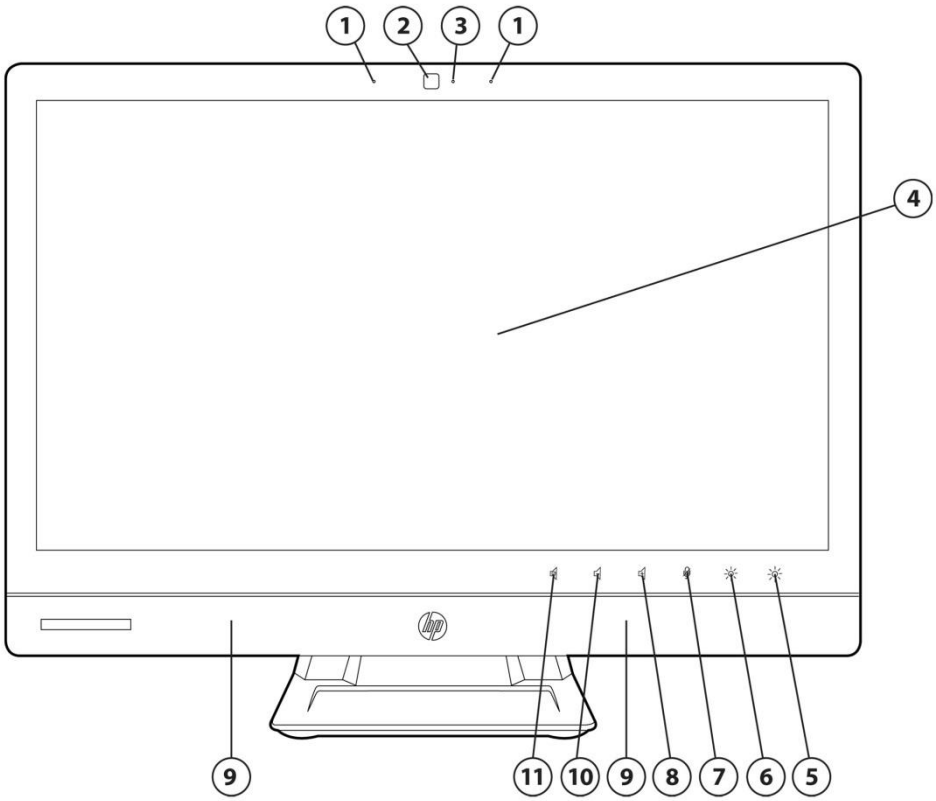
Overview

HP ELITEONE 705 G1 ALL-IN-ONE BUSINESS PC (23.0” NON-TOUCH)

