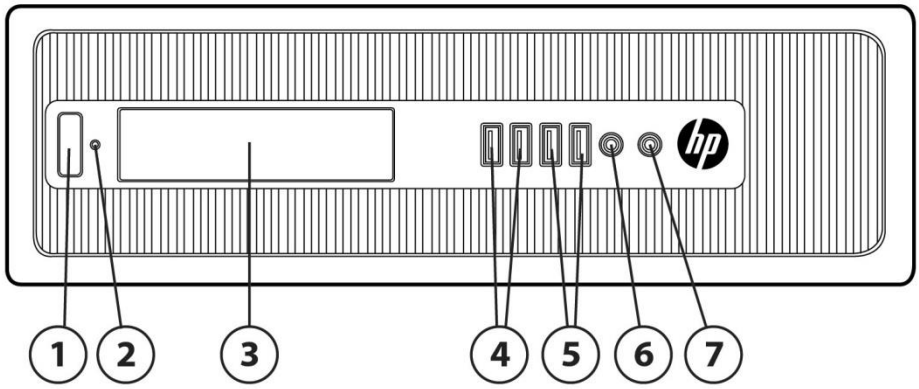
## Overview

### HP ProDesk 400 G2 Small Form Factor Business PC[1]




1. Power button
2. PC status LED
3. 3.5” external drive bay; used for installing a Media Card Reader
4. (2) USB 2.0 ports (black)
5. (2) USB 3.0 ports (blue)
6. 3.5mm microphone jack
7. 3.5mm headphone output

Not Shown

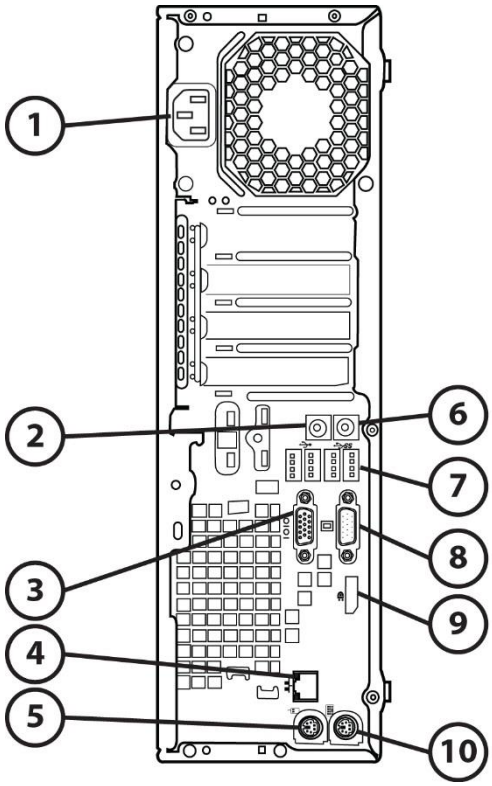
Slimline drive bay supporting an optical disk drive (located behind removable bezel)

Slots
(1) PCI 3.0 Express x16 Graphics Connectors
(3) PCI Express 2.0 x1 Accessory Connectors

Bays
(1) 2.5” Internal Storage Drive Bay
(2) 3.5” Internal Storage Drive Bay

[1] THIS PRODUCT IS ONLY FOR APJ REGION

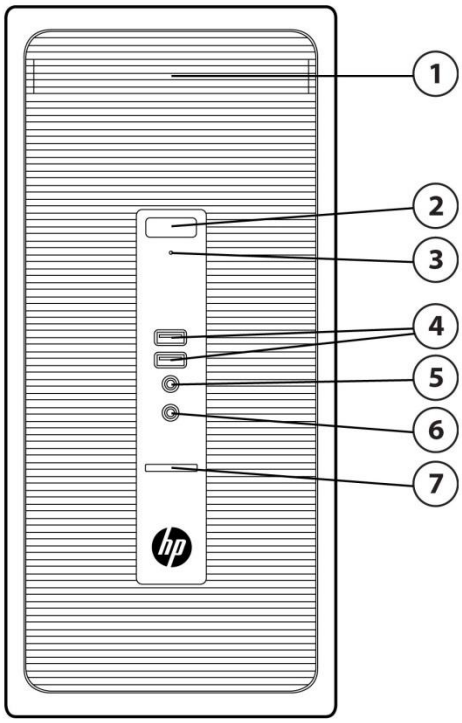
## Overview




1. Power Cord Connector
2. Line-In Audio Connector (blue)
3. RS-232 Serial Connector
4. RJ-45 Network Connector
5. PS/2 Mouse Connector (green)
6. Line-Out Connector for powered audio devices (green)
7. (4) USB 2.0 Ports (black)
8. VGA Monitor Connector
9. DisplayPort 1.2
10. PS/2 Keyboard Connector (purple)

## Overview

### HP ProDesk 400 G2 Microtower Business PC[1] [2]




1. Slimline Drive Bay - supporting an optical disk drive (optional)
2. Power Button
3. Hard Drive Activity Light
4. (2) USB 3.0 Ports (blue)
5. 3.5mm Microphone Jack
6. 3.5mm Headphone Output
7. SD Reader (optional)

Not Shown

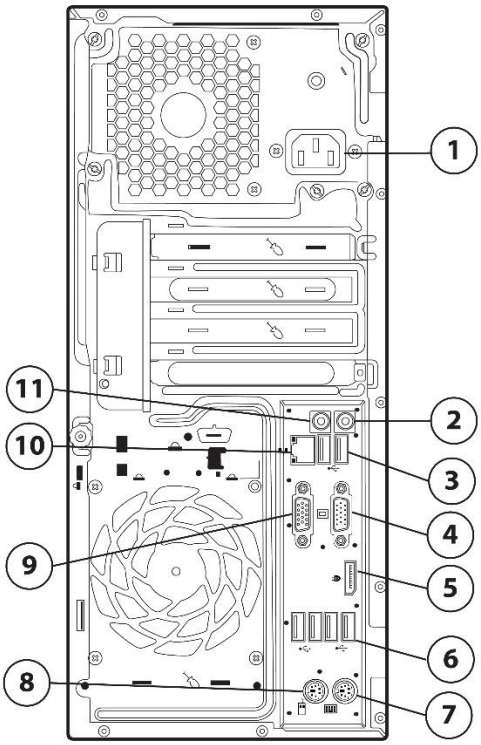
Slots (1) PCI 3.0 Express x16 Graphics Connectors
(3) PCI Express 2.0 x1 Accessory Connectors

Bays (2) 3.5" Internal Storage Drive Bays (1 bay can be configured as 2.5")

[1] THIS PRODUCT IS ONLY FOR EMEA AND APJ REGION

[2] Some features are different according to different models: "HP ProDesk 400 G2 MT" or "HP ProDesk 400 G2 MT (TPM, DisplayPort and 2 extra USB)".

## Overview



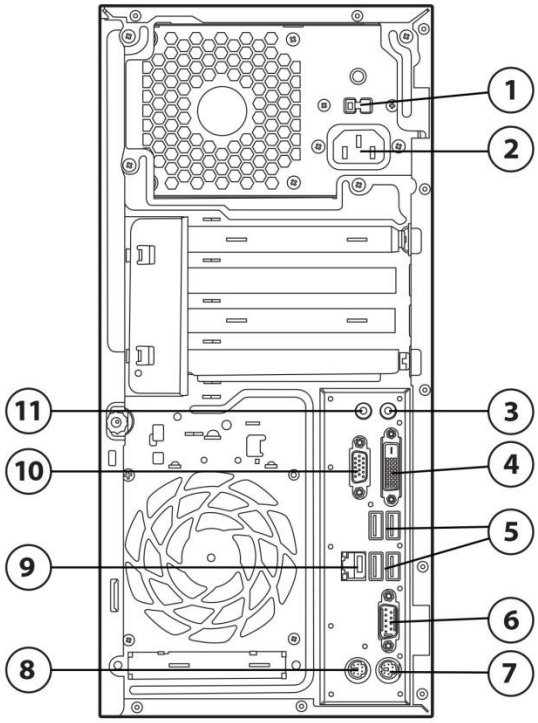

1. Power Cord Connector
2. Line-Out Connector for powered audio devices (green)
3. (2) USB 2.0 Ports (black)
4. VGA Monitor Connector
5. DisplayPort 1.2
6. (4) USB 2.0 Ports (black)
7. PS/2 Keyboard Connector (purple)
8. PS/2 Mouse Connector (green)
9. RS-232 Serial Connector
10. RJ-45 Network Connector
11. Line-In Audio Connector (blue)

Not Shown

Parallel Port (optional); 2nd RS-232 Serial Port (optional)

* Only for model "HP ProDesk 400 G2 MT (TPM, DisplayPort and 2 additional USB)"

## Overview




1. Voltage Select Switch (included on some models only)
2. Power Cord Connector
3. Line-Out Connector for powered audio devices (green)
4. DVI-D Monitor Connector
5. (4) USB 2.0 Ports (black)
6. RS-232 Serial Connector
7. PS/2 Keyboard Connector (purple)
8. PS/2 Mouse Connector (green)
9. RJ-45 Network Connector
10. VGA Monitor Connector
11. Line-In Audio Connector (blue)

Not Shown

Parallel Port (optional); 2nd RS-232 Serial Port (optional)

*Only for model "HP ProDesk 400 G2 MT"

Overview

## AT A GLANCE

- Choice of two chassis form factors: Small Form Factor and Microtower
- Expandable, upgradable chassis and system board
- Intel® H81 Express chipset supporting Intel 4th generation Core processors, featuring integrated Intel HD Graphics
- Processor support up to 84W
- HP developed and engineered UEFI BIOS supporting security, manageability and software image stability
- Realtek RTL8151GH-CG GbE LOM integrated network connection
- Up to 16GB DDR3 Synchronous Dynamic Random Access Memory (SDRAM)
- Multi-independent monitor support via VGA, DVI-D (Only for model "HP ProDesk 400 G2 MT") and DisplayPort 1.2 (Only for model "HP ProDesk 400 G2 MT (TPM, DisplayPort and 2 extra USB)") video interfaces
- Discrete graphics options available for all platforms
- DTS Sound+™ audio management software
- Standard and high efficiency energy saving power supply options
- ENERGY STAR® certified models certified EPEAT® Gold

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

Standard Features and Configurable Components

## PROCESSORS*

| Intel® 4th Generation Core™ i7 Processors | MT/SFF |
|---|---|
| Intel® Core™ i7-4790 Processor<br>Up to 4.0 GHz Max. Turbo Frequency (3.6 GHz base frequency)<br>8 MB cache, 4 cores, 8 threads<br>Intel HD Graphics 4600<br>Supports DDR3 memory up to 1600 MT/s data rate | X |
| Intel® Core™ i7-4790s Processor<br>Up to 4.0 GHz Max. Turbo Frequency (3.2 GHz base frequency)<br>8 MB cache, 4 cores, 8 threads<br>Intel HD Graphics 4600<br>Supports DDR3 memory up to 1600 MT/s data rate | X |
| Intel® Core™ i7-4770 Processor<br>Up to 3.9 GHz Max. Turbo Frequency (3.4 GHz base frequency)<br>8 MB cache, 4 cores, 8 threads<br>Intel HD Graphics 4600<br>Supports DDR3 memory up to 1600 MT/s data rate | X |
| Intel® Core™ i7-4771 Processor<br>Up to 3.9 GHz Max. Turbo Frequency (3.5 GHz base frequency)<br>8 MB cache, 4 cores, 8 threads<br>Intel HD Graphics 4600<br>Supports DDR3 memory up to 1600 MT/s data rate | X |
| Intel® Core™ i7-4770S Processor<br>Up to 3.9 GHz Max. Turbo Frequency (3.1 GHz base frequency)<br>8 MB cache, 4 cores, 8 threads<br>Intel HD Graphics 4600<br>Supports DDR3 memory up to 1600 MT/s data rate | X |

| Intel® 4th Generation Core™ i5 Processors | MT/SFF |
|---|---|
| Intel® Core™ i5-4690 Processor<br>Up to 3.9 GHz Max. Turbo Frequency (3.5 GHz base frequency)<br>6 MB cache, 4 cores, 4 threads<br>Intel HD Graphics 4600<br>Supports DDR3 memory up to 1600 MT/s data rate | X |
| Intel® Core™ i5-4690S Processor<br>Up to 3.9 GHz Max. Turbo Frequency (3.2 GHz base frequency)<br>6 MB cache, 4 cores, 4 threads<br>Intel HD Graphics 4600<br>Supports DDR3 memory up to 1600 MT/s data rate | X |
| Intel® Core™ i5-4590 Processor<br>Up to 3.7 GHz Max. Turbo Frequency (3.3 GHz base frequency)<br>6 MB cache, 4 cores, 4 threads<br>Intel HD Graphics 4600<br>Supports DDR3 memory up to 1600 MT/s data rate | X |

