port output is multi-mode capable, support Audio, HBR2 and MST

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	DisplayPort	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

Technical Specifications – Graphics

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	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	60			X	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	60			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
640 x 480	60		X	X	CEA (VESA DMT)
* >60 refresh rates only for analog (VGA) signaling					

NVIDIA® NVS™ 310 Graphics Card		
Introduction	The NVIDIA® NVS™ 310 Graphics Card is a PCI Express low profile form factor graphics add-in card targeted as an active low cost graphics solution for the corporate business and enterprise markets. The NVIDIA® NVS™ 310 graphics card is an ideal solution for customers requiring a small form factor graphics add-in card for either standard or small form factor PC designs.	
Performance and Features	The NVIDIA® NVS™ 310 Graphics Card offers 1GB of ultrafast DDR3 memory and is capable of supporting up to 2 displays. DisplayPort connector supports multimode technology to support connection to DVI-D, VGA and HDMI monitors with optional adapters in kits NR078AA, FH973AT, BP937AA, AS615AA. For a DisplayPort to DisplayPort connections use the optional DisplayPort Cable Kit VN567AA.	
Form Factor	Low Profile: 2.713 × 6.15 in	
Graphics Controller	NVIDIA® NVS™ 310	
Memory Clock	875MHz	
Memory Size	1GB DDR3	
Memory Bandwidth	14 GB/s	
Max. Power	19.5W	
Display Max. Resolution	Up to 2560 x 1600 (digital display) per display	
Display Output	Up to 2 displays in the following configurations	
	DisplayPort output:	• Drives two DisplayPort enabled digital display at resolutions up to 2560 × 1600 at 60 Hz with reduced blanking, when connected natively using the 2 DisplayPort connectors on the NVS 310 graphics card • Supports 2 monitors up to resolution of 1920 × 1200 at 60 Hz with reduced blanking using DisplayPort Multi-Stream topology technology.
	DVI-D output:	• Drives two digital display at resolutions up to 1920 × 1200 at 60 Hz with reduced blanking using DisplayPort to DVI-D single-link cable adaptors • Drives two digital display at resolutions up to 2560× 1600 at 60 Hz with reduced blanking using DisplayPort to DVI-D dual-link cable adaptors

Technical Specifications – Graphics

	HDMI output:	• NVS 310 is capable of driving two high definition (HD) panels up to resolutions of 1920 × 1080P at 60 Hz using DisplayPort to HDMI cable adaptors
	VGA display output:	• Drives two analog display at resolutions up to 1920 × 1200 at 60 Hz using DisplayPort to VGA cable adaptors

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) by Connection**			
	DisplayPort to VGA	DisplayPort to DVI-D	DisplayPort to HDMI	DisplayPort
640 x 480	85	60	60	60
800 x 600	85	60	60	60
1024 x 768	85	60	60	60
1280 x 720	85	60	60	60
1280 x 1024	85	60	60	60
1440 x 900	75	60	60	60
1600 x 1200	60	60	60	60
1680 x 1050	60	60	60	60
1920 x 1080	60-R	60-R	60	60
1920 x 1200	60-R	60-R		60
1920 x 1440				60
2048 x 1536				60
2560 x 1600				60

Technical Specifications – Hard Disk and Solid State Storage

HARD DISK AND SOLID 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 and ProOne 400 Series Business PCs support 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.

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

Technical Specifications – Hard Disk and Solid State Storage

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)	

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

Technical Specifications – Hard Disk and Solid State Storage

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)	

1TB SATA 6G 2.5" 8GB Solid State Hybrid Drive (SSHD)		
Formatted Capacity	1 TB	
Spindle Speed	5,400 rpm +/- 0.2%	
Drive Type	Solid State Hybrid Drive (SSHD) technology with NAND Flash	
Interface	Serial ATA (SATA)	
Cache Buffer	64 MB	
NAND Flash Commercial Multilevel Cell (cMLC)	8 GB	
Number of Sectors	976,773,168	
Seek Time (typical reads)	Single Track:	2.0 ms
	Average:	12 ms
Height	0.374 +/-.008 in (9.5 +/- 0.2 mm)	
Width	2.750 +/- 0.010 in (69.85 +/- 0.25 mm)	

Technical Specifications – Hard Disk and Solid State Storage

Length	3.951 +0.008 / -0.010 in (100.35 +0.20 / -0.25 mm)
Weight	0.254 lb/115 g (max)
Operating Temperature	41° to 131° F (5° to 55° C)

500 GB SATA 6G 2.5" 8GB Solid State Hybrid Drive (SSHD)		
Formatted Capacity	500 GB	
Spindle Speed	5,400 rpm +/- 0.2%	
Drive Type	Solid State Hybrid Drive (SSHD) technology with NAND Flash	
Interface	Serial ATA (SATA)	
Cache Buffer	64 MB	
NAND Flash Commercial Multilevel Cell (cMLC)	8 GB	
Number of Sectors	976,773,168	
Seek Time (typical reads)	Single Track:	2.0 ms
	Average:	12 ms
Height	0.268 +/-.008 in (6.8 +/- 0.2 mm)	
Width	2.750 +/- 0.010 in (69.85 +/- 0.25 mm)	
Length	3.951 +0.008 / -0.010 in (100.35 +0.20 / -0.25 mm)	
Weight	0.209 lb/95 g (max)	
Operating Temperature	41° to 131° F (5° to 55° C)	

512GB SATA 2.5" 3D Non-SED Solid State Drive	
Unformatted Capacity	512 GB
Architecture	Solid State Drive with 3D NAND Flash and SATA interface.
Interface	Serial ATA 3 (6.0 Gb/s)

Technical Specifications – Hard Disk and Solid State Storage

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 540 MB/s
	Sustained Sequential Write:	Up to 500 MB/s
Power	Power consumption:	Active: Typical 250mW; Idle: Typical 50mW
Mean Time Between Failure (MTBF)	1,500,000 hours	
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

HP 256GB SATA 6Gb/s SSD		
Capacity	256 GB	
Interface	SATA 6 Gb/s	
Synchronous Transfer Rate (Maximum)	Sustained Reads	Up to 560MB/s
	Sustained Writes	Up to 510MB/s
	Random Read	Up to 100K IOPS
	Random Writes	88K IOPS

Technical Specifications – Hard Disk and Solid State Storage

Power Consumption (typical)	Active: 150mW Idle: 70mW
Operating Temperature	32° to 158° F (0° to 70° C)

256GB SATA 2.5" 3D Non-SED Solid State Drive			
Unformatted Capacity	256 GB 500,118,192 (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 540 MB/s	
	Sustained Sequential Write:	Up to 280 MB/s	
Power	Power consumption:	Active: Typical 250mW; Idle: Typical 50mW	
Mean Time Between Failure (MTBF)	1,500,000 hours		
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

180GB SATA Opal2 SED SSD (Intel® Pro 2500)			
Formatted Capacity	180 GB		
Architecture	Solid State Drive with SATA interface; ATA 8 Compliant and SATA 3.0 compliant		
Interface	Serial ATA 3 (6.0 Gb/s)		
Form Factor	2.5 inch		
Height	7 mm ± 0.5		
Width	69.85 mm ± 0.25		
Length	100.45 mm Max		
Weight (typical)	Up to 78 g		
Data Transfer Rate (128k Sequential)	Sequential Read	Up to 540 MB/s	
	Sequential Write	Up to 490 MB/s	
Power Watts	Power consumption (avg):	Power-Up: 6W (max) Read: <3.7W Write: 3.7W Standby: <55mW DEVSLP: <7mW	
Environmental (all conditions, non-condensing)	Operating Temperature:		32° to 158° F (0° to 70° C)
	Relative Humidity:		5% to 95%
	Shock:		1500 G Max - operating (operating)

Technical Specifications – Hard Disk and Solid State Storage

120 GB SATA 2.5 Non-SED SSD			
Unformatted Capacity	120 GB		
Architecture	Multi-Level Cell (MLC) NAND		
Interface	Serial ATA 3.0 (6.0 Gb/s)		
Form Factor	2.5 inch		
Height	Low profile, 7mm height		
Width	69.85 mm ± 0.25		
Length	100.45 mm max		
Weight	Up to 78 g		
Bandwidth Performance	Sustained Sequential Read:	Up to 540 MB/s	
	Sustained Sequential Write:	Up to 480 MB/s	
Power	Power consumption:	Average: Read <3.7W; Write 3.7W; Standby <55mW	
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 – Hard Disk and Solid State Storage

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	
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

120GB SATA 2.5" Opal2 SED Solid State Drive (Pro 2500)

Technical Specifications – Hard Disk and Solid State Storage

Unformatted Capacity	120 GB 234,441,648 (Total Logical Sectors)		
Architecture	ATA 8 Compliant and SATA 3.0 compliant Supports Mode 2 Multiword DMA Supports Drive Failure Prediction Supports SMART Offline Read Scan Supports Mode 4 PIO Supports Mode 5 UDMA Supports HP Drive Protection System ATA 8 ACS-2 Data / TRIM Support Support DEVSLP feature Supports TRIM Command per ATA8 / ACS 2 Supports FIPS-197 features Support TCG Storage Architecture Core Specification 2.0		
Interface	Serial ATA 3.0 (6.0 Gb/s)		
Form Factor	2.5 inch		
Height	Low profile, 7mm height		
Width	69.85 mm ± 0.25		
Length	100.45 mm max		
Weight	Up to 78 g		
Bandwidth Performance	Sustained Sequential Read:	Up to 540 MB/s	
	Sustained Sequential Write:	Up to 480 MB/s	
Power	Power consumption:	Average: Read <3.7W; Write 3.7W; Standby <55mW	
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

256GB SATA 2.5” Opal2 SED Solid State Drive	
Unformatted Capacity	256 GB 500,118,192 (User Addressable Sectors)

Technical Specifications – Hard Disk and Solid State Storage

Architecture	Self-Encrypting (SED) Solid State Drive with NAND Flash and SATA interface. Trusted Computing Group(TCG) OPAL2.0 compliant encrypted solid state drive		
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 73 g		
Bandwidth Performance	Sustained Sequential Read:	Up to 520 MB/s	
	Sustained Sequential Write:	Up to 460 MB/s	
Power	Power consumption:	Active: 3.891W; Idle: 0.085W	
Mean Time Between Failure (MTBF)	1,500,000 hours		
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 – Hard Disk and Solid State Storage

180GB SATA 2.5" Opal2 SED Solid State Drive (Pro 2500)			
Formatted Capacity	180 GB 351,651,888 (Total Logical Sectors)		
Architecture	ATA 8 Compliant and SATA 3.0 compliant Supports Mode 2 Multiword DMA Supports Drive Failure Prediction Supports SMART Offline Read Scan Supports Mode 4 PIO Supports Mode 5 UDMA Supports HP Drive Protection System ATA 8 ACS-2 Data / TRIM Support Support DEVSLP feature Supports TRIM Command per ATA8 / ACS 2 Supports FIPS-197 features Support TCG Storage Architecture Core Specification 2.0		
Interface	Serial ATA 3.0 (6.0 Gb/s)		
Form Factor	2.5 inch		
Height	Low profile, 7mm height		
Width	69.85 mm ± 0.25		
Length	100.45 mm max		
Weight	Up to 78 g		
Bandwidth Performance	Sustained Sequential Read:	Up to 540 MB/s	
	Sustained Sequential Write:	Up to 490 MB/s	
Power	Power consumption:	Average: Read <3.7W; Write 3.7W; Standby <55mW	
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
128GB SATA 2.5" Opal2 SED Solid State Drive			

Technical Specifications – Hard Disk and Solid State Storage

Unformatted Capacity	128 GB 250,069,680 (User Addressable Sectors)	
Architecture	Self-Encrypting (SED) Solid State Drive with NAND Flash and SATA interface. Trusted Computing Group(TCG) OPAL2.0 compliant encrypted solid state drive	
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 73 g	
Bandwidth Performance	Sustained Sequential Read:	Up to 520 MB/s
	Sustained Sequential Write:	Up to 340 MB/s
Power	Power consumption:	Active: 0.78A / 3.891W; Idle: 0.005A / 0.026W
Mean Time Between Failure (MTBF)	1,500,000 hours	
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 – Hard Disk and Solid State Storage

180GB SATA Opal2 SED SSD (Intel® Pro 2500)			
Formatted Capacity	180 GB		
Architecture	Solid State Drive with SATA interface; ATA 8 Compliant and SATA 3.0 compliant		
Interface	Serial ATA 3 (6.0 Gb/s)		
Form Factor	2.5 inch		
Height	7 mm ± 0.5		
Width	69.85 mm ± 0.25		
Length	100.45 mm Max		
Weight (typical)	Up to 78 g		
Data Transfer Rate (128k Sequential)	Sequential Read	Up to 540 MB/s	
	Sequential Write	Up to 490 MB/s	
Power Watts	Power consumption (avg):	Power-Up: 6W (max) Read: <3.7W Write: 3.7W Standby: <55mW DEVSLP: <7mW	
Environmental (all conditions, non-condensing)	Operating Temperature:		32° to 158° F (0° to 70° C)
	Relative Humidity:		5% to 95%
	Shock:		1500 G Max - operating (operating)

Technical Specifications – Hard Disk and Solid State Storage

HP 128 GB Turbo Drive SSD-M.2 PCIe Card*		
Unformatted Capacity	128 GB*	
Interface	M.2 PCIe x4 Gen 2	
Architecture	Solid State Drive M.2 PCIe Gen 2 x4 AHCI; NCQ Command Set	
Form Factor	M.2 2280	
Dimensions (Width x Length x Thickness)	.899 x 3.149 x .146 in (22 x 80 x 3.73 mm)	
Weight	0.017 lb (8 g) Max	
Bandwidth Performance - Performance measured using IOMeter 2008 on Windows 8 64bit. Actual performance may vary depending on use conditions and environment.	Sustained Sequential Read (128KB):	Up to 920 MB/ss
	Sustained Sequential Write (128KB):	Up to 430 MB/s
	Random Read (4KB):	up to 8500 IOPs
	Random Write (4KB):	up to 32000 IOPs
Power	Allowable voltage	3.3V ± 5%
	Total power consumption:	5.8 W (Active) ; 80 mW; (Idle)
MTBF	1.5 M hours	
Environmental (all conditions, non-condensing)	Operating Temperature:	32° to 158° F (0° to 70° C)
	Relative Humidity (operating):	5% to 95%
	Shock:	1,500 G
Regulations	Safety TUV UL CB c-UL-us	TUV
		UL CB
		c-UL-us
		TUV
	EMC/EMI	CE (EU)
		BSMI (Taiwan)
		KCC (South Korea)
		VCCI (Japan)

		C-Tick (Austrailia)
		FCC (USA)
*__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.		