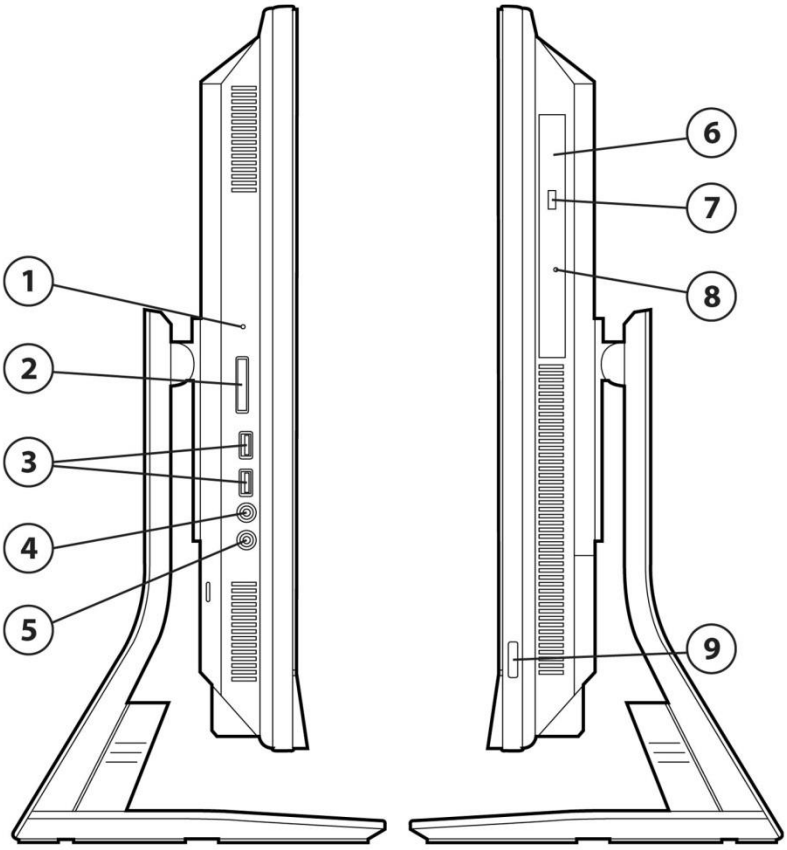


FRONT

1. Dual microphone array (only on models with Webcam)
2. 2.0 MP Webcam (optional)
3. Webcam Activity LED
4. 23-inch IPS Full HD capable screen
5. Increase brightness
6. Decrease brightness
7. Mute microphone
8. Increase volume
9. High performance stereo speakers
10. Reduce volume
11. Mute speaker

Overview

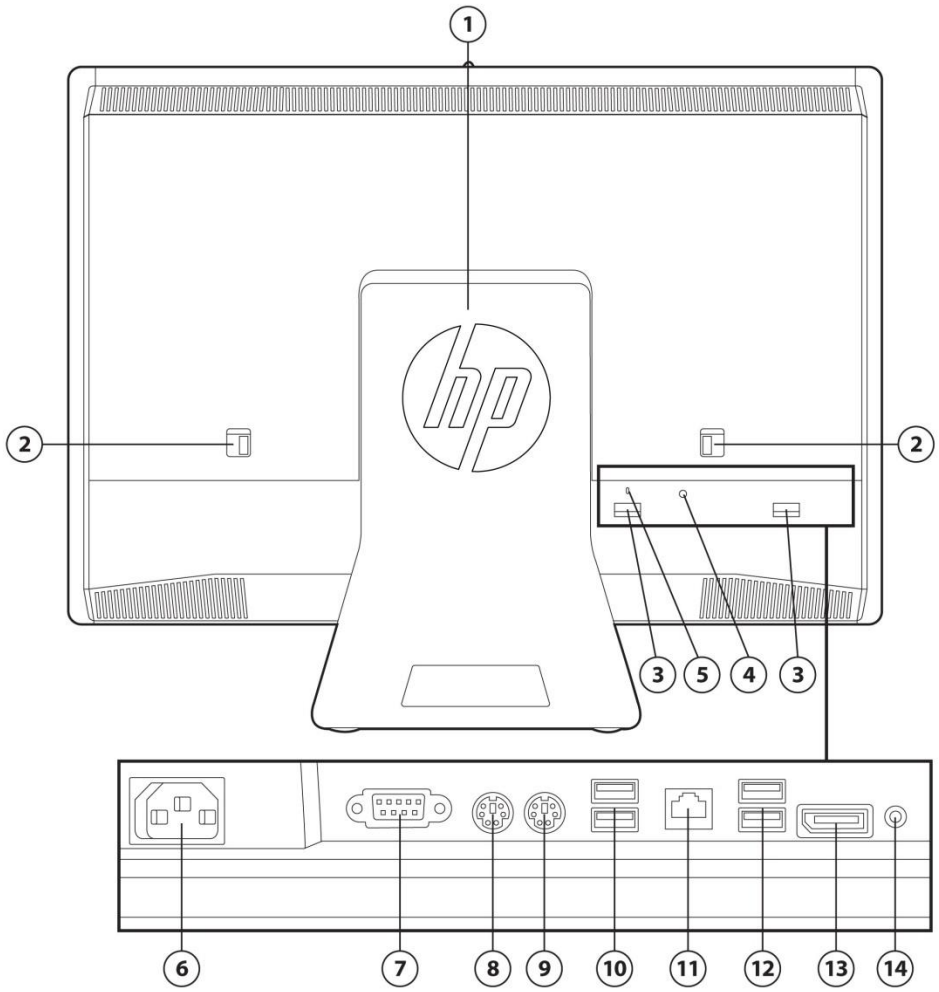
HP EliteOne 705 G1 All-in-One Business PC (23.0” Non-Touch)