## Standard Features and Configurable Components

| | |
|---|---|
| Intel® Core™ i5-4590S Processor<br>Up to 3.7 GHz Max. Turbo Frequency (3.0 GHz base frequency)<br>6 MB cache, 4 cores, 4 threads<br>Intel HD Graphics 4600<br>Supports DDR3 memory up to 1600 MT/s data rate | X |
| Intel® Core™ i5-4570 Processor<br>Up to 3.6 GHz Max. Turbo Frequency (3.2 GHz base frequency)<br>6 MB cache, 4 cores, 4 threads<br>Intel HD Graphics 4600<br>Supports DDR3 memory up to 1600 MT/s data rate | X |
| Intel® Core™ i5-4570S Processor<br>Up to 3.6 GHz Max. Turbo Frequency (2.9 GHz base frequency)<br>6 MB cache, 4 cores, 4 threads<br>Intel HD Graphics 4600<br>Supports DDR3 memory up to 1600 MT/s data rate | X |
| Intel® Core™ i5-4670 Processor<br>Up to 3.8 GHz Max. Turbo Frequency (3.4 GHz base frequency)<br>6 MB cache, 4 cores, 4 threads<br>Intel HD Graphics 4600<br>Supports DDR3 memory up to 1600 MT/s data rate | X |
| Intel® Core™ i5-4670S Processor<br>Up to 3.8 GHz Max. Turbo Frequency (3.1 GHz base frequency)<br>6 MB cache, 4 cores, 4 threads<br>Intel HD Graphics 4600<br>Supports DDR3 memory up to 1600 MT/s data rate | X |
| Intel® Core™ i5-4430 Processor<br>Up to 3.2 GHz Max. Turbo Frequency (3.0 GHz base frequency)<br>6 MB cache, 4 cores, 4 threads<br>Intel HD Graphics 4600<br>Supports DDR3 memory up to 1600 MT/s data rate | X |
| Intel® Core™ i5-4430s Processor<br>Up to 3.2 GHz Max. Turbo Frequency (2.7 GHz base frequency)<br>6 MB cache, 4 cores, 4 threads<br>Intel HD Graphics 4600<br>Supports DDR3 memory up to 1600 MT/s data rate | X |
| **Intel® 4th Generation Core™ i3 Processors** | **MT/SFF** |
| Intel® Core™ i3-4370 Processor<br>Up to 3.8 GHz Base Frequency<br>4 MB cache, 2 cores, 4 threads<br>Intel HD Graphics 4600<br>Supports DDR3 memory up to 1600 MT/s data rate | X |
| Intel® Core™ i3-4360 Processor | X |

## Standard Features and Configurable Components

Up to 3.7 GHz Base Frequency
4 MB cache, 2 cores, 4 threads
Intel HD Graphics 4600
Supports DDR3 memory up to 1600 MT/s data rate

Intel® Core™ i3-4350 Processor **X**
Up to 3.6 GHz Base Frequency
4 MB cache, 2 cores, 4 threads
Intel HD Graphics 4600
Supports DDR3 memory up to 1600 MT/s data rate

Intel® Core™ i3-4170 Processor **X**
Up to 3.7 GHz Base Frequency
3 MB cache, 2 cores, 4 threads
Intel HD Graphics 4400
Supports DDR3 memory up to 1600 MT/s data rate

Intel® Core™ i3-4160 Processor **X**
Up to 3.6 GHz Base Frequency
3 MB cache, 2 cores, 4 threads
Intel HD Graphics 4400
Supports DDR3 memory up to 1600 MT/s data rate

Intel® Core™ i3-4150 Processor **X**
Up to 3.5 GHz Base Frequency
3 MB cache, 2 cores, 4 threads
Intel HD Graphics 4400
Supports DDR3 memory up to 1600 MT/s data rate

Intel® Core™ i3-4340 Processor **X**
Up to 3.6 GHz Max. Turbo Frequency (3.6 GHz base frequency)
4 MB cache, 2 cores, 4 threads
Intel HD Graphics 4600
Supports DDR3 memory up to 1600 MT/s data rate

Intel® Core™ i3-4330 Processor **X**
Up to 3.5 GHz Max. Turbo Frequency (3.5 GHz base frequency)
4 MB cache, 2 cores, 4 threads
Intel HD Graphics 4600
Supports DDR3 memory up to 1600 MT/s data rate

Intel® Core™ i3-4130 Processor **X**
Up to 3.4 GHz Max. Turbo Frequency (3.4 GHz base frequency)
3 MB cache, 2 cores, 4 threads
Intel HD Graphics 4400
Supports DDR3 memory up to 1600 MT/s data rate

**Intel® Pentium Processors** **MT/SFF**

Intel® Pentium G3470 Processor **X**
Up to 3.6 GHz Base Frequency
3 MB cache, 2 cores, 2 threads

## Standard Features and Configurable Components

Intel HD Graphics
Supports DDR3 memory up to 1600 MT/s data rate

Intel® Pentium G3460 Processor **X**
Up to 3.5 GHz Base Frequency
3 MB cache, 2 cores, 2 threads
Intel HD Graphics
Supports DDR3 memory up to 1600 MT/s data rate

Intel® Pentium G3450 Processor **X**
Up to 3.4 GHz Base Frequency
3 MB cache, 2 cores, 2 threads
Intel HD Graphics
Supports DDR3 memory up to 1600 MT/s data rate

Intel® Pentium G3440 Processor **X**
Up to 3.3 GHz Base Frequency
3 MB cache, 2 cores, 2 threads
Intel HD Graphics
Supports DDR3 memory up to 1600 MT/s data rate

Intel® Pentium G3260 Processor **X**
Up to 3.3 GHz Base Frequency
3 MB cache, 2 cores, 2 threads
Intel HD Graphics
Supports DDR3 memory up to 1333 MT/s data rate

Intel® Pentium G3250 Processor **X**
Up to 3.2 GHz Base Frequency
3 MB cache, 2 cores, 2 threads
Intel HD Graphics
Supports DDR3 memory up to 1333 MT/s data rate

Intel® Pentium G3240 Processor **X**
Up to 3.1 GHz Base Frequency
3 MB cache, 2 cores, 2 threads
Intel HD Graphics
Supports DDR3 memory up to 1333 MT/s data rate

Intel® Pentium G3430 Processor **X**
Up to 3.3 GHz Max. Turbo Frequency (3.3 GHz base frequency)
3 MB cache, 2 cores, 2 threads
Intel HD Graphics
Supports DDR3 memory up to 1600 MT/s data rate

Intel® Pentium G3420 Processor **X**
Up to 3.2 GHz Max. Turbo Frequency (3.2 GHz base frequency)
3 MB cache, 2 cores, 2 threads
Intel HD Graphics
Supports DDR3 memory up to 1600 MT/s data rate

## Standard Features and Configurable Components

| | |
|---|---|
| Intel® Pentium G3220 Processor<br>Up to 3.0 GHz Max. Turbo Frequency (3.0 GHz base frequency)<br>3 MB cache, 2 cores, 2 threads<br>Intel HD Graphics<br>Supports DDR3 memory up to 1600 MT/s data rate | X |

**Intel® Celeron Processors**

| | |
|---|---|
| Intel® Celeron™ G1850 Processor<br>2.9 GHz base frequency<br>2 MB cache, 2 cores, 2 threads<br>Intel HD Graphics<br>Supports DDR3 memory up to 1333 MT/s data rate | X |
| Intel® Celeron™ G1840 Processor<br>2.8 GHz base frequency<br>2 MB cache, 2 cores, 2 threads<br>Intel HD Graphics<br>Supports DDR3 memory up to 1333 MT/s data rate | X |
| Intel® Celeron™ G1830 Processor<br>2.8 GHz base frequency<br>2 MB cache, 2 cores, 2 threads<br>Intel HD Graphics<br>Supports DDR3 memory up to 1333 MT/s data rate | X |
| Intel® Celeron™ G1820 Processor<br>2.7 GHz base frequency<br>2 MB cache, 2 cores, 2 threads<br>Intel HD Graphics<br>Supports DDR3 memory up to 1333 MT/s data rate | X |

*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 on Intel® architecture requires a computer system with a processor, chipset, BIOS, operating system, device drivers, and applications enabled for Intel® 64 architecture. Processors will not operate (including 32-bit operation) without an Intel® 64 architecture-enabled BIOS. Performance will vary depending on your hardware and software configurations. Intel's numbering is not a measurement of higher performance.

## CHIPSET

Intel® 8 Series (H81 Express) Chipset

## GRAPHICS*

***NOTE**: AMD and NVIDIA graphics cards are not available on configurations with the preinstalled Windows 10 operating system. Configurations with the Windows 10 downgrade to Windows 7 operating system will allow for upgrading to Windows 10 with AMD and NVIDIA graphics cards through graphics driver installation from hp.com.

| | MT/SFF |
|---|---|
| **Intel HD Graphics on all models (integrated on processor)** | **X** |
| AMD Radeon™ HD 8350 (1GB) FH PCIe x16* | **MT only** |
| AMD Radeon™ HD 8350 (1GB) PCIe x16 | **X** |

## Standard Features and Configurable Components

| | |
|---|---|
| AMD Radeon™ HD 8470 (2GB) FH* | **MT only** |
| AMD Radeon™ HD 8490 (1GB) PCIe x16 | **X** |
| NVIDIA® GeForce® GT630 (2GB) FH PCIe x16** | **MT only** |
| NVIDIA® NVS™ 310 x16 1st (no cbl) | **X** |
| NVIDIA® NVS™ 315 (1GB) PCIe x1 | **X** |
| AMD Radeon™ R7 240 2GB FH PCIe x16 | **MT only** |
| AMD Radeon™ R9 255 2GB PCIe x16 | **MT only** |

**NOTE**: HD content required to view HD images.
**NOTE**: Discrete graphics options cannot be configured with 180W power supply and Quad-Core Processor

*Available only in China region

**Not configurable with 180W PSU

## ADAPTERS AND CABLES

HP DMS-59 to Dual DisplayPort Cable
HP DMS-59 to Dual DVI Cable
HP DMS-59 to Dual VGA Cable
HP DisplayPort to DisplayPort Cable
HP DisplayPort to DVI-D Adapter
HP DisplayPort to HDMI Adapter
HP DisplayPort To HDMI 1.4 Adapter
HP DisplayPort to VGA Adapter
HP Serial Port Adapter
HP Parallel Port Adapter
HP DisplayPort Cable

## STORAGE*

| **SATA Drives** | **MT** | **SFF** |
|---|---|---|
| 2 TB, 7200 RPM, SATA 6.0 Gb/s, SMART IV, 3.5” | **X** | **X** |
| 2 TB, 7200 RPM, SATA 6.0 Gb/s, SMART IV, 3.5” - 2nd hard drive | **X** | **X** |
| 1 TB, 7200 RPM, SATA 6.0 Gb/s, SMART IV, 3.5” | **X** | **X** |
| 1 TB, 7200 RPM, SATA 6.0 Gb/s, SMART IV, 3.5” - 2nd hard drive | **X** | **X** |
| 500 GB, 7200 RPM, SATA 6.0 Gb/s, SMART IV, 3.5” | **X** | **X** |
| 500 GB, 7200 RPM, SATA 6.0 Gb/s, SMART IV, 3.5” - 2nd hard drive | **X** | **X** |
| 500GB, 7200 RPM SATA SED, 2.5” (with 3.5” adapter when installed in MT) | **X** | **X** |
| 500GB, 7200 RPM SATA SED, 2.5” (with 3.5” adapter when installed in MT) - 2nd hard drive | **X** | **X** |
| 500GB 2.5 FIPS 140-2 SED HDD (with 3.5” adapter when needed) | | **X** |

| **Hybrid Drives** | **MT** | **SFF** |
|---|---|---|
| 1 TB SATA 6G 2.5” (8 GB cache) SSHD Drive (with 3.5” adapter when installed in MT) | **X** | **X** |
| 1 TB SATA 6G 2.5” (8 GB cache) SSHD Drive (with 3.5” adapter when installed in MT) - 2nd hard drive | **X** | **X** |

## Standard Features and Configurable Components

| | | |
|---|---|---|
| 500 GB SATA 6G 2.5" (8GB cache) SSHD Drive (with 3.5" adapter when installed in MT) | X | X |
| 500 GB SATA 6G 2.5" (8GB cache) SSHD Drive (with 3.5" adapter when installed in MT) - 2nd hard drive | X | X |
| 500 GB SATA 6G 2.5" (8GB cache) SSHD Drive w/caddy | X | X |
| 500 GB SATA 6G 2.5" (8GB cache) SSHD Drive w/caddy- 2nd hard drive | X | X |
| **Solid State Drives** | **MT** | **SFF** |
| 120GB SATA 2.5 Non-SED SSD (with 3.5" adapter when needed) | X | X |
| 180GB SATA 2.5 Non-SED SSD (with 3.5" adapter when needed) | X | X |
| 128 GB SATA 6G 2.5" SSD (with 3.5" adapter when installed in MT) | X | X |
| 128 GB SATA 6G 2.5" SSD (with 3.5" adapter when installed in MT) - 2nd hard drive | X | X |
| 128 GB SATA 6G 2.5" SSD w/caddy | X | |
| 128 GB SATA 6G 2.5" SSD w/caddy - 2nd hard drive | X | |
| 128GB SATA 2.5 SSD TLC Non-SED | X | X |
| 256GB SATA 2.5 SSD TLC Non-SED | X | X |
| **Self-encrypting Drives** | **MT** | **SFF** |
| 500GB 7200 RPM SATA 2.5 SED HDD | | X |
| **Self-encrypting Solid State Drive** | **MT** | **SFF** |
| 500GB 2.5" FIPS 140-2 Self-Encrypting (SED) Solid State Drive | | X |
| 500GB 2.5" FIPS 140-2 Self-Encrypting (SED) Solid State Drive - 2nd hard drive | | X |
| 500GB 2.5" FIPS 140-2 w/ca Self-Encrypting (SED) Solid State Drive | X | |
| 500GB 2.5" FIPS 140-2 w/ca Self-Encrypting (SED) Solid State Drive - 2nd hard drive | X | |
| 256GB SATA 2.5" Opal2 Self-Encrypting (SED) Solid State Drive SSD | | X |
| 256GB SATA 2.5" Opal2 Self-Encrypting (SED) Solid State Drive - 2nd hard drive | | X |
| 256GB SATA 2.5" w/ca Opal2 Self-Encrypting (SED) Solid State Drive | X | |
| 256GB SATA 2.5" w/ca Opal2 Self-Encrypting (SED) Solid State Drive - 2nd hard drive | X | |
| 256 GB SATA 2.5" Self-Encrypting (SED) Solid State Drive (with 3.5" adapter when installed in MT) | X | X |
| 256 GB SATA 2.5" Self-Encrypting (SED) Solid State Drive (with 3.5" adapter when installed in MT) - 2nd hard drive | X | X |
| 256 GB SATA 2.5" w/caddy Self-Encrypting (SED) Solid State Drive | X | |
| 256 GB SATA 2.5" w/caddy Self-Encrypting (SED) Solid State Drive - 2nd hard drive | X | |
| 180GB SATA 2.5" Opal1 Self-Encrypting (SED) Solid State Drive (Pro 1500) | | |
| 180GB SATA 2.5" Opal1 Self-Encrypting (SED) Solid State Drive (Pro 1500) - 2nd hard drive | | |
| 180GB SATA 2.5" Opal1 Self-Encrypting (SED) Solid State Drive (Pro 1500) w/caddy | X | |
| 180GB SATA 2.5" Opal1 Self-Encrypting (SED) Solid State Drive (Pro 1500) w/caddy - 2nd hard drive | X | |
| 128GB SATA 2.5" Opal2 Self-Encrypting (SED) Solid State Drive | | X |
| 128GB SATA 2.5" Opal2 Self-Encrypting (SED) Solid State Drive- 2nd hard drive | | X |
| 128GB SATA 2.5" Opal2 Self-Encrypting (SED) Solid State Drive w/ caddy | X | |

## Standard Features and Configurable Components

| | | |
|---|---|---|
| 128GB SATA 2.5” Opal2 Self-Encrypting (SED) Solid State Drive w/ caddy - 2nd hard drive | X | |
| 120GB SATA 2.5” Opal1 Self-Encrypting (SED) Solid State Drive (Pro 1500) | | X |
| 120GB SATA 2.5” Opal1 Self-Encrypting (SED) Solid State Drive (Pro 1500) - 2nd hard drive | | |
| 120GB SATA 2.5” Opal1 Self-Encrypting (SED) Solid State Drive (Pro 1500) w/ caddy | X | |
| 120GB SATA 2.5” Opal1 Self-Encrypting (SED) Solid State Drive (Pro 1500) w/ caddy - 2nd hard drive | X | X |
| 120GB SATA 2.5 Opal2 SED SSD (with 3.5” adapter when needed) | X | X |
| 180GB SATA 2.5 Opal2 SED SSD (with 3.5” adapter when needed) | X | X |

**Frame/Carrier**

HP Slim Removable SATA HDD Frame/Carrier

**Optical Disc Drive**

Slim DVD-ROM

Slim BDXL Blu-ray Writer

Slim SuperMulti

**Media Card Reader****

| | | |
|---|---|---|
| Media Card Reader | | X |
| SD Reader | 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.