HP 256 GB Turbo Drive SSD-M.2 PCIe Card*			
Formatted Capacity	256 GB		
Architecture	Solid State Drive M.2 PCIe Gen 2 x4 AHCI; NCQ Command Set		
Interface	M.2 PCIe Gen 2 x4		
Form Factor	M.2 2280		
Height	7 mm ± 0.20		
Width	.8 mm ± 0.08		
Length	50 mm ± 0.15		
Weight (typical)	Up to 10 g		
Data Transfer Rate (128k Sequential)	Sequential Read	Up to 2150 MB/s	
	Sequential Write	Up to 1200 MB/s	
Power Watts	Power consumption (avg):	Power-Up: N/A Read: 4 W Write: 5.1 W Standby: 700 mW Idle: 70 mW	
Environmental (all conditions, non-condensing)	Operating Temperature:		32° to 158° F (0° to 70° C)
	Relative Humidity:		5% to 95%
	Shock (Linear 2 m/Sec half-sine):		1000 G peak (operating)
*__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.			

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
Other Media	M-Disc	DVD media for storage preservation
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%

Technical Specifications - Removable Storage

	Maximum Wet Bulb Temperature	84° F (29° C)

HP 9.5mm Desktop G2 Slim SATA BDXL Blu-Ray Writer			
Height	9.5mm height		
Orientation	Either horizontal or vertical		
Interface type	SATA/ATAPI		
Disc recording capacity	Up to 128 GB QL, 100 GB TL, 50 GB DL or 25 GB standard SL		
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 0.29 lb (132g) without bezel		
		Triple-layer	**Quadruple-layer**
Write speeds	BD-R	Up to 4X	Up to 4X
	BD-RE	Up to 2X	Not supported
		Single-layer	**Double-layer**
	BD-R	Up to 6X	Up to 6X
	BD-RE	Up to 2X	Up to 2X
	DVD-R	Up to 8X	Up to 6X
	DVD-RW	Up to 6X	Not supported
	DVD+R	Up to 8X	Up to 6X
	DVD+RW	Up to 8X	Not supported
	CD-R	Up to 24X	
	CD-RW	Up to 10X	
	(This should be for read speeds)	**Triple-layer**	**Quadruple-layer**
	BD-R	Up to 6X	Up to 6X
	BD-RE	Up to 4X	Not supported
		Single-layer	**Double-layer**
	BD-ROM	Up to 6X	Up to 6X
	BD-R	Up to 6X	Up to 6X
Read speeds	BD-RE	Up to 6X	Up to 6X
	DVD-ROM	Up to 8X	Up to 8X
	DVD-R	Up to 8X	Up to 8X
	DVD-RW	Up to 8X	

Technical Specifications - Removable Storage

	DVD+R	Up to 8X	Up to 8X
	DVD+RW	Up to 8X	
	BDMV (AACS Compliant Disc)	Up to 6X/2X (Read/Play)	
	DVD-Video (CSS Compliant Disc)	Up to 8X/4X (Read/Play)	
	CD-R/RW/ROM	Up to24X	
	CD-DA(DAE)	Up to 24X/10X (Read/Play)	
Other Media	M-Disc	BR/DVD media for storage preservation	
Access time (typical reads, including settling)	Random	BD-ROM: 205 ms (typical), DVD-ROM: 185 ms (typical), CD-ROM: 165 ms (typical)	
	Full Stroke	BD-ROM: 350 ms (typical), DVD-ROM: 345 ms (typical), CD-ROM: 340 ms (typical)	
Power	Source	Slimline SATA DC power receptacle	
	DC Power Requirement	5 VDC ± 5%-100 mV ripple p-p	
	DC Current	5 VDC -1200 mA typical, 2000 mA maximum	
Environmental conditions (operating - non-condensing)	Temperature	41° to 122° F (5° to 50° C)	
	Relative Humidity	10% to 80%	
	Maximum Wet Bulb Temperature	84° F (29° C)	

HP 9.5mm Desktop G2 Slim DVD-ROM Drive		
Height	9.5mm	
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
	Random	DVD-ROM: 170 ms (typical), CD-ROM: 170 ms (typical)

Technical Specifications - Removable Storage

Access time (typical reads, including settling)	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 – Memory

SYSTEM MEMORY SUPPORT

The HP ProDesk 400 Business PC supports the 6th generation Intel® Core™ processor family. Based on a new PC micro-architecture, the processor is designed for a two-chip platform consisting of a processor and Platform Controller Hub (PCH). Unlike previous generations, the 6th generation Intel® Core™ processor includes an Integrated Memory Controller (IMC). The IMC supports DDR4 protocols with two independent, 64-bit wide channels each accessing one or two DIMMs.

- Two channels of non-ECC DDR4 unbuffered dual in-line memory modules (DIMM) or DDR4 unbuffered small outline dual in-line memory modules (SO-DIMM) with a maximum of two DIMMs per channel
- Single-channel and dual-channel memory organization modes
- Data burst length of eight for all memory organization modes
- Memory data transfer rates of up to 2133 MT/s; actual supported data transfer rate determined by the configured processor.
- 64-bit wide channels
- DDR4 system memory I/O voltage of 1.2V

Platform Memory Support

- The Microtower (MT) and Small Form Factor (SFF) platform supports up to two (2) industry-standard DDR4-SDRAM DIMMs.

- The AiO/DM platform supports up to two (2) industry-standard DDR4-SDRAM SO-DIMMs.

CAUTION: You must shut down the computer and disconnect the power cord before adding or removing memory modules. Regardless of the power-on state, voltage is always supplied to the memory modules as long as the computer is plugged in to an active AC outlet. Adding or removing memory modules while voltage is present may cause irreparable damage to the memory modules or system board.

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.

AUDIO

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

Broadcom BCM943228Z 802.11n 2x2 DualBand Combo PCIe x1 Card (Bluetooth® capable/disabled by default)		
	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 • 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 no support this band)
	Antenna Structure	2 transmit; 2 receive (2x2)
	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
	Security[1]	• 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 Power[2]	• 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 Sensitivity[4]	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 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	
	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.		

	HP Integrated Module with Bluetooth® 4.0+EDR Wireless Technology	
	Bluetooth® Specification	4.0+EDR Compliant
	Frequency Band	2402 to 2480 MHz
	Number of Available Channels	79 (1 MHz) available channels
	Data Rates and Throughput	3 Mbps data rate; throughput up to 2.17 Mbps
		Synchronous Connection Oriented links up to 3, 64 kbps, voice channels
		Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric
	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	**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 – Audio

	Range	Up to 33 ft (10 m)
	Electrical Interface	USB 2.0 compliant
	Bluetooth® Software Supported **Link Topology**	Microsoft Windows Bluetooth® Software
	Electrical Interface	Point to Point, Multipoint Pico Nets up to 7 slaves
	Bluetooth® Software Supported **Security**	Full support of Bluetooth® Security Provisions
	Power Management	Microsoft Windows ACPI, and USB Bus Support
	Power Management **Certifications**	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	ETS 300 328, ETS 300 826
	Certifications	Low Voltage Directive IEC950
		UL, CSA, and CE Mark
	Certifications **Bluetooth® Profiles Supported**	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] File Transfer Profile (FTP) Synchronization Profile (SYNC) Hard Copy Cable Replacement (HCRP)[1,2] Personal Area Networking Profile (PAN)[1,2] Human Interface Device Profile (HID)[1,2] FAX Profile (FAX) Basic Imaging Profile (BIP)[2] Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP)

Intel® 7265 802.11ac 2x2 DualBand Combo PCIe x1 Card (Bluetooth® capable/disabled by default)		
	Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac
	Interoperability	Wi-Fi certified
	Frequency Band	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 no support this band)
	Data Rates	• 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) • 802.11ac : MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz)
	Modulation	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM
	Security[1]	• 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
	Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
	Roaming	IEEE 802.11 compliant roaming between access points
	Output Power[2]	• 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 • 802.11ac 80MHz(5GHz) : +11dBm 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 Sensitivity[3]	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 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
	Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure

Technical Specifications – Audio

		Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications 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 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	
	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. 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).		

	HP Integrated Module with Bluetooth 4.2 Wireless Technology			
	Bluetooth® Specification	4.2 Compliant		
	Frequency Band	2402 to 2480 MHz		
	Number of Available Channels	79 (1 MHz) available channels		
	Data Rates and Throughput	3 Mbps data rate; throughput up to 2.17 Mbps		
		Synchronous Connection Oriented links up to 3, 64 kbps, voice channels		
		Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric		
	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	**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		
	Range	Up to 33 ft (10 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 **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	FCC (47 CFR) Part 15C, Section 15.247 & 15.249		

Technical Specifications – Audio

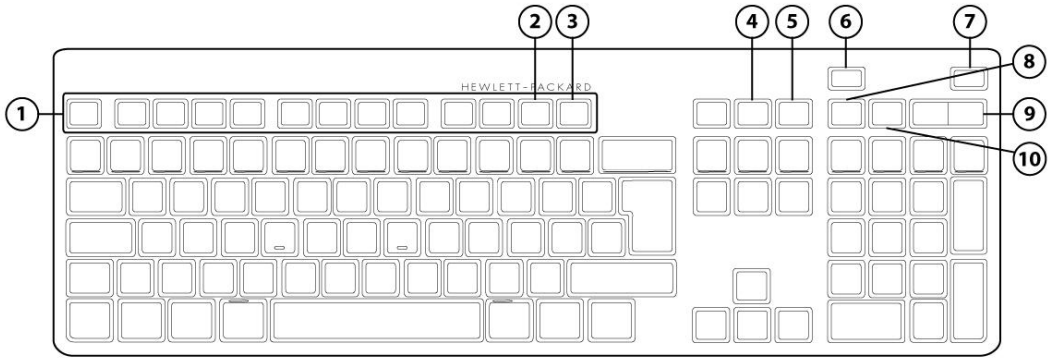
	Bluetooth® Profiles Supported	
	Power Management Certifications	ETS 300 328, ETS 300 826
		Low Voltage Directive IEC950
	Certifications	UL, CSA, and CE Mark
	Bluetooth® Profiles Supported	Serial Port Profile (SPP)[1] Service Discovery Application Profile (SDAP) Dial-Up Networking (DUN)[1,2] Generic Object Exchange Profile (GOEP)[1,2] Object Push Profile (OPP)[1,2] File Transfer Profile (FTP) Synchronization Profile (SYNC) Hard Copy Cable Replacement (HCRP)[1,2] Personal Area Networking Profile (PAN)[1,2] Human Interface Device Profile (HID)[1,2] FAX Profile (FAX) Basic Imaging Profile (BIP)[2] Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP)

High Definition Audio

Type	Integrated
HD Stereo Codec	Realtek 2-channel ALC3228-CG codec
Audio I/O Ports	Front microphone-In
	Rear Line-In
	Rear Line-Out
	Front Headphone-Out Front Microphone
	All ports are 3.5mm
Internal Speaker Amplifier	1.5W amplifier for the internal speaker only. External speakers must be powered externally.
Multi-streaming Capable	Playback 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 Mono Speaker	Yes
External Speaker Jack	Yes

INPUT/OUTPUT DEVICES

HP Conferencing Keyboard



1.	Function Keys	**6.**	End/Decline a Call
2.	F11 Lync or Skype for Business Contact list *	**7.**	Answer a Call
3.	F12 Lync or Skype for Business Calendar **	**8.**	Microphone Mute
4.	Share Screen	**9.**	Volume Up/Down
5.	Stop Webcam	**10.**	Audio Mute
*Microsoft Lync 2013, or Skype for Business, or Microsoft Outlook 2013 Contact list			
**Microsoft Lync 2013, or Skype for Business, or Microsoft Outlook 2013 Calendar			

Dimensions (H x L x W)	0.85 x 17.34 x 6.10 in (2.16 x 44.05 x 15.50 cm)
Weight	24.69 oz. (700 g)
Connectivity	USB cable
Keys	110 (US) Layout, 111 (EU) Layout – depending upon country
Feature Summary	Full-size ultra-quiet keyboard with numerical pad and 12 function keys One-touch simplicity for Microsoft Lync or Skype for Business calls with dedicated keys and LED light indicators
Illuminated keys	Incoming Call – Blinks Green Call in progress –Green Microphone Mute – Orange Audio Mute – Orange

Technical Specifications – Input/Output Devices

	Screen Sharing – Orange Stop Webcam – Orange
Other Call control keys	End/Decline Call Volume up and down rocker key
Microsoft Lync/Outlook	Fn+F12 – Lync or Skype for Business Calendar will open. If Lync or Skype for Business is not available will bring Outlook Calendar * Fn+F11 – Lync or Skype for Business Contact will open. If Lync or Skype for Business is not available will bring Outlook Contact list * * Fn+11 and Fn+12 function keys are not supported in Microsoft Windows 8.x Metro mode
Functions Keys	Fn+F10 – System Settings Fn+F9 – Devices Fn+F8 – Search Fn+F7 – Blank Fn+F6 – Up Brightness Adjustment Fn+F5 – Down Brightness Adjustment Fn+F4 – Display Options Fn+F3 – File Explorer Fn+F2 – System Lock Fn+F1 – System Sleep
System requirements	Available USB port Windows 7, Windows 8.x, and Windows 10 Server: Microsoft Lync Server 2010 or 2013 and Skype for Business Server 2015 Client: Microsoft Lync 2013 version 15.0.46xx or newer or Skype for Business Notes: • Limited support for Microsoft Lync 2010, Microsoft Lync 2013 Basic and Microsoft Metro Mode • Screen brightness functions supported in select HP systems
Approvals **EMC** **Product Safety**	FCC; CE; ACA(C-tick); EAC UL, CE Mark