SIDE

1. Hard disc drive activity LED
2. HP SD media card reader (optional)
3. (2) USB 3.0 ports, including 1 fast charging port
4. Microphone/line in jack
5. Headphone/line out jack
6. Tray-load optical disc drive (optional)
7. Optical disc drive eject button
8. Optical disc drive activity LED
9. Power button

HP EliteOne 705 G1 All-in-One Business PC (23.0” Non-Touch)



REAR/PORTS (BEHIND SECURITY COVER)

1. Basic Stand*
2. Access panel latches
3. I/O security cover latch
4. Security Screw hole
5. Security lock slot
6. Power connector
7. Serial port
8. PS/2 mouse connector
9. PS/2 keyboard connector
10. (2) USB 2.0 ports
11. RJ-45 Gigabit Ethernet port
12. (2) USB 3.0 ports
13. DisplayPort connector
14. Stereo line out

* Can be configured with no stand, basic stand, or height adjustable/reclining stand.

AT A GLANCE

- Windows 7, Windows 8.1, or Linux
- UEFI BIOS developed and engineered by HP for better security, manageability and software image stability
- Integrated All-in-One form factor
- 23-inch IPS (1920 x 1080) diagonal widescreen WLED backlit anti-glare LCD
- Landscape or portrait display orientation – with height adjustable stand or VESA mount
- Can be configured with no stand, basic stand, or height adjustable/reclining stand
- AMD® D4 chipset
- AMD® A-Series PRO processors
- AMD® DASH 1.1 Technology available
- Integrated AMD® Graphics
- Integrated Broadcom NetXtreme Gigabit Ethernet Plus Gigabit Network Connection
- Optional wireless connectivity:
    - WLAN and Bluetooth Combo Card - HP 802.11 a/b/g/n and Bluetooth® 4.0
- Optional Near Field Communication (NFC)
- Optional Integrated 2.0 MP Full HD Webcam & Dual Microphone Array
- High performance integrated stereo speakers
- DTS Studio Sound™
- Up to 16 GB of DDR3 SDRAM, dual channel memory support, two SODIMM slots
- Support for up to 3 storage drives (2 SATA, 1 M.2 SSD) with RAID support
- Up to 500GB SATA Hard Drive, up to 256GB Solid State Drive, 500 GB Self-Encrypting Drive, 256GB Self-Encrypting Solid State Drive, and 1TB Solid State Hybrid Drive
- Optional slim Tray-load SuperMulti DVD Writer, DVD-ROM, or BDXL Blu-ray Writer Optical Disc Drive
- Optional SD Media Card Reader
- Serial port
- DisplayPort out
- Integrated VESA 100 x 100 mounting holes
- Lockable rear access panel with intrusion sensor
- ENERGY STAR® qualified. EPEAT® registered where applicable/supported. See www.epeat.net for registration status by country.
- CCC, CECP & SEPA Certified
- Optimized for Microsoft Lync
- TCO AiO and TCO Edge
- Low Halogen
- Arsenic Free
- Protected by HP Services, including warranties up to 5-5-5 (terms and conditions vary by country; certain restrictions and exclusions apply)

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

Standard Features and Configurable Components

OPERATING SYSTEMS

Preinstalled When Purchased

Windows 8.1 Pro (64-bit)*
Windows 8.1 (64-bit)*
Windows 7 Professional (32-bit)*
Windows 7 Professional (64-bit)*
Windows 7 Professional (32-bit) (available through downgrade rights from Windows 8.1 Pro)**
Windows 7 Professional (64-bit) (available through downgrade rights from Windows 8.1 Pro)**

FreeDOS 2.0

Ubuntu Linux (64-bit)***

*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.