**Card sold separately

## MEMORY

| Form Factor | Type | Maximum | # of Slots |
|---|---|---|---|
| Small Form Factor | DDR3 non-ECC Up to 1600 MT/s | 16 GB | 2 DIMM |
| Microtower | DDR3 non-ECC Up to 1600 MT/s | 16 GB | 2 DIMM |

**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)**

Realtek RTL8151GH-CG GbE LOM (standard)

Intel Ethernet I210-T1 PCIe x1 Gb Network Interface Card (optional)

**Wireless***

Intel® Dual Band Wireless-N 7260 802.11 a/b/g/n PCI Express (optional)

## Standard Features and Configurable Components

HP WLAN 802.11 a/b/g/n 2x2 Dual Band PCIe x1 WLAN (optional)
Intel 7260 802.11 a/b/g/n PCIe x1 WLAN Card (optional)

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

## AUDIO/MULTIMEDIA

HD audio with Realtek ALC221 codec (all ports are stereo)
DTS Sound+™ audio management technology
Microphone and headphone front ports (3.5mm)
Line-out and Line-In rear Ports (3.5mm)
Multi-streaming capable

Internal speaker (standard)

## KEYBOARDS AND POINTING DEVICES

**Keyboard**

HP PS/2 Keyboard
HP USB Keyboard
USB Smart Card (CCID) Keyboard
HP USB and PS/2 Washable Keyboard
HP Wireless Keyboard and Mouse Combo*
HP USB PS/2 Washable W8 Keyboard
HP USB Antimicrobial Keyboard
*Keyboard contains 25% post-consumer recycled plastic material

**Mice**

HP PS/2 Mouse
HP USB Mouse
HP USB 1000dpi Laser Mouse
HP USB and PS/2 Washable Mouse
HP USB Antimicrobial Mouse

## HP BIOSphere

Key features of the HP BIOS include:

- Deployment and manageability - HP BIOS provides several technologies that help integrate the HP ProDesk 400 G2 MT Business PC into the enterprise, such as PXE, and F10 Setup support for 12 languages.
- Support UEFI specification 2.3.1
- 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.
- Thermal Controlled Fans – Automatic or manual controlled fan speeds for cooling and acoustic performance 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 (Emergency Boot Block Recovery). In addition, the HP Business Desktop BIOS Utilities tool enables replicated BIOS setup throughout the Enterprise; it is available from within the BIOS F10 setup and from the support website.

- HP BIOS uses PKI signing of the BIOS for trusted BIOS upgrades and recovery.
- Serviceability - HP BIOS provides diagnostic and detailed service information.

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 Pro models use ACPI to provide power conservation features.
- 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.
- 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.

*BIOS Absolute Persistence module is shipped turned off, and will be activated when customers purchase and activate a subscription. Service may be limited. Check with Absolute for availability outside the U.S. The optional subscription service of Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit: http://www.absolute.com/company/legal/agreements/computrace-agreement. If Data Delete is utilized, the Recovery Guarantee payment is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either create a PIN or purchase one or more RSA SecurID tokens from Absolute Software.

| SECURITY | MT | SFF |
|---|---|---|
| Trusted Platform Module,SLB9660TT1.2FW4.40 (TPM) 1.2 (Common Criteria EAL4+ certified) * Only for model "HP ProDesk 400 G2 MT (TPM, DisplayPort and 2 extra USB)" | X | X |
| SATA port disablement (via BIOS) | X | X |
| Drivelock | N/A | N/A |
| RAID configurations | N/A | N/A |
| Intel® Identify Protection Technology (IPT)[1] | N/A | N/A |
| Serial, parallel, USB enable/disable (via BIOS) | X | X |
| Optional USB Port Disable at factory (user configurable via BIOS) | X | X |
| Removable media write/boot control | X | X |
| Power-On password (via BIOS) | X | X |
| Administrator password (via BIOS) | X | X |

[1] 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.

## Standard Features and Configurable Components

| | | |
|---|---|---|
| HP Chassis (1 bay) Security Kit | **X** | **N/A** |
| Solenoid Hood Lock / Sensor | **N/A** | **N/A** |
| Support for chassis padlocks and cable lock devices | **X** | **X** |

## ENVIRONMENTAL & REGULATORY

ENERGY STAR® certified models available

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

Low halogen (chassis, all internal components and modules)*

TAA compliant models available

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

*External power supplies, power cords, cables and peripherals are not Low Halogen. Service parts obtained after purchase may not be Low Halogen.

## PORTS

**I/O Ports – Standard**

| | **MT** | **SFF** |
|---|---|---|
| USB 2.0 | 6 (rear) * Only for model "HP ProDesk 400 G2 MT (TPM, DisplayPort and 2 extra USB)"<br><br>4 (rear) *Only for model "HP ProDesk 400 G2 MT" | 2 (front); 4 (rear) |
| USB 3.0 | 2 (front) | 2 (front) |
| Serial (RS-232) | 1 | 1 |
| PS/2 | 1 keyboard (purple)<br>1 mouse (green) | 1 keyboard (purple)<br>1 mouse (green) |
| Video | 1 VGA<br><br>1-DisplayPort 1.2 * Only for model "HP ProDesk 400 G2 MT (TPM, DisplayPort and 2 extra USB)"<br><br>1 DVI-D *Only for model "HP ProDesk 400 G2 MT" | 1 VGA<br><br>1-DisplayPort 1.2 |

**NOTE:** When configured with an Intel Celeron, Pentium or 4th generation Intel Core i3 CPU only two of the available video output ports are active

| | | |
|---|---|---|
| Audio | Front: headphone/mic<br>Rear: line in/out<br>3.5mm diameter | Front: headphone/mic<br>Rear: line in/out<br>3.5mm diameter |
| RJ-45 Network Interface | 1 | 1 |

Standard Features and Configurable Components

| I/O Ports – Optional | MT | SFF |
|---|---|---|
| 2nd Serial (RS-232) | 1 | 1 |
| Parallel | 1 | 1 |
| PCI Express x1 (v2.0) | 3<br>4.2” full height<br>6.6” length<br>10W max. power | 3 |
| PCI Express x16 (v2.0) | 1<br>4.2” full height<br>6.6” length<br>75W max. power | 1 |

## BAYS

| (4 total – 2 external, 2 internal) | MT | SFF |
|---|---|---|
| External, SD reader | 1 | 1 |
| External, Slimline ODD | 1 | 1 |
| 2.5” internal storage drive | N/A | 1 |
| 3.5” internal storage drive | 2* | 1 |

*One bay can be configured as a 2.5”

## SERVICE AND SUPPORT

On-site Warranty [1]: One-year (1-1-1) limited warranty delivers one year of on-site, next business day [2] service for parts and labor and includes free telephone support [3] 24 x 7. One-year onsite and labor are not available in all countries. Service offers terms up to 5 years by choosing a Care Pack. To choose the right level of service for your HP product, visit HP Care Pack Central: www.hp.com/go/cpc

**NOTE** 1: Terms and conditions may vary by country. Certain restrictions and exclusions apply. Other warranty variations may be offered in your region.

**NOTE** 2: On-site service may be provided pursuant to a service contract between HP and an authorized HP third-party provider, and is not available in certain countries. Global service response times are based on commercially reasonable best effort and may vary by country.

**NOTE** 3: Technical telephone support applies only to HP-configured and third-party HP qualified hardware and software. Toll-free calling and 24 x 7 support may not be available in some countries.

Technical Specifications - Graphics

## OPERATING SYSTEMS

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

**Pre-installed (Other)**
FreeDOS 2.0
Novell SUSE Linux Enterprise Desktop 11

**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 (available through downgrade rights form Windows 8.1 Pro)
Windows 7 Professional 32 (available through downgrade rights form Windows 8.1 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.
***This system is preinstalled with Windows 7 Pro software and also comes with a license and media for Windows 8.1 Pro software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.

| SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS | | | |
|---|---|---|---|
| **Included** | **Windows 7** | **Windows 8.1** | **Windows 10** |

Technical Specifications - Graphics

| | | | |
|---|---|---|---|
| **BIOS** | HP BIOSphere[1]<br>HP BIOS Protection[2]<br><br>BIOS Update via Network<br>Power On Authentication<br><br><br><br>Absolute Persistence Module[4] | HP BIOSphere[1]<br>HP BIOS Protection[2]<br><br>BIOS Update via Network<br>Power On Authentication<br><br>Measured Boot<br>Secure Boot<br>Absolute Persistence Module[4] | HP BIOSphere[1]<br>HP BIOS Protection[2]<br><br>BIOS Update via Network<br>Power On Authentication<br><br>Measured Boot<br>Secure Boot<br>Absolute Persistence Module[4] |
| **Multimedia** | CyberLink Power DVD, BD<br>CyberLink Power2Go (Secure Burn) | CyberLink Power DVD, BD<br>CyberLink Power2Go (Secure Burn) | CyberLink Power DVD, BD<br>CyberLink Power2Go (Secure Burn) |

| | Windows 7 | Windows 8.1 | Windows 10 |
|---|---|---|---|
| **Communication** | Intel® Wireless Display (WiDi) Software for Windows[5] | Intel® Wireless Display (WiDi) Software for Windows[5] | Intel® Wireless Display (WiDi) Software for Windows[5] |
| **HP Value Add** | HP ePrint Driver[7]<br>HP Recovery Manager<br>HP Support Assistant<br>HP Recovery Disc Creator | HP ePrint Driver7<br>HP Recovery Manager<br>HP Support Assistant<br>HP Recovery Disc Creator | HP ePrint Driver7<br>HP Recovery Manager<br>HP Support Assistant<br>Windows 10 Welcome App<br>HP Recovery Disc Creator |
| **3rd Party** | Foxit PhantomPDF Express for HP | Foxit PhantomPDF Express for HP | Foxit PhantomPDF Express for HP |
| **Microsoft Products** | Buy Office<br>Bing Search<br>Skype | Buy Office<br>Bing Search<br>Skype | Buy Office<br>Bing Search<br>Skype |
| **Manageability** | HP Drive Packs[8]<br>HP SoftPaq Download Manager (SDM)<br>HP System Software Manager (SSM) [8]<br>HP Client Catalog [8] | HP Drive Packs[8]<br>HP SoftPaq Download Manager (SDM)<br>HP System Software Manager (SSM) [8]<br>HP Client Catalog [8] | HP Drive Packs[8]<br>HP SoftPaq Download Manager (SDM)<br>HP System Software Manager (SSM) [8]<br>HP Client Catalog [8] |

Technical Specifications - Graphics

| | | | |
|---|---|---|---|
| | HP CIK for Microsoft SCCM [8]<br>LANDESK Management [9]<br>HP BIOS Config Utility (BCU) [8] | HP CIK for Microsoft SCCM [8]<br>LANDESK Management [9]<br>HP BIOS Config Utility (BCU) [8] | HP CIK for Microsoft SCCM [8]<br>LANDESK Management [9]<br>HP BIOS Config Utility (BCU) [8]<br>Discover HP Touchpoint Manager |
| For more information on HP Client Management Solutions refer to: http://www.hp.com/go/clientmanagement. | | | |
| | Windows 7 | Windows 8.1 | Windows 10 |
| **Security** | HP Device Access Manager<br>HP Drive Encryption[10]<br>HP Disk Sanitizer External Edition<br>HP Security Manager<br>Microsoft Security Essentials[11] | HP Device Access Manager<br>HP Drive Encryption[10]<br>HP Disk Sanitizer External Edition<br>HP Security Manager<br>Microsoft Defender | HP Drive Encryption[10]<br>HP Disk Sanitizer External Edition<br>HP Security Manager<br>Microsoft Defender |
| **Standard** | Smart Card Reader<br>Security lock slot<br>Preboot Authentication | Smart Card Reader<br>Security lock slot<br>Preboot Authentication | Smart Card Reader<br>Security lock slot<br>Preboot Authentication |

**NOTE**: The Absolute Persistence agent is shipped turned off, and must be activated by customers when they purchase a subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S.

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
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

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/eprintcenter). 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 on manageability website.
9 Subscription required.