HP PS/2 Business Slim Keyboard

Physical Characteristics	Keys	104, 105, 106, 107, 109 layout (depending upon country)
	Dimensions (L x W x H)	171.97 x 68.35 x 8.27 in (436.8± 1.5 x 137.6± 1.0 x 21.0± 1.0 cm)
	Weight	1.32 lb (600± 80 g)
Electrical	Operating voltage	+ 4.4 – 5.25VDC
	Power consumption	50-mA maximum (with 5 VDC power supplied and three LEDs ON)
	System interface	PS/2 6-pin mini din connector
	ESD	Contact Discharge: 2, 4,6,8KV Air Discharge: 2, 4, 8,10,12.5KV
	EMI - RFI	Conforms to FCC rules for a Class B computing device
	Microsoft PC 99 - 2001	Functionally compliant
	Keycaps	Low-profile design
	Switch actuation	60±12.5g nominal peak force with tactile feedback
	Switch life	10 million keystrokes (Life tester)
	Switch type	Contamination-resistant switch membrane
	Key-leveling mechanisms	For all double-wide and greater-length keys
	Cable length	6 ft (1.8 m)
	Microsoft PC 99 - 2001	Mechanically compliant
	Acoustics	43-dBA maximum sound pressure level
Environmental	Operating temperature	50° to 122° F (10° to 50° C)
	Non-operating temperature	-22° to 140° F (-30° to 60° C)
	Operating humidity	10% to 90% (non-condensing at ambient)
	Non-operating humidity	20% to 80% (non-condensing at ambient)

	Operating shock	N/A
	Non-operating shock	65 inch 2.9 ms, six surface; 30g 266 inch/second; 50g 266 inch/second six surface
	Operating vibration	2-g peak acceleration
	Non-operating vibration	Starting at 5 Hz, vary the frequency of vibration from 5 to 500 Hz and back to 5 Hz at a Logarithmic sweep rate of 1 octave per minute.
	Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
	Drop (in box)	29.93 in (76 cm) on concrete, 16-drop sequence
Approvals	UL, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, KC	
Ergonomic compliance	ANSI HFS 100, ISO 9241-4, and TUVGS	

HP USB Business Slim Keyboard

	Keys	104, 105, 106, 107, 109 layout (depending upon country)
Physical characteristics	Dimensions (L x W x H)	171.97 x 68.35 x 8.27 in (436.8± 1.5 x 137.6± 1.0 x 21.0± 1.0 cm)
	Weight	1.32 lb (0.6± 0.08 kg)
Electrical	Operating voltage	+ 4.4 – 5.25VDC
	Power consumption	50-mA maximum (with 5 VDC power supplied and three LEDs ON)
	System interface	USB Type A plug connector
	ESD	Contact Discharge: 2, 4,6,8KV Air Discharge: 2, 4, 8,10,12.5KV
	EMI - RFI	Conforms to FCC rules for a Class B computing device
	Microsoft® PC 99 - 2001	Functionally compliant
Mechanical	Keycaps	Low-profile design

Technical Specifications – Input/Output Devices

	Switch actuation	60±12.5g nominal peak force with tactile feedback
	Switch life	10 million keystrokes (Life tester)
	Switch type	Contamination-resistant switch membrane
	Key-leveling mechanisms	For all double-wide and greater-length keys
	Cable length	6 ft (1.8 m)
	Microsoft PC 99 - 2001	Mechanically compliant
	Acoustics	43-dBA maximum sound pressure level
	Operating temperature	50° to 122° F (10° to 50° C)
	Non-operating temperature	-22° to 140° F (-30° to 60° C)
	Operating humidity	10% to 90% (non-condensing at ambient)
	Non-operating humidity	20% to 80% (non-condensing at ambient)
Environmental	Operating shock	40 g, six surfaces
	Non-operating shock	80 g, six surfaces
	Operating vibration	2-g peak acceleration
	Non-operating vibration	4-g peak acceleration
	Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
	Drop (in box)	30 in (76.2 cm) on concrete, 16-drop sequence
Approvals	UL, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, KC	
Ergonomic compliance	ANSI HFS 100, ISO 9241-4, and TUVGS	
Kit contents	Keyboard	Installation Guide
	Warranty Card	Safety and Comfort Guide

HP Wireless Business Slim Keyboard and Mouse

Keyboard	Dimensions (L x W x H)	171.97 x 68.35 x 8.27 in (436.8± 1.5 x 137.6± 1.0 x 21.0± 1.0 cm)
	Weight – Without Two AA Alkaline Batteries	1.23 lb (560± 80 g)
Mouse	Dimensions (H x L x W)	1.46 x 4.53 x 2.47 in (37 x 115 x 62.9 mm)
	Weight – Without Two AA Alkaline Batteries	0.15 lb (67 g)
Receiver	Dimensions (H x L x W)	0.33x 1.79 x 0.72 in (8.4 x 45.5 x 18.4 mm)
	Weight	0.21 oz (5.9 g)
	Cable Length – Minimum	6 ft (1.8 m)
	Range	32.8 ft (10 m)
System Requirements	Available USB port for the receiver CD-ROM Drive *This system may require upgraded and/or separately purchased hardware and/or a DVD drive to install the Windows 7 software and take full advantage of Windows 7 functionality. See http://www.microsoft.com/windows/windows-7/ for details.	
Approvals	Product Safety	UL; CSA /TUV (Europe only); CE Mark; CB Report
	Ergonomics	ANSI; ISO (Europe only); GS Mark (Germany only)
	EMC	FCC; CE; ACA (-tick); BSMI; KC ; VCCI
	CE Mark	EN 55022:2010; EN 55024; EN 301489-1; EN 61000
	Design Guidelines for PCs	PC 99 – connector overmold colors; PC 2001 – full functionality
	Telecom	All local telecom requirements and approvals for intended markets
	USA	FCC Title 47 CFR, Par 15, Subpart C; other local requirements
	Country Support	US, Belgium, Switzerland, Spain, Denmark, Netherlands, France, Germany, Italy, Portugal, Sweden, Norway, Finland, UK, Poland, Czech Republic, Turkey, Greece, Austria, Bulgaria, Cyprus, Estonia, Hungary, Ireland, Latvia, Lithuania, Luxemburg, Malta, Romania, Slovakia, Slovenia, Vietnam, HK, Australia, NZ, Malaysia, Singapore, Indonesia, Philippines, Thailand, Canada, China, Japan, Korea, Taiwan, India, Venezuela, Ecuador, Russia, Ukraine, Israel, Croatia, United Arab Emirates, Peru, Brazil, Chile, Argentina, Mexico, South Africa, and up to 193 countries worldwide.
Environmental	Keyboard contains 25% post-consumer recycled plastic material.	

HP PS/2 Keyboard		
Physical Characteristics	Keys	104, 105, 106, 107, 109 layout (depending upon country)
	Dimensions (L x W x H)	18.12 x 6.47 x 0.96 in (46.03 x 16.43 x 2.44 cm)
	Weight	2 lb (0.9 kg) minimum
Electrical	Operating voltage	+ 5VDC ± 5%
	Power consumption	50-mA maximum (with three LEDs ON)
	System interface	PS/2 6-pin mini din connector
	ESD	CE level 4, 15-kV air discharge
	EMI - RFI	Conforms to FCC rules for a Class B computing device
	Microsoft PC 99 - 2001	Functionally compliant
Mechanical	Keycaps	Low-profile design
	Switch actuation	55-g nominal peak force with tactile feedback
	Switch life	20 million keystrokes (using Hasco modified tester)
	Switch type	Contamination-resistant switch membrane
	Key-leveling mechanisms	For all double-wide and greater-length keys
	Cable length	6 ft (1.8 m)
	Microsoft PC 99 - 2001	Mechanically compliant
Environmental	Acoustics	50-dBA maximum sound pressure level
	Operating temperature	32° to 104° F (0° to 40° C)
	Non-operating temperature	-22° to 140° F (-30° to 60° C)
	Operating humidity	15% to 80% (non-condensing at ambient)
	Non-operating humidity	15% to 90% (non-condensing at ambient)
	Operating shock	N/A
	Non-operating shock	65 inch 2.9 ms, six surface; 30g 266 inch/second; 50g 266 inch/second six surface
	Operating vibration	2-g peak acceleration
	Non-operating vibration	Starting at 5 Hz, vary the frequency of vibration from 5 to 500 Hz and back to 5 Hz at a Logarithmic sweep rate of 1 octave per minute.
	Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
	Drop (in box)	29.93 in (76 cm) on concrete, 16-drop sequence
Approvals	CUL, ICES-003 Class B, FCC, CE Mark,TUV GS, VCCI, BSMI, C-Tick, KC	
Ergonomic compliance	ANSI HFS 100, ISO 9241-4, and TUVGS	

HP USB Smart Card (CCID) Keyboard

Introduction:

Boost your security, simplify access procedures and reduce the costs associated with managing networks by preventing unauthorized access to your computers and networks using smartcard technology with the HP Smart Card (CCID) Keyboard.

The USB Smart Card (CCID) Keyboard is a full-sized keyboard that takes advantage of digital signatures and certificates to secure the environment for transactions performed on both public and private networks. The USB Smart Card (CCID) Keyboard works with all smart cards that comply with ISO standard 7816.

Smart cards are easy-to-use credit card-sized devices which require multiple forms of information to be validated before you gain access to your accounts or resources. Used worldwide, smart cards strengthen access to a network or other resource using dual-factor authentication. Implementing a two-factor authentication (or multi-factor authentication) process reduces the risk of unauthorized access by verifying and validating your identity in one of the following ways:

- Something you know – a combination of username and password or PIN
- Something you have – a smart card or security token.

Something you have (smart card) plus something you know (PIN), improves user-access security within corporate network environments. Smart cards are used in government agencies, healthcare companies and the finance industry.

HP ProtectTools Smart Card Manager provides authentication software for the smart card. The Smart Card Reader module works with the HP ProtectTools Security Manager and enables the user to setup, use, and manage the smart card. This allows strengthened security with HP patented technology.

Key Benefits:	• Protects against unauthorized access with smart card technology • Delivers even greater security when combined with a HP ProtectTools smart card and the HP ProtectTools Security Software • Combination of username and password or pin with a smart card or security token • Secures online transactions using digital signatures and certificates • Conforms to industry standards for ease of setup and use • Delivers long product life and quiet operation with high-impact materials and lubricated keys • Spill drain feature	
Physical Characteristics	Keys	104, 105, 106, 107, 109 layout (depending upon country
	Form factor	USB basic smart card keyboard
	Colors	Carbonite/Silver
	Dimensions (H x W x D)	18.2 x 6.3 x 1.3 in (46.3 x 16.1 x 3.3 cm)
	Weight	2 lb (0.9 kg) minimum
Electrical	Operating voltage	+ 5VDC ± 5%
	Power consumption	100-mA maximum (with four LEDs ON)
	System interface	USB Type A plug connector
	ESD	CE level 4, 15-kV air discharge
	EMI - RFI	Conforms to FCC rules for a Class B computing device
	Microsoft PC 99 - 2001	Functionally compliant
Mechanical	Languages	30+ available
	Keycaps	Standard design

Technical Specifications – Input/Output Devices

	Switch actuation	55 g nominal peak force with tactile feedback	
	Switch life	20 million keystrokes (using Hasco modified tester)	
	Switch type	Contamination-resistant membrane	
	Key-leveling mechanisms	For all double-wide and greater-length keys	
	Cable length	6 ft (1.8 m)	
	Microsoft PC 99 - 2001	Mechanically compliant	
	Acoustics	43-dBA maximum sound pressure level	
Environmental	Operating temperature	50° to 122° F (10° to 50° C)	
	Non-operating temperature	-22° to 140° F (-30° to 60° C)	
	Operating humidity	10% to 90% (non-condensing at ambient)	
	Non-operating humidity	20% to 80% (non-condensing at ambient)	
	Operating shock	40 g, six surfaces	
	Non-operating shock	80 g, six surfaces	
	Operating vibration	2-g peak acceleration	
	Non-operating vibration	4-g peak acceleration	
	Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence	
	Drop (in box)	42 in (107 cm) on concrete, 16-drop sequence	
SmartCard Function	Support	All ISO 7816 smart cards	
	Interface	Reads from and writes to all ISO7816-1, 2, 3, 4 memory and microprocessor smart cards (T=0, T=1)	
	Chipset	SCM STCIII	
	Standard APIs supported	PC/SC, EMV2000, CT-API	
	Power	USB Port	
		Short circuit detection (protects smart card and reader)	
		Power supply compliant with ISO7816 and EMV (5V, 60 mA)	
		Supports 3-V and 5-V cards	
	Power consumption	100-mA maximum draw	
	Communication	From card	9600 bps to 330,000 bps
		From computer	12 Mbps (USB transfer speed)
	Landing mechanism	Contact device	Friction contact
		Card insertions rating	Up to 100,000 insertion cycles
	Interface modes	CCID protocol	
	Reader performance interface	USB connection	
	Electro-magnetic standards	Europe	2004/108/EC
		USA	USAFCC part 15
Approvals	CE-Mark, UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC, EMV2000, USB-IF		
Ergonomic Compliance	ISO 9241-4, TUVGS		
Kit Contents	Keyboard, I/O Security and Documentation CD, warranty card		