## Technical Specifications - Graphics

10 Requires Windows. Data is protected prior to Drive Encryption login. Turning the PC off or into hibernate logs out of Drive Encryption and prevents data access.
11 Opt in and internet connection required for updates.

Technical Specifications - Graphics

| Intel HD Graphics | | |
|---|---|---|
| **VGA Controller** | Integrated | |
| **DisplayPort** | Multimode capable; supports HDCP, Display Port Audio (2 streams), HBR2 link rates and Multi-Stream Technology for a maximum of 2 displays (including the integrated panel) | |
| **Bus Type** | N/A | |
| **RAMDAC** | N/A | |
| **Memory** | Intel graphics do not have dedicated memory but utilizes some of the computer's system memory The amount of memory used for graphics depending on the amount of system memory installed, BIOS settings, operating system, and system load. 32 MB is pre-allocated for graphics use at system boot time. Additional memory can be allocated at boot time by the BIOS for PAVP (Protected Audio Video Playback) support for playback of protected video content.<br><br>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 |
| | Up to 1.7GB | Up to 1.8GB |
| | **NOTE**: the actual amount of maximum graphics memory can be less than the amounts listed above depending upon your computer's configuration. | |
| **Maximum Color Depth** | 32 bits/pixel | |
| **Graphics/Video API Support** | 4th Generation Core processors:<br>• The Processor Graphics contains a refresh of the seventh generation graphics core enabling substantial gains in performance and lower power consumption. Up to 16 EU support.<br>• 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<br>  ○ Encode/transcode HD content<br>  ○ Playback of high definition content including Blu-ray Disc<br>  ○ Superior image quality with sharper, more colorful images<br>• DirectX Video Acceleration (DXVA) support for accelerating video processing<br>  ○ Full AVC/VC1/MPEG2 HW Decode<br>• Advanced Scheduler 2.0, 1.0<br>• Windows 7, Windows 8.1, Linux OS Support<br>• DirectX 11.1<br>• OpenGL 4.3<br>• Open CL 1.2 | |

**Supported Display Resolutions and Refresh Rates**

**NOTE:** other resolutions may be available but are not recommended as they may not have been tested and qualified by HP

| Resolution | Refresh Rates |
|---|---|
| 800x600 | 60 Hz |
| 1024x768 | 60 Hz |
| 1152x864 | 60 Hz |
| 1280x600 | 60 Hz |

## Technical Specifications - Graphics

| | |
|---|---|
| 1280x720 | 60 Hz |
| 1280x800 | 60 Hz |
| 1280x960 | 60 Hz |
| 1280x1024 | 60 Hz |
| 1360x768 | 60 Hz |
| 1366x768 | 60 Hz |
| 1400x1050 | 60 Hz |
| 1440x900 | 60 Hz |
| 1600x900 | 60 Hz |
| 1600x1200* | 60 Hz |
| 1680x1050 | 60 Hz |
| 1920x1080 | 60 Hz |
| 1920x1200* | 60 Hz |
| 1920x1440* | 60 Hz |
| 2560x1440* | 60 Hz |
| 2560x1600* | 60 Hz |

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

### AMD Radeon™ HD 8470 Graphics Card

| | |
|---|---|
| **Form Factor** | Full Height |
| **Graphics Controller** | AMD Radeon™ HD 8470 |
| **Core Clock** | 775MHz |
| **Memory Clock** | 900MHz |
| **Memory** | 2GB, DDR3, 64-bit wide |
| **Bus Type** | PCIe Gen2 |
| **Max. Power** | < 30W |
| **Power Source Support** | 12V and 3.3V |
| **3D API Support** | DX11 |
| **HDCP Support** | Yes |
| **Display Max. Resolution** | Digital 2560 x 1600<br>Analog 2048 x 1536 |
| **Supported Graphics APIs** | DX11, OpenGL, full 1080p BD (H264) playback in hardware, HDMI 1.4 support |

**Supported Display Resolutions and Refresh Rates**

**NOTE**: other resolutions may be available but are not recommended as they may not have been tested and qualified by HP

| Resolution | Refresh Rates |
|---|---|
| 800 x 600 | 60 Hz |

## Technical Specifications - Graphics

| | |
|---|---|
| 1024 x 768 | 60 Hz |
| 1280 x 720 | 60 Hz |
| 1280 x 768 | 60 Hz |
| 1280 x 1024 | 60 Hz |
| 1360 x 768 | 60 Hz |
| 1440 x 900 | 60 Hz |
| 1600 x 900 | 60 Hz |
| 1680 x 1050 | 60 Hz |
| 1920 x 1080 | 60 Hz |

| **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.<br>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 512 MB of ultrafast DDR3 memory and is capable of supporting up to 2 displays.<br>DisplayPort connector supports multimode technology to support connection to DVI-D, VGA and HDMI monitors with optional adapters in kits NR078AA, FH973AT, BP937AA, AS615AA.<br>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** | 512 MB 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<br>• Supports 2 monitors up to resolution of 1920 × 1200 at 60 Hz with reduced blanking using DisplayPort Multi-Stream topology technology. |

## Technical Specifications - Graphics

| | | |
|---|---|---|
| | 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<br>• 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 |
| | 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 |

| NVIDIA® NVS™ 315 1GB PCIe x 16 Graphics Card | |
|---|---|
| **Introduction** | Get efficient dual-display graphics performance in a PCI Express low-profile graphics card with the NVIDIA® NVS™ 315 PCIe x16 1 GB Graphics Card, an ideal desktop graphics solution for professional business and commercial applications. |
| **Performance and Features** | The NVIDIA® NVS™ 315 Graphics Card offers 1 GB of ultrafast DDR3 memory and is capable of supporting up to 2 displays.<br>DisplayPort connector supports multimode technology to support connection to DVI-D, VGA and HDMI monitors with optional adapters in kits NR078AA, FH973AT, BP937AA, AS615AA.<br>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™ 315 |
| **Memory Clock** | 875MHz |
| **Memory Size** | 512 MB DDR3 |
| **Memory Bandwidth** | 14 GB/s |
| **Connectors** | DMS-59 , with support for dual VGA, dual DVI or dual Display Port with the appropriate adapter cable |
| **Display Max. Resolution** | Up to 2048 x 1536 VGA; 1920 x 1200 DVI; 2560 x 1600 DisplayPort |
| **Display Output** | Up to 2 displays in the following configurations |
| | • Dual DVI :<br>  ○ Drives two DVI displays using optional HP DMS59 DVI Dual-head Connector Cable DL139A<br>• Dual DisplayPort :<br>  ○ Drives two DisplayPort using optional HP DMS-59 to Dual DisplayPort kit XP688AA<br>• Dual VGA :<br>  ○ Drives two analog using the included HP DMS-59 to Dual VGA Cable |

**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 | |
|---|---|---|
| | Analog Connection | Digital Connection |
| 640 x 480 | 85 | 60 |
| 720 x 480 | 85 | 60 |
| 720 x 576 | 85 | 60 |

## Technical Specifications - Graphics

| | | |
|---|---|---|
| 800 x 600 | 85 | 60 |
| 1024 x 768 | 85 | 60 |
| 1280 x 720 | 85 | 60 |
| 1280 x 768 | 85 | 60 |
| 1280 x 1024 | 85 | 60 |
| 1440 x 900 | 75 | 60 |
| 1600 x 1024 | 85 | 60 |
| 1600 x 1200 | 85 | 60 |
| 1680 x 1050 | 75 | 60 |
| 1920 x 1080 | 85 | 60-R |
| 1920 x 1200 | 85 | 60-R |
| 1920 x 1440 | 85 | N/A |
| 2048 x 1536 | 75 | N/A |
| 2560 x 1440 | N/A | 60* |
| 2560 x 1600 | N/A | 60* |
| | | * Display Port Only |

| **NVIDIA® GeForce® GT630 Graphics Card** | |
|---|---|
| **Introduction** | The NVIDIA® GeForce® GT630 DP (2GB) PCIe x16 Card Graphics Card provides a full height, PCI Express x16 graphics add-in card solution based on the NVIDIA® Kepler™ Architecture GPU. The card is designed to support three display connections through its DVII, and two DisplayPort connectors.<br><br>An ideal solution for desktop PC customers seeking enhanced 2D and advanced 3D graphics performance, the NVIDIA® GeForce® GT630 DP (2GB) PCIe x16 Cards are an excellent choice for business users who want run multiple displays from a single graphics board. Engage in Web conferencing or video or photo editing, while improving your everyday business PC experience with better graphics and excellent visual display quality. |
| **Performance and Features** | The NVIDIA® GeForce® GT630 DP (2GB) PCIe x16 Cards deliver superior PCI Express (PCIe) Gen 3 features including:<br>• Unprecedented flexibility for new applications and enhanced performance<br>• Support for NVIDIA surround technology<br>• Run multiple displays from a single graphics card<br>• Full 16 lane PCIe Generation 3 bus support with peak bandwidth support<br>• Wireless Display ready for future support |
| **Form Factor** | PCIe x16 Card |
| **Graphics Controller** | NVIDIA® Kepler™ Architecture GPU |
| **Core Clock** | 875 MHz |
| **Memory Clock** | 891 MHz |
| **Memory Size** | 2 GB DDR3 128 bit |

## Technical Specifications - Graphics

| | |
|---|---|
| **Memory Bandwidth** | 28.5 GB/s |
| **Display Max. Resolution** | 2560 x 1600 digital, 2048 x 1536 analog |
| **Display Support** | Integrated 400 MHz RAMDAC |

**Supported Display Resolutions and Refresh Rates**

**NOTE**: other resolutions may be available but are not recommended as they may not have been tested and qualified by HP

| **Resolution** | **Maximum Refresh Rates (Hz)** | |
|---|---|---|
| | Analog Connection | Digital Connection |
| 640 x 480 | 85 | 60 |
| 800 x 600 | 85 | 60 |
| 1024 x 768 | 85 | 60 |
| 1280 x 720 | 85 | 60 |
| 1280 x 1024 | 85 | 60 |
| 1440 x 900 | 75 | 60 |
| 1600 x 1200 | 85 | 60 |
| 1680 x 1050 | 75 | 60 |
| 1920 x 1080 | 85 | 60-R |
| 1920 x 1200 | 85 | 60-R |
| 1920 x 1440 | 85 | 60 |
| 2048 x 1536 | 75 | 60 |
| 2560 x 1600 | N/A | 60 |

### AMD Radeon™ HD 8350 1GB PCIe x16 DH Graphics Card

| | |
|---|---|
| **Introduction** | Get stable 2D and advanced 3D graphics performance from the AMD Radeon™ HD 8350 1 GB PCIe x16 DH Graphics Card, a low profile, PCI Express x16 graphics add-in card based on the AMD Radeon™ HD 8350 GPU, great for Web conferencing or video and photo editing. |
| **Form Factor** | PCIe x16 |
| **Graphics Controller** | AMD Radeon™ HD 8350 |
| **Core Clock** | GPU engine operates at 523 MHz |
| **Memory** | 1GB, DDR3, SDRAM |
| **Memory Clock** | 875 MHz |
| **HDCP Support** | Yes |
| **Display Max. Resolution** | Digital 1920 x 1200<br>Analog 2048 x 1536 |

**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

| | Analog Connection | Digital Connection |
|---|---|---|
| 640 x 480 | 85 | 60 |
| 720 x 480 | 85 | 60 |
| 720 x 576 | 85 | 60 |
| 800 x 600 | 85 | 60 |
| 1024 x 768 | 85 | 60 |
| 1280 x 720 | 85 | 60 |
| 1280 x 768 | 85 | 60 |
| 1280 x 1024 | 85 | 60 |
| 1440 x 900 | 75 | 75 |
| 1600 x 1024 | 85 | 60 |
| 1600 x 1200 | 85 | 60 |
| 1680 x 1050 | 75 | 75-R |
| 1920 x 1080 | 85 | 60-R |
| 1920 x 1200 | 85 | 60-R |
| 1920 x 1440 | 85 | N/A |
| 2048 x 1536 | 75 | N/A |
| 2560 x 1440 | N/A | N/A |
| 2560 x 1600 | N/A | N/A |

| **AMD Radeon™ HD 8490 1GB PCIe x16 Graphics Card** | |
|---|---|
| **Introduction** | Get impressive graphics and high resolution dual-display performance in a low profile, PCI Express x16 graphics add-in card based on the AMD Radeon™ HD 8490 Graphics Processor. Improve your everyday PC, Web conferencing, and video or photo editing. |
| **Form Factor** | PCie x16 |
| **Graphics Controller** | AMD Radeon™ HD 8490 |
| **Core Clock** | GPU engine operates at 875 MHz |
| **Memory** | 1GB, DDR3, SDRAM |
| **Memory Clock** | 900 MHz |
| **HDCP Support** | Yes |
| **Display Max. Resolution** | Digital 2560 x 1600<br>Analog 2048 x 1536 |

**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

| | Analog Connection | Digital Connection |
|---|---|---|

Technical Specifications - Graphics

| | | |
|---|---|---|
| 300 x 200 | 85 | 60 |
| 320 x 240 | 85 | 60 |
| 400 x 300 | 85 | 60 |
| 640 x 480 | 85 | 60 |
| 720 x 480 | 85 | 60 |
| 720 x 576 | 85 | 60 |
| 800 x 600 | 85 | 60 |
| 1024 x 768 | 85 | 60 |
| 1280 x 720 | 85 | 60 |
| 1280 x 768 | 85 | 60 |
| 1280 x 1024 | 85 | 60 |
| 1440 x 900 | 75 | 75 |
| 1600 x 900 | 85 | 60 |
| 1600 x 1024 | 85 | 60 |
| 1600 x 1200 | 85 | 60 |
| 1680 x 1050 | 75 | 75-R |
| 1920 x 1080 | 85 | 60-R |
| 1920 x 1200 | 85 | 60-R |
| 1920 x 1440 | 85 | N/A |
| 2048 x 1536 | 75 | N/A |
| 2560 x 1440 | N/A | 60 |
| 2560 x 1600 | N/A | 60 |

| **AMD Radeon™ R7 240 2GB FH PCIe x16 GFX Graphics Card** | |
|---|---|
| **Form Factor** | Full Height |
| **Graphics Controller** | AMD Radeon™ R7 240 |
| **Core Clock** | 730MHz |
| **Memory Clock** | 1800MHz |
| **Memory** | 2GB, DDR3 |
| **Frame Buffer** | 128-bit wide frame buffer |
| **Bus Type** | PCI Express 3.0 interface |
| **Max. Power** | 32.71 W |
| **Power Source Support** | 12V and 3.3V |
| **HDCP Support** | Yes, All digital outputs support HDCP (High-Bandwidth Digital Content Protection) |

## Technical Specifications - Graphics

| | |
|---|---|
| **Display Max. Resolution** | Digital 1920 x 1200<br>Analog 2048 x1536 |
| **Compliance** | Compliant with all listed and with all applicable ACPI, AGP Forum, ANSI, DDWG, HP, Intel, ITU, Microsoft, PCI SIG, SMPTE, and VESA APIs, standards, requirements, implementation guides, and ECRs. |

**SUPPORTED DVI-D (DIGITAL) AND DISPLAYPORT DISPLAY MODES**

**NOTE**: other resolutions may be available but are not recommended as they may not have been tested and qualified by HP

| Resolution | Refresh Rates |
|---|---|
| 640 x 480 | 60 Hz |
| 720 x 480 | 60 Hz |
| 720 x 576 | 60 Hz |
| 800 x 600 | 60 Hz |
| 1024 x 768 | 60 Hz |
| 1280 x 720 | 60 Hz |
| 1280 x 768 | 60 Hz |
| 1280 x 1024 | 60 Hz |
| 1440 x 900 | 60 Hz, 75 Hz |
| 1600 x 1024 | 60 Hz |
| 1600 x 1200 | 60 Hz |
| 1680 x 1050 | 75 Hz |
| 1920 x 1080 | 60 Hz |

### AMD Radeon™ R9 255 2GB PCIe x16 GFX

| | |
|---|---|
| **Form Factor** | PCie x16 |
| **Graphics Controller** | AMD Radeon™ R9 255 |
| **Core Clock** | 900MHz |
| **Memory Clock** | 1150MHz |
| **Memory** | 2GB, (4 pcs of 4Gb 128Mx32 GDDR5) |
| **Frame Buffer** | 128-bit wide frame buffer |
| **Bus Type** | PCI Express 3.0 interface |
| **Max. Power** | N/A |
| **Power Source Support** | 12V and 3.3V |
| **HDCP Support** | Yes, All digital outputs support HDCP (High-Bandwidth Digital Content Protection) |

## Technical Specifications - Graphics

| | |
|---|---|
| **Display Max. Resolution** | Digital 1920 x 1200<br>Analog 2048 x1536 |
| **Compliance** | Compliant with all listed and with all applicable ACPI, AGP Forum, ANSI, DDWG, HP, Intel, ITU, Microsoft, PCI SIG, SMPTE, and VESA APIs, standards, requirements, implementation guides, and ECRs.<br><br>Supports Microsoft DirectX 11.1, OpenGL 4.3 and OpenCL 1.2 APIs. |

**SUPPORTED DVI-D (DIGITAL) AND DISPLAYPORT DISPLAY MODES**

**NOTE**: other resolutions may be available but are not recommended as they may not have been tested and qualified by HP

| Resolution | Refresh Rates |
|---|---|
| 320 x 200 | 60 Hz |
| 320 x 240 | 60 Hz |
| 400 x 300 | 60 Hz |
| 480 x 360 | 60 Hz |
| 512 x 384 | 60 Hz |
| 640 x 350 | 60 Hz |
| 640 x 400 | 60 Hz |
| 640 x 480 | 60 Hz |
| 720 x 480 | 60 Hz |
| 720 x 576 | 60 Hz |
| 800 x 600 | 60 Hz |
| 1024 x 768 | 60 Hz |
| 1152 x 864 | 60 Hz |
| 1280 x 720 | 60 Hz |
| 1280 x 768 | 60 Hz |
| 1280 x 960 | 60 Hz |
| 1280 x 1024 | 60 Hz |
| 1440 x 900 | 60 Hz, 75 Hz |
| 1600 x 900 | 60 Hz |
| 1600 x 1024 | 60 Hz |
| 1600 x 1200 | 60 Hz |
| 1680 x 1050 | 75 Hz |
| 1680 x 1080 | 60 Hz |
| 1920 x 1080 | 60 Hz |
| 2560 x 1440 | 60 Hz |
| 2560 x 1600 | 60 Hz |

Technical Specifications – Hard Disk and Solid State Storage

## Introduction:

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

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

**SMART IV Technology**

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

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

**Native Command Queuing**

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

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

| HP 256 GB* (non-SED) TLC Solid State Drive | | |
|---|---|---|
| **Unformatted Capacity** | 256 GB* | |
| **Architecture** | Triple Level Cell (TLC) NAND | |
| **Interface** | SATA 6 GB/sec | |
| **Dimensions (W x H x D)** | 2.75 x 0.276 x 3.96 in (6.985 x 0.7 x 10.05 cm) | |
| **Weight** | 0.1 lb (45 g) | |
| **Bandwidth Performance** | Sustained Sequential Read: | Up to 510 MB/s |

## Technical Specifications – Hard Disk and Solid State Storage

| | | |
|---|---|---|
| | Sustained Sequential Write: | Up to 280 MB/s |
| | Random Read (4KB): | up to 90K IOPs |
| | Random Write (4KB): | up to 70K IOPs |
| **Latency** | Read: | 55ms (TYP) |
| | Write: | 55ms (TYP) |
| **Power** | DC power requirement: | Min 4.75 V; Max 5.25 V |
| | Total power consumption: | 160 mW (Active) ; <85 mW; (Idle) |
| **Useful Drive Life** | 1.2 million device 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/1.0 msec |
| **Regulations** | UL, CSA, EN 60950-2000, CISPR Pub 22 Class B, CNS 13438, AS/NZS<br>CISPR 22:2002 Class B, Korea KCC, CE Mark | |

* For solid state disk drives, GB means 1 billion bytes. Actual formatted capacity is less. Up to 16GB for Windows 7 and up to 36GB for Windows 8.1 is reserved for system recovery software.** The product achieves a mean time between failure (MTBF) based on population statistics not relevant to individual units.

| **HP 128 GB* (non-SED) TLC Solid State Drive** | | |
|---|---|---|
| **Unformatted Capacity** | 128 GB* | |
| **Architecture** | Triple Level Cell (TLC) NAND | |
| **Interface** | SATA 6 GB/sec | |
| **Dimensions (W x H x D)** | 2.75 x 0.276 x 3.96 in (6.985 x 0.7 x 10.05 cm) | |
| **Weight** | 0.1 lb (45 g) | |
| **Bandwidth Performance** | Sustained Sequential Read: | Up to 510 MB/ss |
| | Sustained Sequential Write: | Up to 140 MB/s |
| | Random Read (4KB): | up to 90K IOPs |
| | Random Write (4KB): | up to 36K IOPs |
| **Latency** | Read: | 55ms (TYP) |
| | Write: | 55ms (TYP) |

## Technical Specifications – Hard Disk and Solid State Storage

| | | |
|---|---|---|
| **Power** | DC power requirement: | Min 4.75 V; Max 5.25 V |
| | Total power consumption: | 160 mW (Active) ; <85 mW; (Idle) |
| **Useful Drive Life** | 1.2 million device 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/1.0 msec |
| **Regulations** | UL, CSA, EN 60950-2000, CISPR Pub 22 Class B, CNS 13438, AS/NZS<br>CISPR 22:2002 Class B, Korea KCC, CE Mark | |

* For solid state disk drives, GB means 1 billion bytes. Actual formatted capacity is less. Up to 16GB for Windows 7 and up to 36GB for Windows 8.1 is reserved for system recovery software.** The product achieves a mean time between failure (MTBF) based on population statistics not relevant to individual units.

### 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, Multisegmented (MB)** | 64 MB | |
| **Seek Time** (average) | Read | <8.5 ms |
| | Write | <9.5 ms |
| **Height** | 1.028 in/26.11 mm | |
| **Width** | 4.0 in/101.6 mm | |
| **Depth** | 5.787 in/146.99 mm | |
| **Weight** | 1.38 lb/626 g | |
| **Operating Temperature** | 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) |

## Technical Specifications – Hard Disk and Solid State Storage

| | | |
|---|---|---|
| **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

| | | |
|---|---|---|
| **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) | |

### 500GB 7200 RPM SATA 2.5" Self-Encrypting (SED) Hard Disk Drive

| | |
|---|---|
| **Capacity** | 500,107,862,016 bytes |
| **Rotational Speed** | 7,200 rpm |
| **Drive Type** | Self-Encrypting Drive (SED) with SATA interface |

## Technical Specifications – Hard Disk and Solid State Storage

| | | |
|---|---|---|
| **Interface** | SATA 6 Gb/s | |
| **Segmented Buffer with write cache** | 32768 KB - A portion of buffer capacity used for firmware | |
| **Number of Sectors** | 976,773,168 | |
| **Seek Time** (typical reads) | Single Track: | 1.0 ms |
| | Average: | 13 ms |
| | Full-Stroke: | 25 ms |
| **Media Diameter** | 2.5 in/63.5 mm | |
| **Height** | 0.267 in/6.8 mm, ±0.2mm | |
| **Width** | 2.75 in/69.85 mm, ±0.25mm | |
| **Length** | 3.945 in/100.2 mm, ±0.25mm | |
| **Weight** | 3.35 oz/95 g (max) | |
| **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** | 32° to 140° F (0° to 60° 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) | |

## 128 GB Solid State Drive

| | | |
|---|---|---|
| **Unformatted Capacity** | 128 GB* | |
| **Architecture** | Multi Level Cell (MLC) NAND | |
| **Interface** | SATA 6 GB/sec | |
| **Dimensions (W x H x D)** | 2.75 x 0.276 x 3.96 in (6.985 x 0.7 x 10.05 cm) | |
| **Weight** | 0.16 lb (73 g) | |
| **Bandwidth Performance** | Sustained Sequential Read: | Up to 450 MB/ss |

## Technical Specifications – Hard Disk and Solid State Storage

| | | |
|---|---|---|
| | Sustained Sequential Write: | Up to 260 MB/s |
| | Random Read (4KB): | up to 46K IOPs |
| | Random Write (4KB): | up to 56K IOPs |
| **Latency** | Read: | 55ms (TYP) |
| | Write: | 55ms (TYP) |
| **Power** | DC power requirement: | Min 4.5 V; Max 5.5 V |
| | Total power consumption: | 160 mW (Active) ; <85 mW; (Idle) |
| **Useful Drive Life** | 1.2 million device 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/1.0 msec |
| **Regulations** | UL, CSA, EN 60950-2000, CISPR Pub 22 Class B, CNS 13438, AS/NZS<br>CISPR 22:2002 Class B, Korea KCC, CE Mark | |

* For solid state disk drives, GB means 1 billion bytes. TB = 1 trillion bytes. . Actual formatted capacity is less. Up to 36GB for Windows 8 is reserved for system recovery software.** The product achieves a mean time between failure (MTBF) based on population statistics not relevant to individual units.

### 500GB 2.5” FIPS 140-2 SED Solid State Drive

| | | |
|---|---|---|
| **Formatted Capacity** | 500 GB | |
| **Architecture** | Self-Encrypting (SED) Solid State Drive with SATA interface. | |
| **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** | 100.35 mm ± 0.25/0.20 | |
| **Weight (typical)** | <95 g (0.209 lb) | |
| **Bandwidth Performance** | Sustained data transfer rate OD | 100 MB/s max |
| | I/O data-transfer rate | 600 MB/s max |

## Technical Specifications – Hard Disk and Solid State Storage

| | | | |
|---|---|---|---|
| **Power** | Power consumption: | Spinup (max): 1.00A<br>Idle, active: 0.70W<br>Sleep 0.18W | |
| **Environmental** (all conditions, non-condensing) | Operating Temperature: | | 32° to 140° F (0° to 60° C) |
| | Relative Humidity: | | 5% to 95% |
| | Shock: | | Maximum 400 G/2 ms |
| **256GB SATA 2.5" Opal2 SED Solid State Drive** | | | |
| **Unformatted Capacity** | 256 GB<br>500,118,192 (User Addressable Sectors) | | |
| **Architecture** | Self-Encrypting (SED) Solid State Drive with NAND Flash and SATA interface.<br>Trusted Computing Group(TCG) OPAL 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 55 g | | |
| **Bandwidth Performance** | Sustained Sequential Read: | Up to 520 MB/s | |
| | Sustained Sequential Write: | Up to 500 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

| 256 GB SATA 2.5" Self-Encrypting (SED) Solid State Drive | | |
|---|---|---|
| **Unformatted Capacity** | 256,186,271 user addressable sectors | |
| **Architecture** | Self-Encrypting (SED) Solid State Drive with 25nm MLC NAND Flash and SATA interface | |
| **Interface** | Serial ATA 2.0 (3.0 Gb/s) | |
| **NAND Flash** | 25nm MLC NAND Flash | |
| **Height** | .275 in/7mm | |
| **Width** | 2.75 in/69.85 mm | |
| **Length** | 3.95 in/100.5 mm | |
| **Weight** | 0.161 lb (73 g) | |
| **Bandwidth Performance** | Sustained Sequential 128k Read: | Up to 450 MB/s |
| | Sustained Sequential 128k Write: | Up to 260 MB/s |
| | Random 4k Read: | Up to 46K IOPs |
| | Random 4k Write: | Up to 56K IOPs |
| **Latency** | Read: | 55 µs |
| | Write: | 55 µs |
| **Power** | SATA power consumption: | 160 mW (active average); <85 mW (idle average) |
| **Useful Drive Life** | 72TB written, up to 40GB/day for 5 years | |
| **Environmental** (all conditions, non-condensing) | Operating Temperature: | 32° to 158° F (0° to 70° C) |
| | Relative Humidity: | 5% to 95% |
| | Shock: | 1,500 G/1 ms |

| 180GB SATA 2.5" Opal1 SED Solid State Drive (Pro 1500) | |
|---|---|
| **Unformatted Capacity** | 351,651,888 Unformatted Capacity (Total User Addressable Sectors in LBA mode) |
| **Architecture** | Self-Encrypting (SED) Solid State Drive with 20nm MLC NAND Flash and SATA interface |
| **Interface** | Serial ATA (6.0 Gb/s) |
| **NAND Flash** | 20nm MLC NAND Flash |