Technical Specifications – Input/Output Devices

HP USB PS/2 Washable Keyboard		
Physical Characteristics	Keys	104 (US) Layout, 105 (EU) layout - depending upon country
	Dimensions (L x W x H)	17.67x 6.62 x 1.38 in (449 x 168 x 35 mm)
	Weight	1.7 lb (0.77 kg) minimum
Electrical	Operating voltage	+ 5VDC ±5%
	Power consumption	50-mA maximum (with three LEDs ON)
	System interface	USB Type A plug connector
	ESD	CE level 4, 15-kV air discharge
	EMI - RFI	Conforms to FCC rules for a Class B computing device
	Microsoft® PC 99 - 2001	Functionally compliant
Mechanical	Keycaps	Stepped -profile design
	Switch actuation	55-g nominal peak force with tactile feedback
	Switch life	20 million keystrokes
	Switch type	Contamination-resistant switch membrane
	Key-leveling mechanisms	For all double-wide and greater-length keys
	Cable length	7 ft (2.2 m)
	Microsoft PC 99 - 2001	Mechanically compliant
	Acoustics	43-dBA maximum sound pressure level
Environmental	Operating temperature	50° to 122° F (10° to 50° C)
	Non-operating temperature	4° to 149° F (-20° to 65° C)
	Operating humidity	10% to 95% (non-condensing at ambient)
	Non-operating humidity	0% to 95% (non-condensing at ambient)
	Operating shock	40 g, six surfaces
	Non-operating shock	80 g, six surfaces
	Operating vibration	2-g peak acceleration
	Non-operating vibration	4-g peak acceleration
	Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
	Drop (in box)	42 in (107 cm) on concrete, 16-drop sequence
Approvals	UL, cUL, FCC, CE, TUV GS, VCCI, BSMI, C-Tick, KCC, USB-IF, WHQL, EN/IEC 60601-1, IP66/NEMA4X	
Ergonomic compliance	ANSI HFS 100, ISO 9241-4, and TUVGS	

Technical Specifications – Input/Output Devices

HP PS/2 Mouse		
Dimensions (H x L x W)	1.46 x 2.48 x 4.53 in (3.70 x 6.29 x 11.50 cm)	
Weight	3.53 oz (100g; +10g/- 5 g)	
Environmental	Operating temperature	-32° to 104°F (0° to 40° C)
	Non-operating temperature	-4° to 140°F (-20° to 60° C)
	Operating humidity	10% to 90% (non condensing at ambient)
	Non-operating humidity	10% to 90% (non condensing at ambient)
	Operating shock	40 g, 6 surfaces
	Non-operating shock	80 g, 6 surfaces
	Operating vibration	2 g peak acceleration
	Non-operating vibration	4 g peak acceleration
	Drop (out of box)	80 cm height onto asphalt tile over concrete or equivalent, 5-drop in 5 direction except the cable face
Electrical	Operating voltage	5 VDC ± 10%
	Power consumption	100mA
	System consumption	PS/2 mini-din connector
	ESD	CE level 4, 15 kV air discharge
	EMI-RFI	Conforms to FCC rules for a Class B computing device
	Microsoft PC99 - 2001	Functionally compliant
Mechanical	Resolution	800 DPI
	Tracking speed	10 in/s (25.4 cm/s) maximum
	Acceleration	±15%
	Switch actuation	65±20 gf
	Switch life	3,000,000 operations (using Hasco modified tester)
	Switch type	Low force micro-switches
	Tracking mechanism life	80 km
	Cable length	6 ft (1.8 m)
	Microsoft PC99 - 2001	Mechanically compliant
Scroll wheel	Width	6 mm
	Diameter	22.5 ± 0.2 mm
	Maximum rotation force	50 gf-cm
	Switch type	Light force micro-switch
	Switch life	1 million operations

	Mechanical life	Minimum 200,000 revolutions
Regulatory Approvals	UL/cUL, FCC, CE Mark, TUV/GS, VCCI, KCC, BSMI, C-Tick	

HP USB 1000dpi Laser Mouse		
Dimensions (H x L x W)	1.47 x 4.53 x 2.47 in (37.3 x 114.97 x 62.86 mm)	
Weight	3.360 oz (102g)	
Cable length	70.9 in (180 cm)	
System requirements	Available USB port	
Environmental	Operating Temperature	32° to 104° F (0° to 40° C)
	Non-operating Temperature	-4° to 140° F (-20° to 60° C)
	Operating Humidity	10% to 90% (non-condensing at ambient)
Mechanical	Resolution	1000dpi
	Tracking Speed	45 cm/sec
	Cable Length	70.9 in (180 cm)

HP USB PS/2 Washable Mouse		
Dimensions (H x L x W)	1.56 x 2.44 x 4.61 in (3.95 x 6.21 x 11.7 cm)	
Weight	4.44 oz (126 g)	
Environmental	Operating temperature	–32° to 104°F (0° to 40° C)
	Non-operating temperature	–4° to 140°F (–20° to 60° C)
	Operating humidity	10% to 90% (non-condensing at ambient)
	Non-operating humidity	10% to 90% (non condensing at ambient)
	Operating shock	40 g, 6 surfaces
	Non-operating shock	80 g, 6 surfaces
	Operating vibration	2 g peak acceleration
	Non-operating vibration	4 g peak acceleration
	Drop (out of box)	80 cm height onto asphalt tile over concrete or equivalent, 5-drop in 5 direction except the cable face
Electrical	Operating voltage	5 VDC ± 10%
	Power consumption	100mA
	System consumption	PS/2 mini-din connector
	ESD	CE level 4, 15 kV air discharge
	EMI-RFI	Conforms to FCC rules for a Class B computing device
	Microsoft® PC99 – 2001	Functionally compliant
Mechanical	Resolution	400 ± 20% DPI

Technical Specifications – Input/Output Devices

	Tracking speed	10 in/s (25.4 cm/s) maximum
	Acceleration	100 in/s/s (2.54 m/s/s)
	Switch actuation	61 g nominal peak force
	Switch life	3,000,000 operations (using Hasco modified tester)
	Switch type	Low force micro-switches
	Tracking mechanism life	155 mi (250 km) at average speed of 10 in/s
	Cable length	6 ft (1.8 m)
	Microsoft PC99 – 2001	Mechanically compliant
Scroll wheel	Width	8 mm
	Diameter	1.01 in (25.6 mm)
	Maximum rotation speed	48 rats/sec
	Switch type	Light force micro-switch
	Switch life	1 million operations
	Mechanical life	Minimum 200,000 revolutions
Regulatory approvals	Compliant	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC

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

	DM	AiO	SFF	MT
Standard Efficiency	65W active PFC 89%/230Vac & 88%/115Vac average efficiency	90W active PFC 89%/230Vac & 88%/115Vac average efficiency 120W active PFC 89%/230Vac & 88%/115Vac average efficiency	N/A	180W/ 300W active PFC 68% efficiency at full load (230V only) 180W/ 300W non-PFC 68% efficiency at full load
80 PLUS Bronze	N/A	N/A	180W active PFC 82/85/82% efficient at 20/50/100% load (115V)	180W active PFC 82/85/82% efficient at 20/50/100% load (115V) 300W active PFC 82/85/82% efficient at 20/50/100% load (115V)
Operating Voltage Range	90 - 264 VAC	90 -264VAC	90 - 264 VAC	90 - 264 VAC

Technical Specifications – Power

Rated Voltage Range	100 - 240 VAC	100-240V AC	100 - 240 VAC	100 - 240 VAC (E* and non PFC) 200- 240VAC (for APFC PSU)
Rated Line Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Operating Line Frequency	47 – 63 Hz	47 – 63 Hz	47 – 63 Hz	47 – 63 Hz
Rated Input Current	N/A			3A (for 180W aPFC) 3A (for 300W aPFC 6A (for 180/300W non PFC)
Rated Input Current with Energy Efficient* Power Supply	65W/1.7A	90W/1.4A 120W/2A	3.6A	6A (for 180W E*) 6.3A (for 300W E*)
DC Output	+19.5V	+19.5V	+12V/ +5.5V/+3.3V	+12V/+5.5V/+3.3V/+5Vsb
Current Leakage (NFPA 99: 2102)	Less than 500 microamps of leakage current at 120 Vac with the ground wire disconnected, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1.	Less than 500 microamps of leakage current at 120 Vac with the ground wire disconnected, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1.	Less than 500 microamps of leakage current at 120 Vac with the ground wire disconnected, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1.	
	Less than 100 microamps of leakage current at 120 Vac with the ground wire intact with normal polarity, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1.	Less than 100 microamps of leakage current at 120 Vac with the ground wire intact with normal polarity, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1.	Less than 100 microamps of leakage current at 120 Vac with the ground wire intact with normal polarity, as required for Non-patient Electrical Appliances and Equipment used in a patient care facility or that contact patients in normal use. Per section 10.3.5.1.	
Power Supply Fan	N/A		50mm Fan	80mm Fan
Power cord length	6.0 ft. (1.83 m)	6.0 ft. (1.83 m)	N/A	N/A
External Power Adapter				
Dimensions	55x30x114mm (60W)	58x32x135 (90W) 75 x26x148 (120W)	-	-
Total Cord Length	6 ft	6 ft	-	-

Technical Specifications – Power

*High efficiency power supply is a requirement for ENERGY STAR® certification in conjunction with a select range of processors and modules

WEIGHTS & DIMENSIONS

(Configured with 2TB HDD, Wi-Fi card, graphics card)

	400 G2 DM	400 G2 AiO	400 G3 SFF	400 G3 MT	490 G3 MT
Chassis (W x H x D)	6.9 x 1.3 x 7.0 in 175 x 34 x 177 mm	**See table below**	3.7x10.6x11.8 in 95x270x296 mm	6.5x14x14.1 in 165x355x358.8mm	6.5x14x14.1 in 165x355x358.8mm
System Volume	62.79 cu in 1.05 L		7.7 L	1322.58 cu in 21.62 L	1322.58 cu in 21.62 L
System Weight*	2.9 lb 1.3 kg		9.8lb 4.43kg	15.5 lb 7.05 kg	15.5 lb 7.05 kg
Max Supported Weight (desktop orientation)	77.0 lb 35.0 kg		4.4 kg	77.0 lb 35.0kg	77.0 lb 35.0 lb
Tower Stand (H x W x D)	77x 4.6 x 6.3 in 19.5 x 117 x 160 mm Weight: 47g/ .1 lbs.		27.29 x 151.75 x 190 mm 1.15x 5.97 x 7.48 in	N/A	N/A
Packaged (H x W x D)	9.6 x 5.1 x 19.5 in 245 x 130 x 495 mm		440 x 210 x 520 mm 17.32 x 8.27 x 20.47 in	CCID SC KB for 240 type 520x 255 x 496mm 20.47x10.04x19.53 in STD KB for 225 type 520x 240x 496mm 20.47x9.45x19.53in	CCID SC KB for 240 type 520 x 255x 496mm 20.47x10.04x19.53 in STD KB for 225type 520x 240x 496mm 20.47x9.45x 9.53in
Shipping Weight	6.1 lb. 2.8 kg		7.07 kg (15.58lb)	9.89 kg (21.81 lb)	9.89 kg (21.81 lb)
Multi-Unit Packaging (10 units)	23.58 x 19.65 x 27.64 in 599 x 499 x 702 mm				
Shipping Weight	108 lbs /49 kg				
Palletization Profile	18-units per layer 4 layer max 72 per pallet Footprint (H x W x D) - 38.58 x 46.06 x 38.97 in (980 x 1170 x 990 mm)		SEA 10-units per layer 4-layer max. 40-units per pallet AIR 10-units per layer 2-layer max. 20-units per pallet	SEA 10 units per layer 4 layers max 40 units per pallet AIR 10 units per layer 2 layers max 20 units per pallet	SEA 10 units per layer 4 layers max 40 units per pallet AIR 10 units per layer 2 layers max 20 units per pallet

Technical Specifications – Weights & Dimensions

Weight with Touch Panel (400 G2 AiO)

Product Weight Unboxed	Without Stand 12.015~12.456 lbs 5.45~5.65 kg	Easel Stand 13.5~13.93 lbs 6.12~6.32 kg	Adjustable Height Stand 20.35~20.79 lbs 9.23~9.43 kg	Recline Stand 18.73~19.18 lbs 8.5~8.7 kg
Shipping Weight Boxed	Without stand 17.085 lbs 7.75 kg	Easel stand 18.55 lbs 8.42 kg	Adjustable Height stand 26.31 lbs 11.93 kg	Recline Stand 24.69 lbs 11.20 kg
Shipping Weight Pallet	Without stand (40 units) 775.23 lbs 324.76 kg	Easel stand (40units) 775.23 lbs 351.64 kg	Adjustable Height stand(24 units) 664.46 lbs 301.39 kg	Recline Stand (24 units) 625.62 lbs 283.78 kg

Weight without Touch Panel (400 G2 AiO)

Product Weight Unboxed	Without Stand 10.97~11.419 lbs 4.98~5.18 kg	Easel Stand 12.45 ~ 12.9 lbs 5.65~5.85 kg	Adjustable Height Stand 19.31~19.75 lbs 8.76 ~ 8.96 kg	Recline Stand 17.91~18.144 lbs 8.03 ~ 8.23 kg
Shipping Weight Boxed	Without Stand 14.881 lbs 6.75 kg	Easel Stand 17.52 lbs 7.42 kg	Adjustable Height Stand 25.27 lbs 11.46 kg	Recline Stand 23.65 lbs 10.73 kg
Shipping Weight Pallet	Without Stand (40 units) 674.43 lbs 305.92 kg	Easel Stand (40 units) 733.70 lbs 332.8 kg	Adjustable Height Stand (24 units) 639.53 lbs 290.09 kg	Recline Stand (24 units) 600.70 lbs 272.47 kg

Dimensions (W x D x H) (400 G2 AiO)

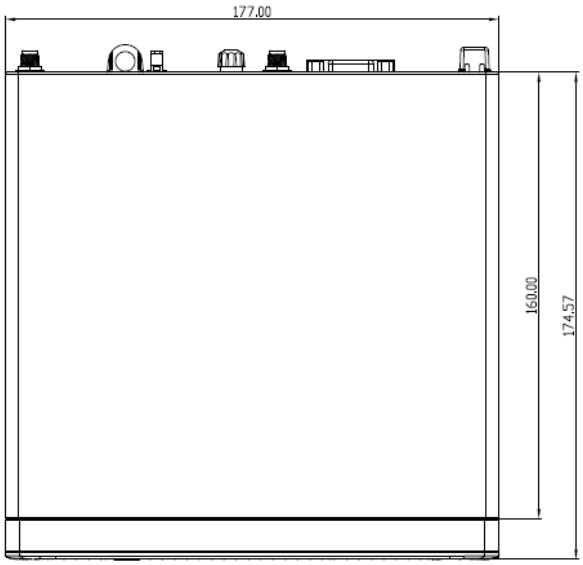
Product Dimensions(X*Y*Z)	Without Stand 19.55x13.68x2.31 in 496.71x347.5x58.7 mm	Easel Stand 19.55x13.68x6.35 in 496.71x347.5x161.45 mm	Adjustable Height Stand (maximum) 19.55x21.707x8.27 in 496.71x551.373x209.95 mm	Recline Stand (minimum) 19.55 x14.19 x10.26 in 496.71 x360.46 x277.49 mm
			Adjustable Height Stand (minimum) 19.55 x15.217 x8.27 in 496.71x386.53 x209.95 mm	Recline Stand (minimum) 19.55 x16.15 x10.26 in 496.71 x410.2 x277.49 mm