## Technical Specifications – Hard Disk and Solid State Storage

| | | |
|---|---|---|
| **Form Factor** | 2.5 inch | |
| **Thickness** | 7 mm | |
| **Weight** | Up to 78 g | |
| **Bandwidth Performance** | Sustained Sequential Read: | Up to 540 MB/s |
| | Sustained Sequential Write: | Up to 490 MB/s |
| | Random 4k Read: | Up to 41K IOPs |
| | Random 4k Write: | Up to 80K IOPs |
| **Power** | SATA power consumption: | 195 mW (active average); 125 mW (idle average) |
| **Mean Time Between Failure (MTBF)** | 1,200,000 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 |

### 128GB SATA 2.5” Opal2 SED Solid State Drive

| | |
|---|---|
| **Unformatted Capacity** | 128 GB<br>250,069,680 (User Addressable Sectors) |
| **Architecture** | Self-Encrypting (SED) Solid State Drive with NAND Flash and SATA interface.<br>Trusted Computing Group(TCG) OPAL 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 55 g |

## Technical Specifications – Hard Disk and Solid State Storage

| | | |
|---|---|---|
| **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 |

### 120GB SATA 2.5" Opal1 SED Solid State Drive

| | | |
|---|---|---|
| **Unformatted Capacity** | 234,442,648 Unformatted Capacity (Total User Addressable Sectors in LBA mode) | |
| **Architecture** | Self-Encrypting (SED) Solid State Drive with 20nm MLC NAND Flash and SATA interface | |
| **Interface** | Serial ATA (6.0 Gb/s) | |
| **NAND Flash** | 20nm MLC NAND Flash | |
| **Form Factor** | 2.5 inch | |
| **Thickness** | 7 mm | |
| **Weight** | Up to 78 g | |
| **Bandwidth Performance** | Sustained Sequential Read: | Up to 540 MB/s |
| | Sustained Sequential Write: | Up to 480 MB/s |
| | Random 4k Read: | Up to 41K IOPs |
| | Random 4k Write: | Up to 80K IOPs |
| **Power** | SATA power consumption: | 195 mW (active average); 125 mW (idle average) |
| **Mean Time Between Failure (MTBF)** | 1,200,000 hours | |

## Technical Specifications – Hard Disk and Solid State Storage

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

| **1TB 10K SATA 6.0Gb/s 3.5" Hard Disk Drive** | | |
|---|---|---|
| **Capacity** | 500,107,862,016 bytes | |
| **Rotational Speed** | 7,200 rpm | |
| **Interface** | Serial ATA 2.0 (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: | 12 ms |
| | Full-Stroke: | 25 ms |
| **Height** (nominal) | 0.374 in/9.5 mm | |
| **Width** (nominal) | Media diameter: 2.5 in/63.5 mm | |
| | Physical size: 2.75 in/70 mm | |
| **Operating Temperature** | 41° to 131° F (5° to 55° C) | |

Technical Specifications - Removable Storage

| HP Slim SuperMulti DVD Writer Drive | | |
|---|---|---|
| **Height** | 12.7mm 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 0.5 x 5.0 in (128 x 12.7 x 127 mm) without bezel | |
| **Weight** (max) | 0.42 lb (190 g) | |
| **Write speeds** | DVD-RAM | Up to 5X |
| | 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 24X |
| **Read speeds** | DVD-RAM | Up to 5X |
| | DVD-RW, DVD+RW | Up to 8X |
| | DVD-R DL, DVD+R DL | Up to 8X |
| | DVD+R, DVD-R | Up to 8X |
| | DVD-ROM DL, DVD-ROM | Up to 8X |
| | CD-ROM, CD-R | Up to 24X |
| | CD-RW | Up to 24X |
| **Access time** (typical reads, including settling) | Random | DVD-ROM: 170 ms (typical), CD-ROM: 170 ms (typical) |
| | Full Stroke | DVD-ROM: 320 ms (typical), CD-ROM: 320 ms (typical) |
| | Stop Time | 6 seconds (typical) |
| **Power** | Source | Slimline SATA DC power receptacle |
| | DC Power Requirement | 5 VDC ± 5%-100 mV ripple p-p |
| | | |
| | DC Current | 5 VDC (< 1000 mA typical, 1600 mA maximum) |
| | | |
| **Environmental conditions** (operating - non-condensing) | Temperature | 41° to 122° F (5° to 50° C) |
| | Relative Humidity | 10% to 80% |

## Technical Specifications - Removable Storage

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

| **HP Slim Blu-ray BDXL Drive** | | | |
|---|---|---|---|
| **Height** | 12.7mm 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 0.5 x 5.0 in (128 x 12.7 x 127 mm) without bezel | | |
| **Weight** (max) | Up to 0.37 lb (170 g) 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 |
| | DVD-RAM | Up to 5X | |
| | CD-R | Up to 24X | |
| | CD-RW | Up to 24X | |
| | | **Triple-layer** | **Quadruple-layer** |
| | BD-R | Up to 4X | Up to 4X |
| | 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 | |
| | DVD+R | Up to 8X | Up to 8X |

## Technical Specifications - Removable Storage

| | | | |
|---|---|---|---|
| | DVD+RW | Up to 8X | |
| | BDMV (AACS Compliant Disc) | Up to 6X/2X (Read/Play) | |
| | DVD-RAM | Up to 5X | |
| | DVD-Video (CSS Compliant Disc) | Up to 8X/4X (Read/Play) | |
| | CD-R/RW/ROM | Up to24X | |
| | CD-DA(DAE) | Up to 20X/10X (Read/Play) | |
| **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 Slim DVD-ROM Drive** | | |
|---|---|---|
| **Height** | 12.7mm | |
| **Orientation** | Either horizontal or vertical | |
| **Interface type** | SATA/ATAPI | |
| **Dimensions** (W x H x D) | 5.04 x 0.5 x 5.0 in (128 x 12.7 x 127 mm) without bezel | |
| **Weight** (max) | Up to 0.37 lb (170 g) without bezel | |
| **Read speeds** | DVD+R/-R/+RW/ -RW/+R DL /-R DL | Up to 8X |
| | DVD-ROM | Up to 8X |
| | CD-ROM, CD-R | Up to 24X |
| | CD-RW | Up to 24X |
| **Access time** (typical reads, including settling) | Random | DVD-ROM: 170 ms (typical), CD-ROM: 170 ms (typical) |
| | Full Stroke | DVD-ROM: 320 ms (typical), CD-ROM: 320 ms (typical) |
| **Power** | Source | Slimline SATA DC power receptacle |
| | DC Power Requirement | 5 VDC ± 5%-100 mV ripple p-p |
| | DC Current | 5 VDC - <1000 mA typical, < 1600 mA maximum |

## Technical Specifications - Removable Storage

| | | |
|---|---|---|
| **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 G2 Business PC supports the 4th 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 4th generation Intel® Core™ processor includes an Integrated Memory Controller (IMC). The IMC supports DDR3/DDR3L protocols with two independent, 64-bit wide channels each accessing one or two DIMMs.

- Two channels of non-ECC DDR3/DDR3L unbuffered dual in-line memory modules (UDIMM) or DDR3/DDR3L 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 1600 MT/s; actual supported data transfer rate determined by the configured processor.
- 64-bit wide channels
- DDR3/DDR3L system memory I/O voltage of 1.5V
- Theoretical maximum memory bandwidth of:
    - 21.3 GB/s in dual-channel mode assuming 1333 MT/s
    - 25.6 GB/s in dual-channel mode assuming 1600 MT/s

## Platform Memory Support

- The Small Form Factor (SFF) and Microtower (MT) platforms support up to two (2) industry-standard DDR3-SDRAM 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.

Technical Specifications – Networking/Communication

| **Intel 7260 802.11 a/b/g/n PCIe x1 WLAN Card *** | | |
|---|---|---|
| **Dimensions** (L x H) | 0.12 x 1.06 x 1.18 in (3.1 x 26.8 x 30.0 mm) | |
| **Chipset** | Atheros AR9462 | |
| **System interface** | PCI-Express Mini Card | |
| **Network standard** | 802.11 a/b/g/n | |
| **Frequency band** | Wi-Fi:<br>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<br>802.11b/g/n 2.402-2.482 GHz | |
| **Operating temperature** | 14° to 158°F, operating (-10° to 70°C, operating) | |
| **Storage temperature** | -40° to 176°F, non-operating (-40° to 80°C, non-operating) | |
| **Humidity** | 10-90% operating<br>5-95% non-operating | |
| **Operating voltage** | 3.3 V ±9% I/O supply voltage | |
| **Power Consumption** | **Platform/WLAN Mode** | **Power Consumption** |
| | **Wi-Fi** | |
| | Transmit Mode | 2 W |
| | Receive Mode | 1.6 W |
| | Idle mode (PSP)<br>(WLAN Associated) | 250mW |
| | Idle mode<br>(WLAN unassociated) | 100mW |
| | Radio disabled | 75mW |
| **Output Power** | 2.4G: +13.5dBm minimum | |
| | 5G: +12dBm minimum | |

| | |
|---|---|
| **Security** | IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only |
| | 802.1x authentication |
| | WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES |
| | IEEE 802.11i |
| | Cisco Certified Extensions, all versions through CCX4 and CCX Lite |
| | WAPI |
| **Antenna** | 2 transmit; 2 receive (2x2) |
| * Wireless access point and Internet service required and not included. Availability of public wireless access points limited. | |

| **Realtek RTL8151GH-CG GbE LOM Network Adapter** | |
|---|---|
| **Connector** | RJ-45 |
| **System Interface** | Integrated on PCA |
| **Controller** | Realtek RTL8151GH-CG Gigabit Ethernet Controller |
| **Memory** | 16 KB FIFO packet buffer memory |
| **Data rates supported** | 10/100/1000 Mbps |
| **IEEE Compliance** | 802.1P<br>802.1Q<br>802.3<br>802.3ab<br>802.3az<br>802.3u |
| **Bus architecture** | PCI Express |
| **Data transfer mode** | PCIe-based interface for active state operation (S0 state) |
| **Power requirement** | Requires 3.3V and 1V or just 3.3V with integrated regulators<br>Power consumption 0.425 W |
| **Network transfer mode** | Full-duplex |
| | Half-duplex (not supported for the 1000BASE-T transceiver) |
| **Network transfer rate** | 10BASE-T (half-duplex) 10 Mbps |

| | | |
|---|---|---|
| | 10BASE-T (full-duplex) 20 Mbps | |
| | 100BASE-TX (half-duplex) 100 Mbps | |
| | 100BASE-TX (full-duplex) 200 Mbps | |
| | 1000BASE-T (full-duplex) 2000 Mbps | |
| **Environmental** | Operating Temperature: | 32° to 158° F (0° to 70° C ) |
| | Operating Humidity: | 60% RH |
| **Management** | WOL, auto MDI crossover, PXE, Muti-port teaming, Advanced cable diagnostic | |

| **Intel® Ethernet I210-T1 Gigabit Network Adapter** | |
|---|---|
| **Connector** | RJ-45 |
| **System Interface** | PCI Express x1 |
| **Controller** | Intel® I210 Gigabit Ethernet Controller |
| **Memory** | Integrated Dual 48K configurable transmit receive FIFO Buffers |
| **Data rates supported** | 10/100/1000 Mbps |
| **IEEE Compliance** | 802.1P<br>802.1Q<br>802.2<br>802.3<br>802.3AB<br>802.3u<br>802.3x flow control |
| **Bus architecture** | PCI-E 2.1 |
| **Data path width** | X1, 250 MB/s, Bi-directional interface |
| **Data transfer mode** | Bus-master DMA |
| **Hardware certifications** | FCC, B, CE, TUV-c, TUVus Mark Canada and United States, TUV-GS Mark for European Union |
| **Power requirement** | Aux 3.3 V, 3.0 Watts in 1000 base-T and 1.0 Watts in 100 Base-T |
| **Boot ROM support** | Yes<br>10BASE-T (half-duplex) 10 Mbps<br>10BASE-T (full-duplex) 20 Mbps |

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

## Intel Dual Band Wireless-N 7260 802.11 a/b/g/n (2x2) Wireless Network Interface Connection

| | | |
|---|---|---|
| **Wireless LAN Standards** | IEEE 802.11a/b/g/n | |
| **Interoperability** | Wi-Fi certified (802.11 a/b/g/n WMM, WPA, WPA2 and WPS) | |
| | Cisco Compatible Extensions Program compliant with Microsoft Windows 7, Windows Vista and XP. | |
| | **NOTE**: 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. | |
| **Frequency Band** | 802.11b/g/n | 2.402-2.482 GHz |
| | 802.11a/n | 4.9 - 4.95 GHz (Japan)<br>5.15 - 5.25 GHz<br>5.25 - 5.35 GHz<br>5.47 - 5.725 GHz<br>5.825 - 5.850 GHz |
| **Antenna Structure** | 2 transmit; 2 receive (2x2) | |
| **Data Rates** | 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>802.11b: 1, 2, 5.5, 11 Mbps<br>802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) | |
| **Modulation** | Direct Sequence Spread Spectrum<br>CCK, BPSK, QPSK, 16-QAM, 64-QAM | |

## Technical Specifications – Networking/Communication

| | |
|---|---|
| **Security** | • IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only<br>• AES-CCMP: 128 bit in hardware<br>• 802.1x authentication<br>• WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.<br>• WPA2 certification<br>• IEEE 802.11i<br>• Cisco Certified Extensions, all versions through CCX4 and CCX Lite<br>• WAPI |
| | **NOTE**: Check latest software/driver release for updates on supported security features. |
| **Sub-channels** | Multinational support with frequency bands and channels compliant to local regulations. |
| **Network Architecture Models** | Ad-hoc (Peer to Peer)<br>Infrastructure (Access Point Required) |
| **Roaming** | IEEE 802.11 compliant roaming between band Access Points |
| **Output Power** | • 2.4G: +13.5dBm minimum<br>• 5G: +12dBm minimum |
| | **NOTE**: Maximum output power may vary by country according to local regulations. |
| **Power Consumption** | Transmit: 2.0 Watts |
| | Receive: 1.6 Watts |
| | Idle mode: 250 mW (WLAN associated) In Power Save Polling mode and on battery power. |
| | Idle mode: 100 mW (WLAN unassociated) |
| | Radio off: 100 mW (WLAN unassociated) |
| **Power Management** | ACPI compliant power management<br>802.11 compliant power saving mode |
| **Receiver Sensitivity**<br><br>**NOTE**: 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). | 802.11g:-90 dBm (6 Mbps), -89 dBm (9 Mbps), -87 dBm (12 Mbps), -85 dBm (18 Mbps), -82 dBm (24 Mbps), -79 dBm (36 Mbps), -76 dBm (48 Mbps), -74 dBm (54 Mbps)<br><br>802.11b:-95 dBm (1 Mbps), -93 dBm (2 Mbps), -91 dBm (5.5 Mbps), -88 dBm (11 Mbps)<br><br>802.11g:-90 dBm (6 Mbps), -89 dBm (9 Mbps), -87 dBm (12 Mbps), -85 dBm (18 Mbps), -82 dBm (24 Mbps), -79 dBm (36 Mbps), -76 dBm (48 Mbps), -74 dBm (54 Mbps) |
| **Antenna Connections** | 2 U.FL type connectors (output impedance of 50 ± 2 ohms) |
| **Form Factors** | PCI-Express Half-MiniCard |
| **Weight** | 0.0068 lb (3.1 g) |
| **Dimensions** | 0.12 x 1.06 x 1.18 in (3.1 x 26.8 x 30.0 mm) |
| **Operating Voltage** | 3.3V +/- 9% |

Technical Specifications – Networking/Communication

| | | |
|---|---|---|
| **Temperature** | **Operating:**<br>**Non-operating:** | 14° to 158° F (-10° to 70° C)<br>-40° to 176° F (-40° to 80° C) |
| **Humidity** | **Operating:**<br>**Non-operating:** | 10% to 90% (non-condensing)<br>5% to 90% (non-condensing) |
| **Altitude** | **Operating:**<br>**Non-operating:** | 0 to 10,000 ft (3,048 m)<br>0 to 50,000 ft (15,240 m) |
| **LED Activity** | LED Amber - Radio OFF; LED White - Radio ON | |

| **HP WLAN 802.11 a/b/g/n 2x2 Dual Band PCIe x1 WLAN Card** | | |
|---|---|---|
| **Wireless LAN Standards** | IEEE 802.11a/b/g/n | |
| **Interoperability** | Wi-Fi certification | |
| | BQE certification of the Bluetooth component | |
| | CCXv1, v2, v3, v4, v5 CCX certified (Cisco Client Extensions) | |
| | **NOTE**: 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. | |
| **Frequency Band** | 802.11b/g/n | 2.402-2.482 GHz |
| | 802.11a/n | 4.9 - 4.95 GHz (Japan)<br>5.15 - 5.25 GHz<br>5.25 - 5.35 GHz<br>5.47 - 5.725 GHz<br>5.825 - 5.850 GHz |
| **Antenna Structure** | 2 transmit; 2 receive (2x2)<br>Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications. | |
| **Data Rates** | • 802.11b: 1, 2, 5.5, 11 Mbps<br>• 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>• 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>• 802.11n: card will support rates for NSS=1 and NSS=2 for RX and TX for 20 and 40 MHz channels. Short and long guard interval shall be supported. | |
| **Security** | • IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only<br>• AES-CCMP: 128 bit in hardware<br>• 802.1x authentication<br>• WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.<br>• WPA2 certification<br>• IEEE 802.11i<br>• Cisco Certified Extensions, all versions through V5<br>• WAPI | |
| | **NOTE**: Check latest software/driver release for updates on supported security features. | |

## Technical Specifications – Networking/Communication

<table>
<tr><td>Roaming</td><td>IEEE 802.11 compliant roaming between band Access Points</td></tr>
<tr><td rowspan="2">Output Power</td><td>• +13.5 dBm minimum<br>• Maximum output power must be able to achieve modular regulatory certification peak gain of +3dBi at 2.4GHz and +5dBi at 5GHz</td></tr>
<tr><td>NOTE: Maximum output power may vary by country according to local regulations.</td></tr>
<tr><td rowspan="4">Power Consumption</td><td>Transmit: 2.0 Watts</td></tr>
<tr><td>Receive: 1.6 Watts</td></tr>
<tr><td>Idle mode: 250 mW (WLAN associated)</td></tr>
<tr><td>Idle mode: 100 mW (WLAN unassociated)<br>Radio off: 75 mW (WLAN unassociated)</td></tr>
<tr><td rowspan="3">Bluetooth Power Consumption*<br>*Bluetooth not supported on 400 G2 Desktops</td><td>Peak operating: 330 mW</td></tr>
<tr><td>Receive: 230 mW</td></tr>
<tr><td>USB selective suspend: 17 mW</td></tr>
<tr><td>Power Management</td><td>ACPI and PCI Express bus compliant power management<br>802.11 compliant power saving mode<br>Supports USB selective suspend and resume of the Bluetooth component through the USB control signals.</td></tr>
<tr><td>Receiver Sensitivity</td><td>802.11b
<table>
<tr><th>Sensitivity (dBm)</th><th>Rate (Mbps)</th><th>Modulation and Coding Rate</th></tr>
<tr><td></td><td></td><td></td></tr>
<tr><td>-95</td><td>1</td><td>BPSK</td></tr>
<tr><td>-93</td><td>2</td><td>QPSK</td></tr>
<tr><td>-91</td><td>5.5</td><td>CCK</td></tr>
<tr><td>-88</td><td>11</td><td>CCK</td></tr>
</table></td></tr>
<tr><td></td><td>802.11a/g
<table>
<tr><th>Sensitivity (dBm)</th><th>Rate (Mbps)</th><th>Modulation and Coding Rate</th></tr>
<tr><td>-90</td><td>6</td><td>BPSK - ½</td></tr>
<tr><td>-89</td><td>9</td><td>BPSK – ¾</td></tr>
<tr><td>-87</td><td>12</td><td>QPSK – ½</td></tr>
<tr><td>-85</td><td>18</td><td>QPSK – ¾</td></tr>
<tr><td>-82</td><td>24</td><td>16 QAM – ½</td></tr>
<tr><td>-79</td><td>36</td><td>16 QAM – ¾</td></tr>
<tr><td>-76</td><td>48</td><td>64 QAM – 2/3</td></tr>
<tr><td>-74</td><td>54</td><td>64 QAM – ¾</td></tr>
</table></td></tr>
<tr><td></td><td>802.11n
<table>
<tr><th>Sensitivity (dBm)</th><th>Rate (Mbps)</th><th>Modulation and Coding Rate</th></tr>
<tr><td>-69</td><td>150</td><td>64 QAM – 5/6</td></tr>
</table></td></tr>
</table>

## Technical Specifications – Networking/Communication

| | | |
|---|---|---|
| | -66 \| 300 \| 64 QAM – 5/6 | |
| **Form Factors** | PCI-Express Half-MiniCard | |
| **Weight** | 0.1133 oz (3.212 g) | |
| **Dimensions** | 1.04 x 1.17 x 0.042 in (26.65 x 29.85 x 1.067 mm) | |
| **Operating Voltage** | 3.3V +/- 9% | |
| **Temperature** | **Operating:**<br>**Non-operating:** | 14° to 158° F (-10° to 70° C)<br>-40° to 176° F (-40° to 80° C) |
| **Humidity** | **Operating:**<br>**Non-operating:** | 10% to 90% (non-condensing)<br>5% to 95% (non-condensing) |
| **Altitude** | **Operating:**<br>**Non-operating:** | 0 to 10,000 ft (3,048 m)<br>0 to 50,000 ft (15,240 m) |

Technical Specifications – Audio

## High Definition Audio

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

Technical Specifications - Input/Output Devices

| HP PS/2 Keyboard | | |
|---|---|---|
| **Physical Characteristics** | Keys | 104, 105, 106, 107, 109 layout (depending upon country) |
| | Dimensions (L x W x H) | 18.22 x 6.47 x 1.1 in (46.28 x 16.43 x 2.79 cm) |
| | Weight | 2 lb (0.9 kg) minimum |
| **Electrical** | Operating voltage | + 5VDC ± 10% |
| | 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 |
| | 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 149° F (-30° to 65° 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 |

Technical Specifications - Input/Output Devices

| | | |
|---|---|---|
| | 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** | | |
|---|---|---|
| **Key Benefits:** | • Protects against unauthorized access with smart card technology<br>• Delivers even greater security when combined with a HP ProtectTools smart card and the HP ProtectTools Security Software<br>• Combination of username and password or pin with a smart card or security token<br>• Secures online transactions using digital signatures and certificates<br>• Conforms to industry standards for ease of setup and use<br>• Delivers long product life and quiet operation with high-impact materials and lubricated keys<br>• 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 |

## Technical Specifications - Input/Output Devices

| | | |
|---|---|---|
| | Keycaps | Standard design |
| | Switch actuation | 55 g nominal peak force with tactile feedback |
| | Switch life | 20 million keystrokes<br>(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 |
| **Environmental** | 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) |
| | 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 (FIPS 201) |
| | Interface | Reads from and writes to all ISO7816-1, 2, 3, 4 memory and microprocessor smart cards (T=0, T=1) |
| | Chipset | SCM STCII |
| | Standard APIs supported | PC/SC, EMV2000, SET |
| | Power | USB Port |
| | | Short circuit detection (protects smart card and reader) |

Technical Specifications - Input/Output Devices

| | | | |
|---|---|---|---|
| | | 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 | | |

## 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 |

## Technical Specifications - Input/Output Devices

| | | |
|---|---|---|
| | 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 |
| **Operating system support** | Windows® 7, Windows Vista, Windows XP Professional | |
| **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 | |

### HP Wireless Keyboard and Mouse

| | | |
|---|---|---|
| **Keyboard** | Dimensions (H x L x W) | 1.09 x 18.1 x 6.47 in (27.87 x 460.3 x 164.3 mm) |
| | Weight – Without Two AA Alkaline Batteries | 1.94 lb (880 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) |
| | Range | 32.8 ft (10 m) |
| **System Requirements** | Windows 10, Windows 8, Windows 7 Professional Edition 32*, Windows 7 Professional Edition 64*, Windows Vista or Windows XP | |

## Technical Specifications - Input/Output Devices

| | | |
|---|---|---|
| | Available USB port for the receiver<br>CD-ROM Drive<br>* Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows functionality. See http://www.microsoft.com. | |
| **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 | |
| **Encryption** | 128bit AES Encryption | |

| **HP PS/2 Mouse** | |
|---|---|
| **Dimensions**<br>(H x L x W) | 1.46 x 2.48 x 4.53 in (3.70 x 6.29 x 11.50 cm) |

## Technical Specifications - Input/Output Devices

| | | |
|---|---|---|
| **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%<br>(non condensing at ambient) |
| | Non-operating humidity | 10% to 90%<br>(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<br>(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) |

## Technical Specifications - Input/Output Devices

| | | |
|---|---|---|
| | 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 Mouse** | |
|---|---|
| **Dimensions** (H x L x W) | 1.5 x 4.5 x 2.5 in (3.7 x 11.5 x 6.3 cm) |
| **Weight** | 0.22 lb (0.10 kg) |
| **Cable length** | 70.9 in (180 cm) |
| **System requirements** | Available USB port |

| **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) |

## Technical Specifications - Input/Output Devices

| | | |
|---|---|---|
| **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 |
| | 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 or USB |
| | ESD | CE level 2 8 kV air discharge |
| | EMI-RFI | Conforms to FCC rules for a Class B computing device |

## Technical Specifications - Input/Output Devices

| | | |
|---|---|---|
| | Microsoft PC99 - 2001 | Functionally compliant |
| **Mechanical** | Resolution | 1000 ± 20% DPI |
| | Tracking speed | 14 in/s ( 35.56 cm/s) maximum |
| | Acceleration | 2 g |
| | Switch actuation | 70 g nominal peak force |
| | Switch life | 3,000,000 operations (using Hasco modified tester) |
| | Switch type | Low force micro-switches |
| | Tracking mechanism life | 8.8 ft total 70 cm+ 2m extension |
| | Cable length | Mechanically compliant |
| | Microsoft PC99 - 2001 | 1000 ± 20% DPI |
| **Scroll wheel** | Width | 6 mm |
| | Diameter | 1 in (25.4 mm) |
| | Maximum rotation force | 48 rats/sec |
| | Switch type | Light force micro-switch |
| | Switch life | 3 million operations |
| | Mechanical life | Minimum 200,000 revolutions |
| **Regulatory Approvals** | FCC, CE Mark, ICES-003-B, IP66/NEMA4X | |

Technical Specifications – Power

## 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)*<br>Non-operating: –22° to 140° F(–30° to 60° C) |
| Relative Humidity | Operating: 10% to 90% (non-condensing at ambient)<br>Non-operating: 5% to 95% (non-condensing at ambient) |
| Maximum Altitude (unpressurized) | Operating: 10,000 ft (3048 m)<br>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 | MT | SFF |
|---|---|---|
| Standard Efficiency | 300W & 180W active PFC (230 VAC input only)<br>300W & 180W Reg (115V/230 VAC) | 240W active PFC |
| High Efficiency*<br>80 PLUS Bronze | 300W & 180 active PFC ENERGY STAR® 6<br>82/85/82% efficient at 20/50/100% load (115V)<br>82/85/82% efficient at 20/50/100% load (230V) | 240W active PFC<br>82/85/82%efficient at 20/50/100% load (115V)<br>82/85/82% efficient at 20/50/100% load (230V) |
| Operating Voltage Range | 90 - 264 VAC | 90 - 264 VAC |
| Rated Voltage Range | 200 - 240 VAC (300W active PFC)<br>100 - 240 VAC | 100 - 240 VAC |
| Rated Line Frequency | 50/60 Hz | 50/60 Hz |
| Operating Line Frequency | 47 – 63 Hz | 47 – 63 Hz |
| Rated Input Current | 4A | 4A |
| Rated Input Current with Energy Efficient* Power Supply | 4A | 4A |
| Current Leakage (NFPA 99) | <900uA / 230Vac (300W PSU) | < 275 µA @ 120V |
| Power Supply Fan | 80mm Fan (300W PSU) | 70mm Fan |
| Power cord length | 6.0 ft. (1.83 m) | 6.0 ft. (1.83 m) |