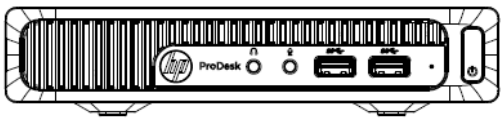
Shipping Dimensions (400 G2 AiO)

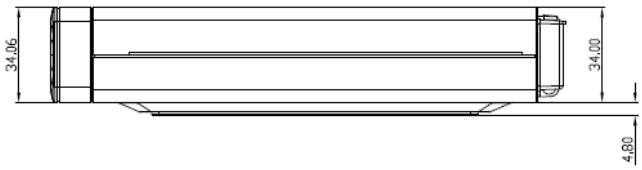
Shipping Dimensions Boxed	Without Stand 22.72*7.36*17.80(H) in 577*187*452(H) mm	Easel Stand 22.72*7.36*17.80(H) in 577*187*452(H) mm	Adjustable Height Stand 22.83*11.50*18.31(H) in 580*292*465(H) mm	Recline Stand 22.83*11.50*18.31(H) in 580*292*465(H) mm
Shipping Dimensions Pallet	Without Stand (40 units) 48*40*76.89(H) in 1219*1016*1953(H) mm	Easel Stand(40 units) 48*40*76.89(H) in 1219*1016*1953(H) mm	Adjustable Height Stand (24 units) 48*40*78.94(H) in 1219*1016*2005(H) mm	Recline Stand (24 units) 48*40*78.94(H) in 1219*1016*2005(H) mm

Technical Specifications – Weights & Dimensions

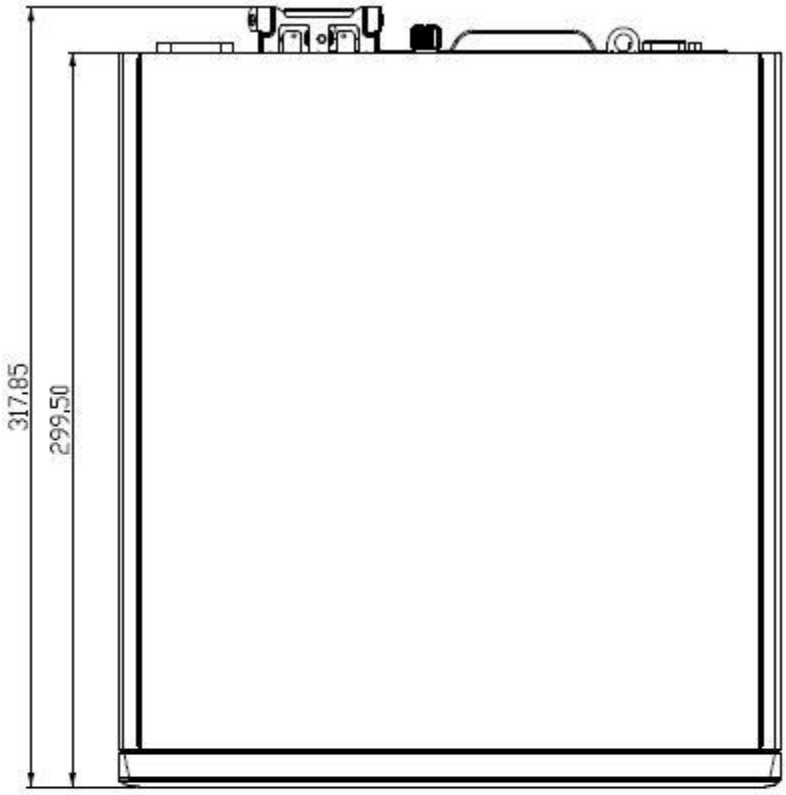
Desktop Mini Dimensions

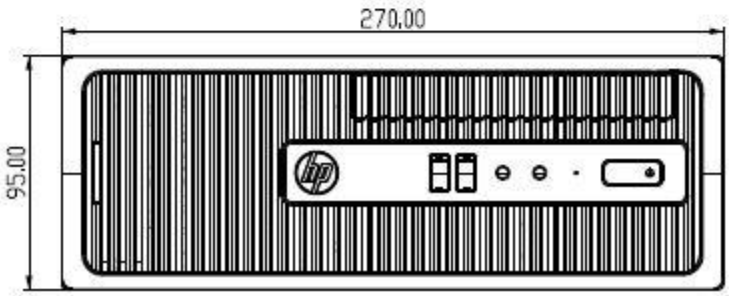






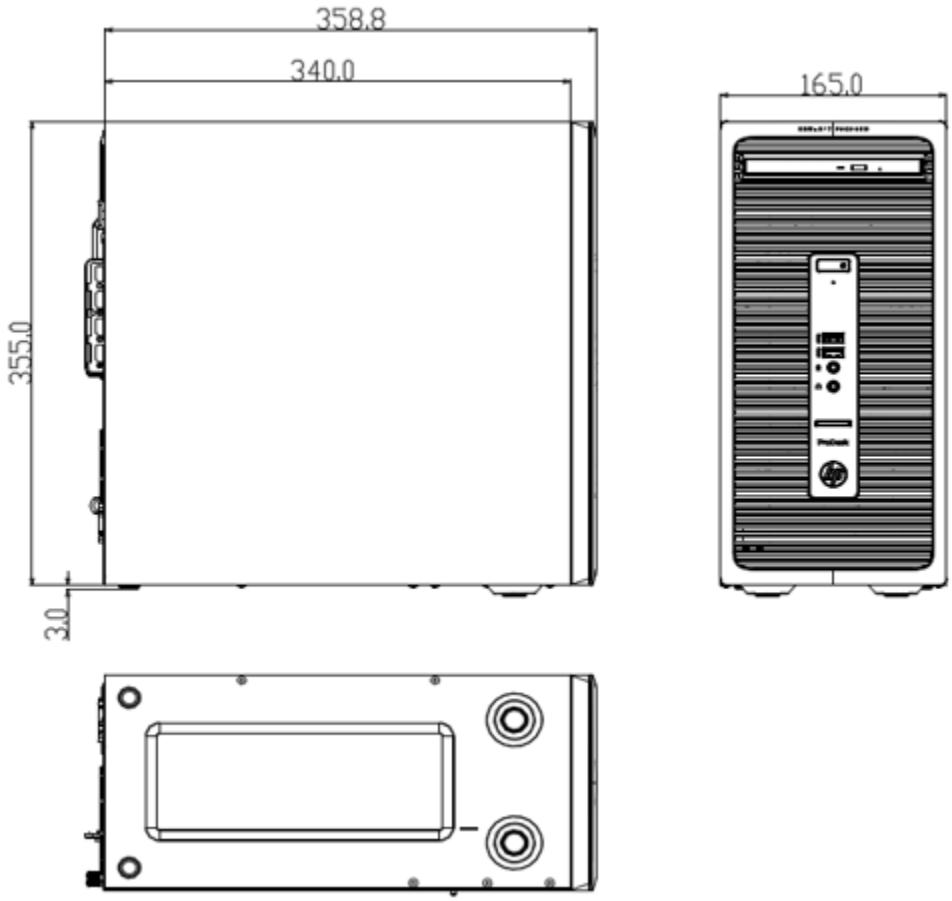
Small Form Factor Dimensions





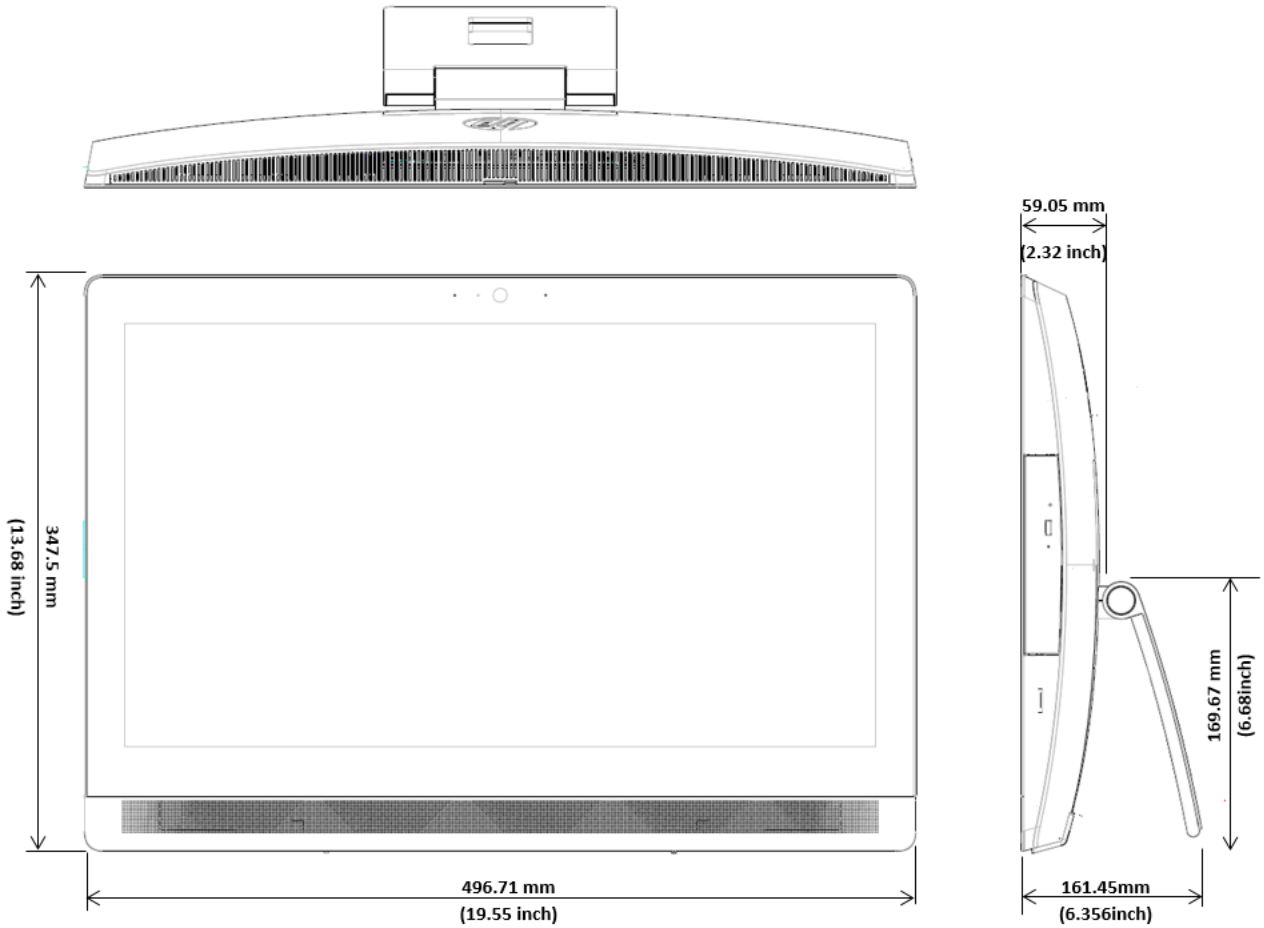
Technical Specifications – Weights & Dimensions

Mictrotower Dimensions



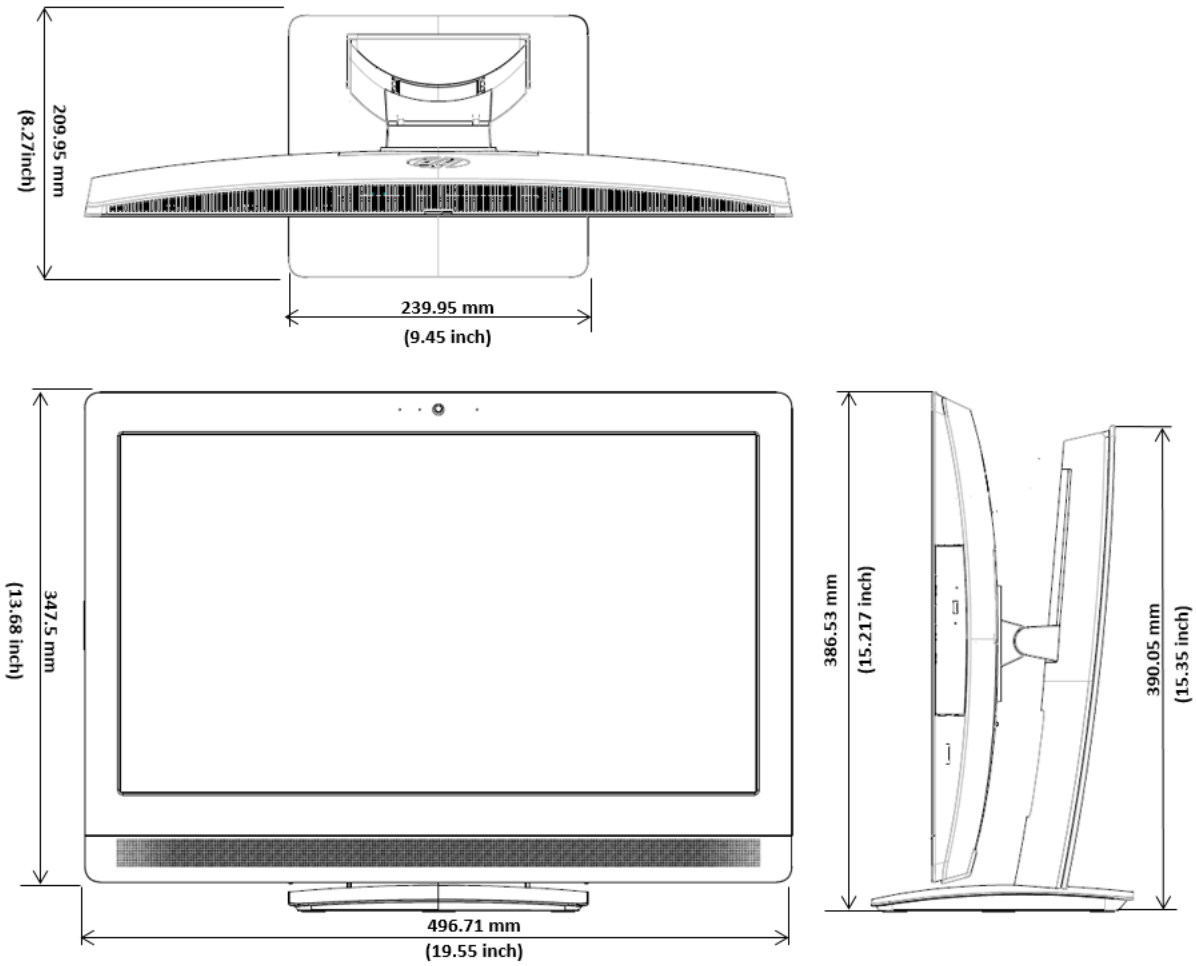
Technical Specifications – Weights & Dimensions

All-in-One Easel Stand Dimensions



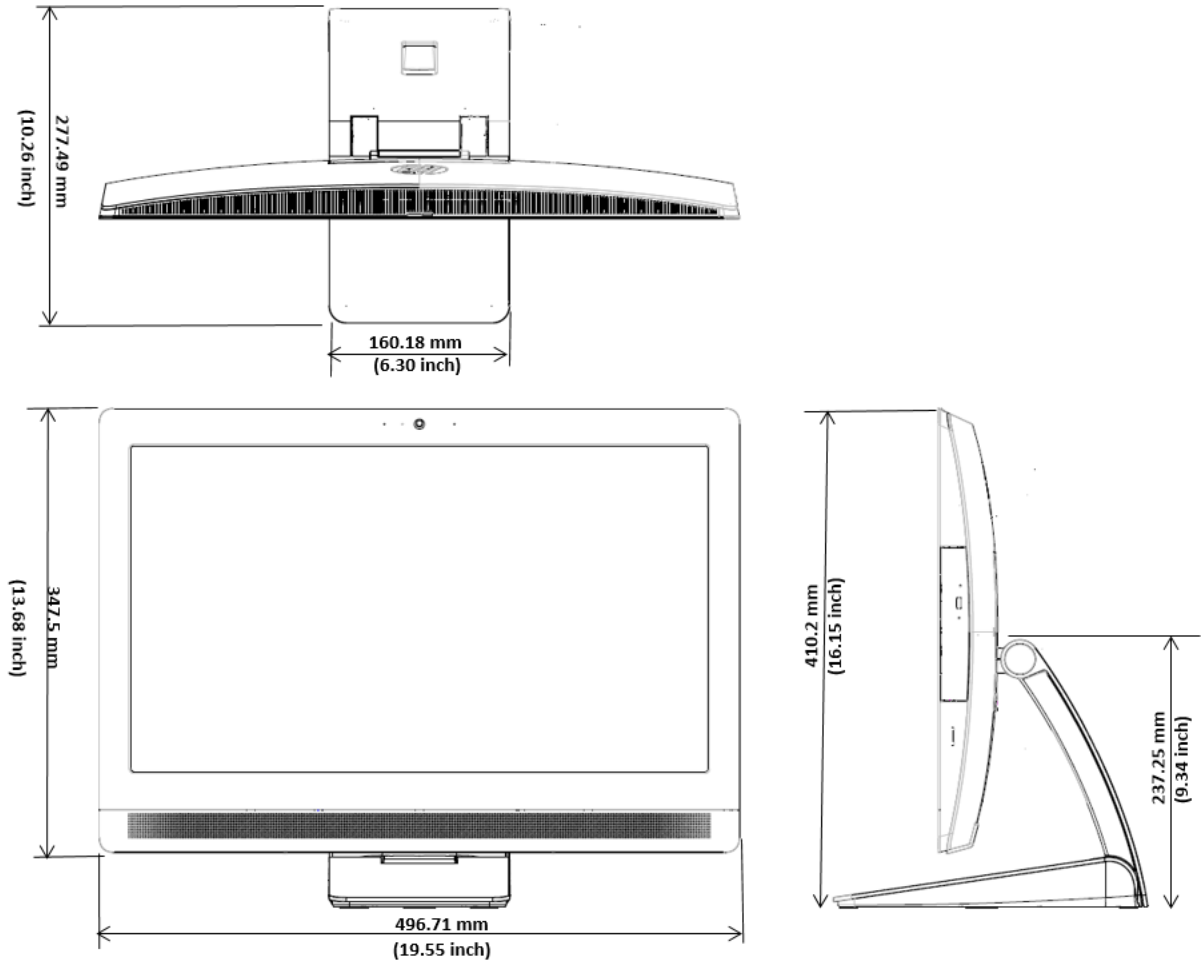
Technical Specifications – Weights & Dimensions

All-in-One Height Adjustable Stand Dimensions



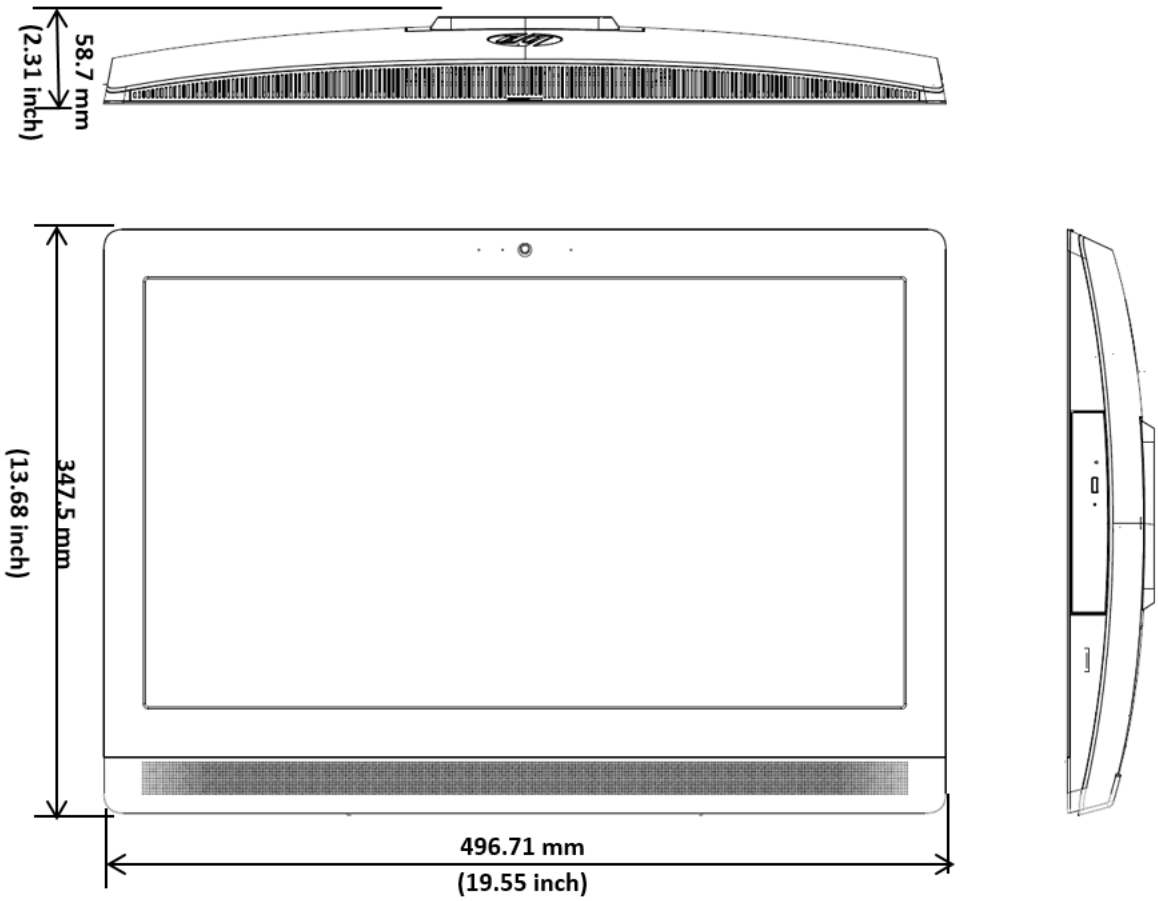
Technical Specifications – Weights & Dimensions

All-in-One Recline Stand Dimensions



Technical Specifications – Weights & Dimensions

All-in-One Head Only Dimensions



MANAGEMENT FEATURES

- Advanced Configuration and Power Management Interface (ACPI). Allows the system to wake from a low power mode. Controls system power consumption, making it possible to place individual cards and peripherals in a low-power or powered-off state without affecting other elements of the system.
- Intel® Wired for Management support; industry wide initiative to make Intel® architecture based PCs, servers and mobile computers more inherently manageable out-of-the-box and over the network
- Dual State Power Button; acts as both an on/off button and a suspend-to-sleep button

Serviceability Features

- Dual colored power LED on front of computer to indicate either normal or fault condition
- Diagnostic LED Explanation Table:
    - Number of 1 - The main area (DXE) of BIOS has become corrupted and there is no recovery binary image available (Power LED 2 red, 2 white)
        - 2 - The embedded controller policy requires the user to enter a key sequence (SureStart 2.0) (Power LED 2 red, 3 white)
        - 3 - The embedded controller is recovering the boot block or DXE. Since it takes 10 sec. or so to load the DXE image and get video in the DXE case, this blink code is necessary. (SureStart) (Power LED 2 red, 4 white)
        - 4 - The embedded controller has timed out waiting for BIOS to return from memory initialization (Power LED 3 red, 2 white)
        - 5 - The embedded controller has timed out waiting for BIOS to return from graphics initialization (Power LED 3 red, 3 white)
        - 6 - The system board displays a power failure (crowbar) * (Power LED 3 red, 4 white)
        - 7 - The CPU is not being detected * (Power LED 3 red, 5 white)
        - 8 - The CPU does not support an enabled feature *(typically this applies only to TXT)* (Power LED 3 red, 6 white)
        - 9 - A CPU over temperature condition has been detected * (Power LED 4 red, 2 white)
        - 10 - The embedded controller cannot find valid firmware (Power LED 5 red, 2 white)
- HP PC Hardware Diagnostics UEFI:
    - This utility enables hardware level testing outside the operating system on many components. The diagnostics can be invoked by pressing F2 at POST, and is available as a download from http://hp.com/go/techcenter/pcdiags
- System/Emergency ROM
- Flash ROM
- CMOS Battery Holder for easy replacement
- Flash Recovery with Video Configuration Record Software
- 5 Aux Power LED on System PCA
- Processor ZIF Socket for easy Upgrade
- Over-Temp Warning on Screen (Requires IM Agents)
- Clear Password Jumper
- DIMM Connectors for easy Upgrade
- Clear CMOS Button
- NIC LEDs (integrated) (Green & Amber)
- Dual Color Power and HD LED - To Indicate Normal Operations and Fault Conditions
- Color coordinated cables and connectors
- Front power switch
- System memory can be upgraded without removing the system board or any internal components
- CD & Diskette Removal

Technical Specifications – Miscellaneous Features

- Tool icon for easy Identification

ADDITIONAL FEATURES

	Description
Drive Lock	Implementation of the industry standard ATA Security feature set. When enabled, it prevents software access to user data on the drive until one or two user-defined passwords are provided. DPS Access through F10 Setup during Boot
Drive Protection System	A diagnostic hard drive self test. It scans critical physical components and every sector of the hard drive for physical faults and then reports any faults to the user Running independently of the operating system, it can be accessed through a Windows-based diagnostics utility or through the computer's setup procedure. It produces an evaluation on whether the hard drive is the source of the problem and needs to be replaced The system expands on the Self-Monitoring, Analysis, and Reporting Technology (SMART), a continuously running systems diagnostic that alerts the user to certain types of failures
SMART Technology (Self-Monitoring, Analysis and Reporting Technology)	Allows hard drives to monitor their own health and to raise flags if imminent failures were predicted
SMART I - Drive Failure Prediction	Predicts failures before they occur. Tracks fault prediction and failure indication parameters such as re-allocated sector count, spin retry count, calibration retry count
SMART II - Off-Line Data Collection	By avoiding actual hard drive failures, SMART hard drives act as "insurance" against unplanned user downtime and potential data loss from hard drive failure
SMART III - Off-Line Read Scanning with Defect Reallocation	IOEDC: I/O Error Detection Circuitry Detects errors in Read/Write buffers on HDD cache RAM
SMART IV - End-to-End CRC for hard drives	Interface in F10 setup provides confirmation of SMART IV support.

Technical Specifications – Environmental

HP ProDesk 400 G3 MT Business PC				
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: • IT ECO declaration • US ENERGY STAR® • EPEAT® Gold 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)	18.93 W	18.51 W	19.15 W
	Normal Operation (Long idle)	17.73 W	17.28W	17.82 W
	Sleep	1.21 W	1.29 W	1.21 W
	Off	0.84 W	0.90 W	0.84 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, 60Hz**
	Normal Operation (Short idle)	65 BTU/hr	63 BTU/hr	65 BTU/hr
	Normal Operation (Long idle)	61 BTU/hr	59 BTU/hr	61 BTU/hr
	Sleep	4 BTU/hr	4 BTU/hr	4 BTU/hr
	Off	3 BTU/hr	3 BTU/hr	3 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	3.9	26	
	Fixed Disk – Random writes	3.9	28	
	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:		

Technical Specifications – Environmental

		• 8 USB ports • 2 memory slots • 1 PCIe x16 slot • 3 PCIe x1 slot • 1 internal 2.5" bay supporting a 2.5" hard drives (HDD/SSD/SED/SSHD) • 1 internal 2.5"/3,5" bay supporting a 2.5" or 3.5" hard drives (HDD/SSD/SED/SSHD) • 1 Slim external supporting optical drive • 1 external SD 3.0 Reader Spare parts are available throughout the warranty period and or for up to "5" 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 the1ppm 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 Gold level, see www.epeat.net • Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043. • This product contains 11% 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 1030 g
		Internal: PLASTIC/EPE (Expanded Polyethylene) 231 g PLASTIC/Polyethylene low density 40 g The Plastic packaging material is made from 65% recycled content. The corrugated paper packaging materials contains at least 52.5% recycled content.
	Material Usage	This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf): • Asbestos • Certain Azo Colorants • Certain Brominated Flame Retardants – may not be used as flame retardants in plastics • Cadmium

Technical Specifications – Environmental

		• 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	HP follows these guidelines to decrease the environmental impact of product packaging: • Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials. • Eliminate the use of ozone-depleting substances (ODS) in packaging materials. • Design packaging materials for ease of disassembly. • Maximize the use of post-consumer recycled content materials in packaging materials. • Use readily recyclable packaging materials such as paper and corrugated materials. • Reduce size and weight of packages to improve transportation fuel efficiency. • Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.
	End-of-life Management and Recycling	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. 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.