## Technical Specifications – Power

| | | |
|---|---|---|
| External Power Adapter | | |
| Dimensions | N/A | N/A |
| Total Cord Length | N/A | N/A |

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

Technical Specifications – Weights & Dimensions

## Weights & Dimensions

(configured with 1 HDD & 1 ODD)

| | MT | SFF |
|---|---|---|
| **Chassis (W x H x D)** | 165 x 355 x 358.8 mm<br>6.49 x 13.976 x 14.126 in | 337 x 100 x 380.5 mm<br>13.26 x 3.93 x 14.98 in |
| **System Volume** | 21.02L | 12.82 L |
| **System Weight*** | 6.5 kg<br>14.33 lb | 5.905 kg<br>13.01 lb |
| **Max Supported Weight (desktop orientation)** | N/A | 35 kg |
| **Tower Stand (H x W x D)** | N/A | 27.5 x 178.2 x 199 mm<br>1.08 x 7.01 x 7.83 in |
| **Packaged (H x W x D)** | 496 x 240 x 520 mm<br>19.53 x 9.45 x 20.47 in | 528 x 229 x 499 mm<br>20.78 x 9.01 x 19.64 in<br><br>245 x 499 x 599 mm<br>9.64 x 19.64 x 23.58 in |
| **Shipping Weight** | Est. 9.083 kg (20.024 lb) | Est. = 9.691 kg<br>21.365lb |
| **Palletization Profile** | 2 x 5 = 10 -units per layer<br>4-layer max.<br>40-units per pallet | SEA<br>4-units per layer<br>10-layer max.<br>32-units per pallet<br><br>AIR<br>4-units per layer<br>5-layer max.<br>20-units per pallet |

Technical Specifications – Miscellaneous Features

## 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-second red LED blinks followed by a 2-second pause, then repeats:
    - 2 - processor thermal protection activated
    - 3 - processor not installed
    - 4 - power supply failure
    - 5 -- memory error
    - 6 - video error
    - 7 - PCA failure (ROM detected failure prior to video)
    - 8 - invalid ROM, boot block recovery mode
    - 9 - system not fetching code
    - 10 - system hang while loading an option ROM
- 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 HP Support
- 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
- 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.<br>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 |

## Technical Specifications – Miscellaneous Features

| | |
|---|---|
| | 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. |

Environmental

## 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** |
|---|---|---|---|
| **Small Form Factor** | | | |
| Normal Operation (Short idle) | 22.63 W | 22.11 W | 22.75 W |
| Normal Operation (Long idle) | 21.91 W | 21.64 W | 21.91 W |
| Sleep | 1.19 W | 1.28 W | 1.82 W |
| Off | 0.54 W | 0.62 W | 0.54 W |
| **Microtower** | | | |
| Normal Operation (Short idle) | 21.94 W | 21.08 W | 22.098 W |
| Normal Operation (Long idle) | 21.16 W | 19.43 W | 20.46 W |
| Sleep | 1.49 W | 1.60 W | 1.50 W |
| Off | 0.79 W | 0.86 W | 0.78 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** |
|---|---|---|---|
| **Small Form Factor** | | | |
| Normal Operation (Short idle) | 77 BTU/hr | 76 BTU/hr | 78 BTU/hr |
| Normal Operation (Long idle) | 75 BTU/hr | 74 BTU/hr | 75 BTU/hr |
| Sleep | 4 BTU/hr | 4 BTU/hr | 6 BTU/hr |
| Off | 2 BTU/hr | 2 BTU/hr | 2 BTU/hr |
| **Microtower** | | | |
| Normal Operation (Short idle) | 75 BTU/hr | 72 BTU/hr | 76 BTU/hr |
| Normal Operation (Long idle) | 72 BTU/hr | 66 BTU/hr | 70 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** | Sound Power ($L_{WAd}$, bels) | Sound Pressure ($L_{pAm}$, decibels) |
|---|---|---|

## Environmental

| (in accordance with ISO 7779 and ISO 9296) | | |
|---|---|---|
| **Small Form Factor** | | |
| Typically Configured – Idle | 3.5 | 25 |
| Fixed Disk – Random writes | 3.6 | 26 |
| **Microtower** | | |
| Typically Configured – Idle | 3.6 | 26 |
| Fixed Disk – Random writes | 3.6 | 27 |

**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:

**Small Form Factor**

- 8 USB ports
- 2 memory slots
- (1) PCI 3.0 Express x16 half-length slot
- (3) PCI Express 2.0 x1 half-length slot
- 2.5” internal storage drive
- 3.5” internal storage drive
- 1 slimdrive bay external supporting optical drive
- 1 3.5 external supporting media card reader

Spare parts are available throughout the warranty period and or for up to “5” years after the end of production.

**Microtower**

- Up to 8 USB ports
- 2 memory slots
- (1) PCI 3.0 Express x16 half-length slot
- (3) PCI Express 2.0 x1 half-length slot
- (2) 3.5” internal storage drive (1 configurable as 2.5”)
- 1 Slimline Drive Bay - supporting an optical disk drive (optional)
- 1 SD 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

## Environmental

**Additional Information Small Form Factor**

- 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 14.7% post-consumer recycled plastic (by wt.)
- This product is 91.2% recycle-able when properly disposed of at end of life.

**Additional Information Microtower**

- 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 11.9% post-consumer recycled plastic (by wt.)
- This product is 90.6% recycle-able when properly disposed of at end of life.

**Packaging Materials**

**Small Form Factor**

| | | |
|---|---|---|
| **External:** | PAPER/Corrugated | 953 g |
| **Internal:** | PLASTIC/Plast. Other | 196 g |
| | PLASTIC/Polyethylene low density | 57 g |
| | PLASTIC/Polypropylene | 13 g |

The plastic packaging material is made from 10.5% recycled content.
The corrugated paper packaging materials contains at least 43.8% recycled content.

**Microtower**

| | | |
|---|---|---|
| **External:** | PAPER/Corrugated | 1065 g |
| **Internal:** | PLASTIC/EPE-Expanded Polyethylene | 260 g |
| | PLASTIC/Polyethylene low density | 50 g |

The plastic packaging material is made from 7% recycled content.
The corrugated paper packaging materials contains at least 25% 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

## Environmental

- 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 | MT | SFF | Part Number |
|---|---|---|---|
| HP ProDisplay P191 | X | X | C9E54AA |
| HP ProDisplay P201 | X | X | C9F26AA |
| HP ProDisplay P221 | X | X | C9E49AA |
| HP ProDisplay P17A | X | X | F4M97AA |
| HP ProDisplay P19A | X | X | D2W67AA |
| HP ProDisplay P231 | X | X | E4S07AA |
| HP EliteDisplay E201 | X | X | C9V73AA |
| HP EliteDisplay E221 | X | X | C9V76AA |
| HP EliteDisplay E231 | X | X | C9V75AA |
| HP EliteDisplay E190i | X | X | E4U30AA |
| HP EliteDisplay E241i | X | X | F0W81AA |
| HP EliteDisplay E271i | X | X | D7Z72AA |
| HP EliteDisplay E221c | X | X | D9E49AA |
| HP EliteDisplay S230tm | X | X | E4S03AA |
| HP L2206tm | X | X | B0L55AA |

| Communication Devices | MT | SFF | Part Number |
|---|---|---|---|
| Intel Ethernet I210 – T1 Gbe NIC | X | X | E0X95AA |
| Intel 7260 802.11 a/b/g/n PCIe x1 WLAN Card | X | X | F2P07AA |

| Graphics Solutions | MT | SFF | Part Number |
|---|---|---|---|
| AMD Radeon™ HD 8350 Graphics (PCIe x16) | X | X | E1C63AA |
| AMD Radeon™ HD 8490 Graphics Card | X | X | E1C64AA |
| NVIDIA® NVS™ 310 Graphics (PCIe x16) | X | X | A7U59AA |
| NVIDIA® NVS™ 315 Graphics (PCIe x16) | X | X | E1C65AA |
| HP DisplayPort Cable Kit | X | X | VN567AA |
| HP DisplayPort To Dual Link DVI-D Adapter | X | X | NR078AA |
| HP DisplayPort To DVI-D Adapter | X | X | FH973AA |
| HP DisplayPort to HDMI Adapter | X | X | BP937AA |
| HP DisplayPort To HDMI 1.4 Adapter | X | X | K2K92AA |
| HP DisplayPort to VGA Adapter | X | X | AS615AA |
| HP DMS-59 to Dual DVI Cable | | X | DL139A |
| HP DMS-59 to Dual DisplayPort Adapter | | X | XP688AA |
| Dual Output USB Graphics Adapter | X | X | C5U89AA |

| Data Storage Drives and Accessories | MT | SFF | Part Number |
|---|---|---|---|
| HP 1-TB 7.2K rpm SATA 6.0Gb/s 3.5” Hard Disk Drive | X | X | QK555AA |
| HP 1-TB 10K rpm SATA 6.0Gb/s 3.5” Hard Disk Drive | X | X | C2T91AA |
| HP 500-GB 7.2K rpm SATA 6.0Gb/s 3.5” Hard Disk Drive | X | X | QK554AA |
| HP 128-GB SATA 3.0Gb/s Solid State Drive | X | X | QV063AA |
| HP 500-GB SATA 3.0Gb/s Solid State Hybrid Drive | X | X | E1C62AA |
| HP Slim Removable SATA Hard Drive Enclosure (frame & carrier) | X | X | C1N41AA |

## After-Market Options (availability may vary by region)

| | | | |
|---|---|---|---|
| HP Slim Removable SATA Hard Drive Enclosure (carrier only) | X | X | AR639AA |
| HP Chassis (1bay) Security Kit | X | | AR639AA |

*Not available in all regions.

### Input Devices

| | MT | SFF | Part Number |
|---|---|---|---|
| HP USB Keyboard | X | X | QY776AA |
| HP USB Gray Keyboard (EMEA only) | X | X | B6B64AA |
| HP USB Smart Card (CCID) Keyboard | X | X | BV813AA |
| HP USB Keyboard and Mouse Kit | X | X | B1T09AA |
| HP USB Washable Keyboard | X | X | VF097AA |
| HP USB and PS/2 Washable Mouse | X | X | BM866AA |
| HP USB and PS/2 Washable Keyboard and Mouse Kit | X | X | BU207AA |
| HP PS/2 Mouse | X | X | QY775AA |
| HP USB Mouse | X | X | QY777AA |
| HP USB 1000dpi Laser Mouse | X | X | QY778AA |
| HP Wireless Keyboard and Mouse Combination | X | X | QY449AA |
| HP USB Antimicrobiall Keyboard and Mouse (China Only) | X | X | K7X25AA |

### System Memory

| | MT | SFF | Part Number |
|---|---|---|---|
| HP 4GB DDR3-1600 (PC3-12800) DIMM | X | X | B4U36AA |
| HP 8GB DDR3-1600 (PC3-12800) DIMM | X | X | B4U37AA |

### Multimedia Devices

| | MT | SFF | Part Number |
|---|---|---|---|
| HP Slim DVD-ROM Drive | X | X | VP033AA |
| HP Slim SuperMulti DVD Writer Drive | X | X | QS209AA |
| HP USB HD 720P v2 Business Webcam | X | X | D8Z08AA |
| HP Business Headset | X | X | QK550AA |
| HP Business Speakers | X | X | D9J19AA |

### Security Devices

| | MT | SFF | Part Number |
|---|---|---|---|
| HP SFF Wall Mount/Security Sleeve | | X | VN570AA |
| HP UltraSlim Cable Lock | X | X | H4D73AA |

### Stands and Accessories

| | MT | SFF | Part Number |
|---|---|---|---|
| HP Integrated Work Center Stand (SFF)R | | X | QP897AA |
| HP SFF Tower Stand | | X | VN569AA |
| HP 400 Tower Bezel Kit | X | | E1C66AA |
| HP (10 Sets) 400 G2 Bezel Support Kit | | X | TBD |
| HP Serial Port Adapter (RS-232 compatible) | X | X | PA716A |
| HP Parallel Port Kit | X | X | KD061AA |

### LANDesk Software (E-Delivery)

## After-Market Options (availability may vary by region)

Contact your HP representative for available options.

## After-Market Options (availability may vary by region)

## Summary of Changes

### Summary of Changes

| Date of change: | Version History: | | Description of change: |
|---|---|---|---|
| February 23, 2015 | From v1 to v2 | Addition | Added “Processor support up to 84W” to at a glance section |
| April 22, 2015 | From v2 to v3 | Addition | Added,<br>Intel® Core™ i3-4170 Processor<br>Intel® Pentium G3470 Processor<br>Intel® Pentium G3260 Processor<br><br>Under Solid State Drive<br>128GB SATA 2.5 SSD TLC Non-SED<br>256GB SATA 2.5 SSD TLC Non-SED<br><br>Added under Hard Disk SSS<br>HP 256 GB* (non-SED) TLC Solid State Drive<br>HP 128 GB* (non-SED) TLC Solid State Drive |
| July 7, 2015 | From v3 to v4 | Addition | Added new note under storage |
| | | Change | Change the OS |
| September 9, 2015 | From v4 to v5 | Changed | HP WLAN 802.11 a/b/g/n 2x2 Dual Band PCIe x1 WLAN Card description updated |
| October 8, 2015 | From v4 to From v5 | Added | Added note about AMD and NVIDIA graphics cards are not available for Windows 10 |