Technical Specifications – Environmental

	Hewlett-Packard Corporate Environmental Information	For more information about HP's commitment to the environment: Global Citizenship Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html Eco-label certifications http://www8.hp.com/us/en/hp-information/environment/ecolabels.html ISO 14001 certificates: http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf and http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf

HP ProDesk 400 G3 SFF				
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: • IT ECO declaration • US ENERGY STAR® • EPEAT® Gold 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)	16.99 W	17.08 W	17.29 W
	Normal Operation (Long idle)	15.77 W	15.77 W	15.78 W
	Sleep	1.23 W	1.37 W	1.22 W
	Off	0.74 W	0.86 W	0.73 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, 60Hz**
	Normal Operation (Short idle)	58 BTU/hr	58 BTU/hr	59 BTU/hr
	Normal Operation (Long idle)	54 BTU/hr	54 BTU/hr	54 BTU/hr
	Sleep	4 BTU/hr	5 BTU/hr	5 BTU/hr
	Off	3 BTU/hr	3 BTU/hr	3 BTU/hr

Technical Specifications – Environmental

		*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	23	
	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:		
		• 6 USB ports • 2 memory slots • 1 Mini PCIe half-length slot • 1 MXM 3.0 Type A - 35W slot • 1 mSATA 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.		
	Batteries	This battery(s) in this product comply with EU Directive 2006/66/EC Batteries used in the product do not contain: Mercury greater the1ppm 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 <gold> level, see www.epeat.net • Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043. • This product contains 12.7% post-consumer recycled plastic (by wt.) • This product is 90.9% recycle-able when properly disposed of at end of life.		
	Packaging Materials	**External:**	PAPER/Corrugated	1060 g
		Internal:	PLASTIC/EPE (Expanded Polyethylene)	168.8 g
			PLASTIC/Polyethylene low density	5 g

Technical Specifications – Environmental

		The EPE foam packaging material is made from 65% recycled content.
		The corrugated paper packaging materials contains at least 52.5% recycled content.
	Material Usage	This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf): • Asbestos • Certain Azo Colorants • Certain Brominated Flame Retardants – may not be used as flame retardants in plastics • Cadmium • Chlorinated Hydrocarbons • Chlorinated Paraffins • Formaldehyde • Halogenated Diphenyl Methanes • Lead carbonates and sulfates • Lead and Lead compounds • Mercuric Oxide Batteries • Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user. • Ozone Depleting Substances • Polybrominated Biphenyls (PBBs) • Polybrominated Biphenyl Ethers (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	HP follows these guidelines to decrease the environmental impact of product packaging: • Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials. • Eliminate the use of ozone-depleting substances (ODS) in packaging materials. • Design packaging materials for ease of disassembly. • Maximize the use of post-consumer recycled content materials in packaging materials. • Use readily recyclable packaging materials such as paper and corrugated materials. • Reduce size and weight of packages to improve transportation fuel efficiency. • Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

Technical Specifications – Environmental

	End-of-life Management and Recycling	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. 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.
	Hewlett-Packard Corporate Environmental Information	For more information about HP's commitment to the environment: Global Citizenship Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html Eco-label certifications http://www8.hp.com/us/en/hp-information/environment/ecolabels.html ISO 14001 certificates: http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf and http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf

HP ProDesk 490 G3 MT				
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: • IT ECO declaration • US ENERGY STAR® • EPEAT® Gold 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)	18.99 W	18.60 W	19.09 W
	Normal Operation (Long idle)	17.58 W	17.06 W	17.58 W
	Sleep	1.46 W	1.52 W	1.45 W
	Off	0.82 W	0.82 W	0.82 W

Technical Specifications – Environmental

		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, 60Hz**
	Normal Operation (Short idle)	65 BTU/hr	64 BTU/hr	65 BTU/hr
	Normal Operation (Long idle)	60 BTU/hr	58 BTU/hr	60 BTU/hr
	Sleep	5 BTU/hr	5 BTU/hr	5 BTU/hr
	Off	3 BTU/hr	3 BTU/hr	3 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	3.9	26	
	Fixed Disk – Random writes	3.9	28	
	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 • 4 memory slots • 1 PCIe x16 slot • 1 PCIe x16 slot, wired as x4 • 2 PCIe x1 slot • 1 internal 2.5" bay supporting a 2.5" hard drives (HDD/SSD/SED/SSHD) • 1 internal 2.5”/3,5" bay supporting a 2.5" or 3.5” hard drives (HDD/SSD/SED/SSHD) • 1 Slim external supporting optical drive • 1 external SD 4.0 Reader Spare parts are available throughout the warranty period and or for up to “5” 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 the1ppm by weight Cadmium greater than 20ppm by weight Battery size: CR2032 (coin cell) Battery type: Lithium		

Technical Specifications – Environmental

	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 Gold level, see www.epeat.net • Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043. • This product contains 11% post-consumer recycled plastic (by wt.) • This product is 93.4% recycle-able when properly disposed of at end of life.		
	Packaging Materials	**External:**	PAPER/Corrugated	1030 g
		Internal:	PLASTIC/EPE (Expanded Polyethylene)	231.7 g
			PLASTIC/Polyethylene low density	40 g
		The EPE foam packaging material is made from 65% recycled content.		
		The corrugated paper packaging materials contains at least 52.5% recycled content.		
	Material Usage	This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf): • Asbestos • Certain Azo Colorants • Certain Brominated Flame Retardants – may not be used as flame retardants in plastics • Cadmium • Chlorinated Hydrocarbons • Chlorinated Paraffins • Formaldehyde • Halogenated Diphenyl Methanes • Lead carbonates and sulfates • Lead and Lead compounds • Mercuric Oxide Batteries • Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user. • Ozone Depleting Substances • Polybrominated Biphenyls (PBBs) • Polybrominated Biphenyl Ethers (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)		

Technical Specifications – Environmental

	Packaging Usage	HP follows these guidelines to decrease the environmental impact of product packaging: • Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials. • Eliminate the use of ozone-depleting substances (ODS) in packaging materials. • Design packaging materials for ease of disassembly. • Maximize the use of post-consumer recycled content materials in packaging materials. • Use readily recyclable packaging materials such as paper and corrugated materials. • Reduce size and weight of packages to improve transportation fuel efficiency. • Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.
	End-of-life Management and Recycling	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. 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.
	Hewlett-Packard Corporate Environmental Information	For more information about HP's commitment to the environment: Global Citizenship Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html Eco-label certifications http://www8.hp.com/us/en/hp-information/environment/ecolabels.html ISO 14001 certificates: http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf and http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf

HP ProOne 400 G2 20-in Touch All-in-One		
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: • IT ECO declaration • US ENERGY STAR® • EPEAT® Gold 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 All-in-One PC model is based on a typically configured PC

Technical Specifications – Environmental

		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)	14.74 W	14.79 W	14.73 W
	Normal Operation (Long idle)	5.54 W	5.65 W	5.56 W
	Sleep	1.57 W	1.58 W	1.56 W
	Off	1.22 W	1.23 W	1.22 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, 60Hz**
	Normal Operation (Short idle)	50 BTU/hr	51 BTU/hr	50 BTU/hr
	Normal Operation (Long idle)	19 BTU/hr	19 BTU/hr	19 BTU/hr
	Sleep	5 BTU/hr	5 BTU/hr	5 BTU/hr
	Off	4 BTU/hr	4 BTU/hr	4 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	3.3	20	
	Fixed Disk – Random writes	3.2	20	
	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:		
		• 4 USB ports • 2 memory slots • 1 M.2 PCIe slots • 1 internal 2.5" bay supporting a 2.5" hard drives • 1 external slim optical drive • 1 external SD card reader Spare parts are available throughout the warranty period and or for up to “5” years after the end of production.		

Technical Specifications – Environmental

	Batteries	This battery(s) in this product comply with EU Directive 2006/66/EC Batteries used in the product do not contain: Mercury greater the1ppm 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 Gold level, see www.epeat.net • Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043. • This product contains 23% post-consumer recycled plastic (by wt.) • This product is 96.5% recycle-able when properly disposed of at end of life.		
	Packaging Materials	**External:**	PAPER/Corrugated	1096 g
		Internal:	PLASTIC/EPE - Expanded Polyethylene	352 g
		The plastic packaging material contains at least 0% recycled content.		
		The corrugated paper packaging materials contains at least 80% recycled content.		
	Material Usage	This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf): • Asbestos • Certain Azo Colorants • Certain Brominated Flame Retardants – may not be used as flame retardants in plastics • Cadmium • Chlorinated Hydrocarbons • Chlorinated Paraffins • Formaldehyde • Halogenated Diphenyl Methanes • Lead carbonates and sulfates • Lead and Lead compounds • Mercuric Oxide Batteries • Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user. • Ozone Depleting Substances • Polybrominated Biphenyls (PBBs) • Polybrominated Biphenyl Ethers (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	HP follows these guidelines to decrease the environmental impact of product packaging: • Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials. • Eliminate the use of ozone-depleting substances (ODS) in packaging materials. • Design packaging materials for ease of disassembly. • Maximize the use of post-consumer recycled content materials in packaging materials. • Use readily recyclable packaging materials such as paper and corrugated materials. • Reduce size and weight of packages to improve transportation fuel efficiency. • Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.
	End-of-life Management and Recycling	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. 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.
	Hewlett-Packard Corporate Environmental Information	For more information about HP's commitment to the environment: Global Citizenship Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html Eco-label certifications http://www8.hp.com/us/en/hp-information/environment/ecolabels.html ISO 14001 certificates: http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf and http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf

HP ProOne 400 G2 20-in Non-Touch All-in-One PC		
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:

		• IT ECO declaration • US ENERGY STAR® • EPEAT® Gold 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)	14.74 W	14.79 W	14.73 W
	Normal Operation (Long idle)	5.54 W	5.65 W	5.56 W
	Sleep	1.57 W	1.58 W	1.56 W
	Off	1.22 W	1.23 W	1.22 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, 60Hz**
	Normal Operation (Short idle)	50 BTU/hr	51 BTU/hr	50 BTU/hr
	Normal Operation (Long idle)	19 BTU/hr	19 BTU/hr	19 BTU/hr
	Sleep	5 BTU/hr	5 BTU/hr	5 BTU/hr
	Off	4 BTU/hr	4 BTU/hr	4 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	22	
	Fixed Disk – Random writes	3.3	22	
	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:		

Technical Specifications – Environmental

		• 4 USB ports • 2 memory slots • 1 M.2 PCIe slots • 1 internal 2.5" bay supporting a 2.5" hard drives • 1 external slim optical drive • 1 external SD card reader Spare parts are available throughout the warranty period and or for up to "5" 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 the1ppm 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 Gold level, see www.epeat.net • Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043. • This product contains 22.4% post-consumer recycled plastic (by wt.) • This product is 96.2% recycle-able when properly disposed of at end of life.		
	Packaging Materials	**External:**	PAPER/Corrugated	1096g
		Internal:	PLASTIC/EPE (Expanded Polyethylene)	352 g
		The plastic packaging material is made from 0% recycled content.		
		The corrugated paper packaging materials contains at least 80% recycled content.		
	Material Usage	This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf): • Asbestos • Certain Azo Colorants • Certain Brominated Flame Retardants – may not be used as flame retardants in plastics • Cadmium • Chlorinated Hydrocarbons • Chlorinated Paraffins • Formaldehyde • Halogenated Diphenyl Methanes • Lead carbonates and sulfates • Lead and Lead compounds		

Technical Specifications – Environmental

		• 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	HP follows these guidelines to decrease the environmental impact of product packaging: • Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials. • Eliminate the use of ozone-depleting substances (ODS) in packaging materials. • Design packaging materials for ease of disassembly. • Maximize the use of post-consumer recycled content materials in packaging materials. • Use readily recyclable packaging materials such as paper and corrugated materials. • Reduce size and weight of packages to improve transportation fuel efficiency. • Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.
	End-of-life Management and Recycling	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. 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.

Technical Specifications – Environmental

	Hewlett-Packard Corporate Environmental Information	For more information about HP's commitment to the environment: Global Citizenship Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html Eco-label certifications http://www8.hp.com/us/en/hp-information/environment/ecolabels.html ISO 14001 certificates: http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf and http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf

HP ProDesk 400 G2 Desktop Mini				
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: • IT ECO declaration • US ENERGY STAR® • EPEAT® <Gold> 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)	6.83 W	6.95 W	6.69 W
	Normal Operation (Long idle)	6.41 W	6.85 W	6.20 W
	Sleep	0.96 W	0.95 W	0.96 W
	Off	0.77 W	0.79 W	0.74 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, 60Hz**
	Normal Operation (Short idle)	23 BTU/hr	24 BTU/hr	23 BTU/hr
	Normal Operation (Long idle)	22 BTU/hr	23 BTU/hr	21 BTU/hr
	Sleep	3 BTU/hr	3 BTU/hr	3 BTU/hr

Technical Specifications – Environmental

	Off	3 BTU/hr	3 BTU/hr	3 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	2.6	17	
	Fixed Disk – Random writes	2.7	17	
	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:		
		• 4 USB ports • 2 memory slots • 2 M.2 PCIe slots • 1 internal 2.5" bay supporting a 2.5" hard drives (HDD/SSD/SED/SSHD) Spare parts are available throughout the warranty period and or for up to "5" 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 the1ppm 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 <gold> level, see www.epeat.net • Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043. • This product contains 0% post-consumer recycled plastic (by wt.) • This product is 94.5% recycle-able when properly disposed of at end of life.		
	Packaging Materials	**External:**	PAPER/Corrugated	530 g
		Internal:	PLASTIC/EPE-Expanded Polyethylene	41 g
			PLASTIC/Polyethylene low density	7 g
		The Plastic packaging material is made from 0% recycled content.		
		The corrugated paper packaging materials contains at least 0% recycled content.		

Technical Specifications – Environmental

	Material Usage	This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf): • Asbestos • Certain Azo Colorants • Certain Brominated Flame Retardants – may not be used as flame retardants in plastics • Cadmium • Chlorinated Hydrocarbons • Chlorinated Paraffins • Formaldehyde • Halogenated Diphenyl Methanes • Lead carbonates and sulfates • Lead and Lead compounds • Mercuric Oxide Batteries • Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user. • Ozone Depleting Substances • Polybrominated Biphenyls (PBBs) • Polybrominated Biphenyl Ethers (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	HP follows these guidelines to decrease the environmental impact of product packaging: • Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials. • Eliminate the use of ozone-depleting substances (ODS) in packaging materials. • Design packaging materials for ease of disassembly. • Maximize the use of post-consumer recycled content materials in packaging materials. • Use readily recyclable packaging materials such as paper and corrugated materials. • Reduce size and weight of packages to improve transportation fuel efficiency. • Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.
	End-of-life Management and Recycling	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. 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.
	Hewlett-Packard Corporate Environmental Information	For more information about HP's commitment to the environment: Global Citizenship Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html Eco-label certifications http://www8.hp.com/us/en/hp-information/environment/ecolabels.html ISO 14001 certificates: http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf and http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf

After-Market Options (availability may vary by region)

Business Monitors	400 G2 DM	400 G2 AiO	400 G3 MT	490 G3 MT	400 G3 SFF	Part Number
HP ProDisplay P17A 17-inch 5:4 LED Backlit Monitor	X	X	X	X	X	F4M97AA
HP ProDisplay P202 20-inch Monitor	X	X	X	X	X	K7X27AA
HP ProDisplay P222va 21.5-inch Monitor	X	X	X	X	X	K7X30AA
HP ProDisplay P232 23-inch Monitor	X	X	X	X	X	K7X31AA
HP ProDisplay P222c 21.5-inch Video Conferencing Monitor	X	X	X	X	X	L4J08AA

Communication Devices	400 G2 DM	400 G2 AiO	400 G3 MT	490 G3 MT	400 G3 SFF	Part Number
Intel® Ethernet I210 – T1 Gbe NIC			X	X	X	E0X95AA
Intel® 7265 802.11ac DualBand PCIe x1 Card			X	X	X	N4G85AA
Broadcom BCM943228Z 802.11n 2x2 DualBand PCIe x1 Card			X	X	X	N3R84AV

Graphics Solutions	400 G2 DM	400 G2 AiO	400 G3 MT	490 G3 MT	400 G3 SFF	Part Number
NVIDIA® GeForce® GT730 Graphics (PCIe x 8) GX Card			X	X	X	N3R90AA
NVIDIA GeForce GT 720 2GB PCIe x8 GFX Card (China only)			X	X		T4E57AA
AMD Radeon™ R9 350 2GB PCIe x16 GFX Card			X	X		N3R91AA
AMD Radeon R5 320 1GB PCIe x16 GFX Card (China only)				X		T9F48AA
NVIDIA Quadro NVS 310 1GB PCIe x16 Graphics Card			X	X	X	M6V51AA

Graphics Cables	400 G2 DM	400 G2 AiO	400 G3 MT	490 G3 MT	400 G3 SFF	Part Number
HP DisplayPort To DVI-D Adapter	X	X	X	X	X	FH973AA
HP DisplayPort to VGA Adapter	X	X	X	X	X	AS615AA
HP DisplayPort Cable Kit	X	X	X	X	X	VN567AA
HP DisplayPort To HDMI 4K Adapter	X	X	X	X	X	K2K92AA
HP HDMI Standard Cable Kit	X	X	X	X	X	T6F94AA
HP (Bulk) 700mm DisplayPort Cable Kit	X					V8Y77A6

Desktop Mini Accessories	400 G2 DM	400 G2 AiO	400 G3 MT	490 G3 MT	400 G3 SFF	Part Number
HP Desktop Mini DVD Writer ODD Expansion Module	X					K9Q83AA
HP Desktop Mini 500GB HDD/ I/O Expansion Module	X					K9Q82AA
HP Desktop Mini Rack Mount Tray Kit	X					G1K21AA
HP Desktop Mini Security/Dual VESA Sleeve	X					G1K22AA
HP Desktop Mini 65W Power Supply Kit	X					L2X04AA
HP Desktop Mini Vertical Chassis Stand	X					G1K23AA
HP Desktop Mini LockBox	X					P1N78AA
HP Desktop Mini Port Cover Kit*	X					P3R65AA
HP Desktop Mini I/O Expansion Module	X					K9Q84AA
HP Integrated Work Center Desktop Mini/Thin Clients	X					G1V61AA
HP Single Monitor Arm	X					BT861AA
HP Quick Release Bracket	X					EM870AA
*Exterior color Jack Black						

After-Market Options (availability may vary by region)

*NOTE: All desktop mini accessories are Compatible with HP ProDesk 400 G2 Desktop Mini, HP ProDesk 600 G2 Desktop Mini, HP EliteDesk 705 G2 Desktop Mini and HP EliteDesk 800 G2 Desktop Mini.

After-Market Options (availability may vary by region)

Data Storage Drives and Accessories	400 G2 DM	400 G2 AiO	400 G3 MT	490 G3 MT	400 G3 SFF	Part Number
HP 500GB SATA 6.0 Gb/s Hard Drive			X	X	X	QK554AA
HP 1TB 7200rpm SATA 6.0 Gb/s Hard Drive			X	X	X	QK555AA
HP 128GB SATA Solid State Drive Desktop	X	X	X	X	X	QV063AA
HP 128 GB SED Opal 2 Solid State Drive	X	X	X	X	X	G1K24AA
Intel® Pro 2500 180GB SATA SED Opal2 Solid State Drive	X	X	X	X	X	P3X90AA
HP 256 GB SATA 3D Non-SED Solid State Drive	X	X	X	X	X	N1M49AA
HP 500 GB SATA 6 Gb/s 2.5 (8GB) SSDHD	X	X	X	X	X	E1C62AA
HP Turbo Drive G2 256GB PCIe Solid State Drive				X		T7W25AA
HP 256GB SATA Value Non-SED Solid State Drive	X	X	X	X	X	W0U55AA
HP 256GB SATA TLC Non-SED Solid State Drive	X	X	X	X	X	P1N68AA

Input Devices	400 G2 DM	400 G2 AiO	400 G3 MT	490 G3 MT	400 G3 SFF	Part Number
HP USB Mouse	X	X	X	X	X	QY777AA
HP USB Grey Mouse (EMEA only)	X	X	X	X	X	K7W54AA
HP USB 1000 dpi Laser Mouse	X	X	X	X	X	QY778AA
HP PS/2 Mouse	X	X	X	X	X	QY775AA
HP Mouse Pad	X	X	X	X	X	AT485AA
HP Conferencing Keyboard	X	X	X	X	X	K8P74AA
HP Wireless Keyboard and Mouse	X	X	X	X	X	QY449AA
HP Business Slim USB Keyboard	X	X	X	X	X	N3R87AA
HP Business Slim Wireless Keyboard and Mouse	X	X	X	X	X	N3R88AA
HP USB Grey Keyboard (EMEA only)	X	X	X	X	X	DT529AA
HP USB Smart Card (CCID) Keyboard	X	X	X	X	X	BV813AA
HP USB and PS/2 Washable Keyboard and Mouse Kit	X	X	X	X	X	BU207AA
HP USB Antimicrobial Keyboard and Mouse (China Only)	X	X	X	X	X	K7X25AA
HP PS/2 Business Slim Keyboard	X	X	X	X	X	N3R86AA
HP PS/2 Keyboard	X	X	X	X	X	QY774AA
HP USB Hardened Mouse	X	X	X	X	X	P1N77AA

I/O Cards and Adapters	400 G2 DM	400 G2 AiO	400 G3 MT	490 G3 MT	400 G3 SFF	Part Number
HP PCIe x1 Parallel Port Card			X	X	X	N1M40AA
HP Serial Port Adapter			X	X		PA716A
HP USB to Serial Port Adapter	X	X				J7B60AA

System Memory	400 G2 DM	400 G2 AiO	400 G3 MT	490 G3 MT	400 G3 SFF	Part Number
HP 4 GB DDR4-2133 DIMM			X	X	X	P1N51AA
HP 8 GB DDR4-2133 DIMM			X	X	X	P1N52AA
HP 4 GB DDR4-2133 SODIMM	X	X				P1N53AA
HP 8 GB DDR4-2133 SODIMM	X	X				P1N54AA
HP 16 GB DDR4-2133 SODIMM	X	X				P1N55AA

After-Market Options (availability may vary by region)

Multimedia Devices	400 G2 DM	400 G2 AiO	400 G3 MT	490 G3 MT	400 G3 SFF	Part Number
HP Desktop G2 9.5mm Slim DVD-ROM Drive			X	X	X	N1M41AA
HP Desktop G2 9.5mm Slim DVD Writer Drive			X	X	X	N1M42AA
HP Desktop G2 9.5mm Slim BDXL Blu-Ray Writer Drive			X	X	X	N1M43AA
HP 9.5mm 400 G2 AiO Slim DVD ROM Drive		X				P8A46AA
HP 9.5mm 400 G2 AiO Slim DVD Writer Drive		X				P8A46AA
HP USB Business Speakers v2	X		X	X	X	N3R89AA
HP Business Headset v2	X	X	X	X	X	T4E61AA

Security Devices	400 G2 DM	400 G2 AiO	400 G3 MT	490 G3 MT	400 G3 SFF	Part Number
HP Business PC Security Lock Kit v2			X	X	X	N3R93AA
HP UltraSlim Cable Lock Kit	X	X	X	X	X	H4D73AA

Stands and Accessories	400 G2 DM	400 G2 AiO	400 G3 MT	490 G3 MT	400 G3 SFF	Part Number
HP (10 Sets) 400 G3/600/705 G2 MicroTower Bezel Support Kit			X	X		N1M44AA
HP 2x2 SFF Stand					X	N4G86AA
HP 400 G2 Height Adjustable Stand		X				T0E53AA
HP 400 G2 Recline Stand		X				T0A01AA
HP PC Mounting Bracket for Monitors	X					N6N00AA
HP Single Monitor Arm		X				BT861AA

LANDesk Software (E-Delivery)*

Contact your HP representative for available options.

*Optional and sold separately.

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Change Log

Date of change:	Version History:	Action	Description of change:
November 20 2015	From v1 to v2	Added	Multiple edits
December 9 2015	From v2 to v3	Added	Multiple edits
January 13, 2016	From v3 to v4	Added	VESA Support note and Marked AiO in After Market Options
January 28, 2016	From v4 to v5	Added	Internal SATA Ports
February 03,2016	From v5 to v6	Removed	HP USB Graphics Adapter. HP Dual Output USB Graphics Adapter.
February 16, 2016	From v6 to v7	Added	"500GB SATA 7.2k RPM SED Opal2" "500GB SATA 7.2k RPM 2nd w/ caddy SED Opal2" "400 G2 DM HP PS/2 Keyboard" (Option) "Intel® 7265 802.11ac PCIe x1 Card"(Part number) "NVIDIA Quadro NVS 310 1GB PCIe x16 Graphics Card" "HP HDMI Standard Cable Kit" "HP Business Headset v2"
February 26, 2016	From v7 to v8	Added	Other Media M-Disc DVD media for storage preservation
			Other Media M-Disc BR/DVD media for storage preservation
			HP Desktop Mini Port Cover Kit "Exterior color"
			HP Desktop Mini Accessories G2 platforms Compatibility
			HP PC Mounting Bracket for Monitors under Stands and accessories
			USB Port adapters part number J7B60AA
			HP ProDesk 400 G3 SFF Environmental specs
March 28, 2016	From v8 to v9	Added	HP 700mm DisplayPort Cable
April 1, 2016	From v9 to v10	Added	Stand Accessory
April 27, 2016	From v10 to v11	Update	Updated environmental data
April 29, 2016	From v11 to v12	Update	Added (USB to Serial port adapter)
May 10, 2016	From v12 to v13	Update	Added solid state drive options
June 9, 2016	From v13 to v14	Update	Added Bluetooth compatibility for 400 AiO
July 6, 2016	From v14 to v15	Update	Removed graphic card disclaimer
September 23, 2016	From v15 to 16	Update	Updated the Graphics Solutions value from NVIDIA GeForce GT 720 2GB PCIe *x16* GFX Card (China only) to x8
October 4, 2016	From v16 to v17	Update	Bluetooth specification updated
October 5, 2016	From v17 to v18	Update	HP BIOSphere updated, 'HP Elite 800 G2' replaced by 'HP ProDesk G3 and ProOne G2 Business PC'; UEFI specification value updated
October 31, 2016	From v18 to v19	Update	NVIDIA GeForce GT 720 2GB PCIe x16 updated to NVIDIA GeForce GT 720 2GB PCIe x8 value
December 5, 2016	From v19 to v20	Update	SuperMulti references deleted
January 20, 2017	From v20 to v21	Update	DM Weights and Dimensions Section updated
February 24, 2017	From v21 to v22	Update	Graphics section updated
June 2, 2017	From V22 to V23	Update	Title Updated
July 26, 2017	From V23 to V24	Update	HP Touchpoint Manager mention deleted from "Maneagibility" features on the SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS section
August 25, 2017	From V23 to V24	Update	400 G3 SFF Weights and Dimensions Section updated
October 16, 2017	From V24 to V25	Update	"Multi-unit packaging" and "Shipping weight" added to Weights and dimensions table