**This system is preinstalled with Windows 7 Professional 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.

***Not all features are supported in Ubuntu Linux.

Standard Features and Configurable Components

CHIPSET

AMD® D4 Chipset

PROCESSORS

AMD® Quad-Core A10 APU with AMD Radeon™ HD Graphics*
AMD Quad-Core A10 PRO-7800B Accelerated Processor with AMD Radeon™ R7 Series
Up to 3.9 GHz Max. Boost Frequency (3.5 GHz base frequency)
4 MB L2 cache, 4 cores, 8 Graphics Core Next Cores
Discrete-Class Graphics
Supports DDR3 memory up to 2133 MT/s data rate
Supports AMD® DASH 1.1 Technologies

AMD® Quad-Core A8 APU with AMD Radeon™ HD Graphics*
AMD Quad-Core A8 PRO-7600B Accelerated Processor with AMD Radeon™ R7 Series
Up to 3.8 GHz Max. Boost Frequency (3.1 GHz base frequency)
4 MB L2 cache, 4 cores, 6 Graphics Core Next Cores
Discrete-Class Graphics
Supports DDR3 memory up to 2133 MT/s data rate
Supports AMD® DASH 1.1 Technologies

AMD® Dual-Core A6 APU with AMD Radeon™ HD Graphics*
AMD Dual-Core A6 PRO – 7400B Accelerated Processor with AMD Radeon™ R5 Series
Up to 3.9 GHz Max. Boost Frequency (3.5 GHz base frequency)
1 MB L2 cache, 2 cores, 4 Graphics Core Next Cores
Discrete-Class Graphics
Supports DDR3 memory up to 1866 MT/s data rate
Supports AMD® DASH 1.1 Technologies

AMD® Dual-Core A4 APU with AMD Radeon™ HD Graphics*
AMD Dual-Core A4 PRO – 7350B Accelerated Processor with AMD Radeon™ R5 Series
Up to 3.8 GHz Max. Boost Frequency (3.4 GHz base frequency)
1 MB L2 cache, 2 cores, 3 Graphics Core Next Cores
Discrete-Class Graphics
Supports DDR3 memory up to 1866 MT/s data rate
Supports AMD® DASH 1.1 Technologies

*Multi-Core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. 64-bit computing system required. Performance will vary depending on your hardware and software configurations. AMD's numbering is not a measurement of clock speed.

GRAPHICS

System Integrated Graphics

AMD® HD Graphics

Graphics controller	AMD® Processor Graphics
DisplayPort	Display Port 1.2 multi-stream (supports 3 additional external displays)[1]

[1] Using the Integrated Graphics, three (3) external displays are supported via one of these methods:

Memory	Up to 1.8GB DDR3 Note: Maximum memory capacities assume Windows 64-bit operating systems or Linux. With Windows 32-bit operating systems, memory above 3 GB may not all be available due to system resource requirements.
Supported Graphics APIs	DX11.1, OpenGL 4.0, OpenCL 1.2, full 1080p Blu-Ray Disc (H264) playback in hardware

SMBIOS

System Management BIOS, previously known as DMI BIOS, is used to store system management information.

DISPLAY

Non-touch

23"diagonal IPS widescreen WLED backlit anti-glare LCD; Orientation designed to operate in portrait or landscape

Display Panel	Type	IPS WLED Backlit LCD
	Viewable image area (mm)	509.18 x 286.42
	Screen opening (mm)	510.6 x 287.6
	Native Resolution (HxV)	1920 x 1080
	Aspect ratio	16:9
	Pixel pitch (HxV)(mm)	0.256 x 0.256
	Contrast ratio (typical)	1000:1
	Brightness (typical)	250 nits (cd/m2)
	Viewing angle (typical) (HxV)	179 ° x 179 °
	Backlight lamp life (to half brightness)	30,000 hours minimum
	Color support	Over 16 million colors
	Color gamut (typical)	72%
	Anti-glare	Yes
	Default color temperature	Warm (6500K)
	NOTE: All performance specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower.	
Basic Stand	Tilt Angle	-5° to +30°
	Rotation	360° swivel
Height Adjustable / Reclining Stand:	Vertical Adjustment	Up to 110 mm
	Recline Angle	Low position sliding height adjustment => -5° to +60°
	Tilt Angle	High position sliding height adjustment => -5° to +30°
	Rotation	360° swivel and portrait or landscape orientation

1) DisplayPort multi-stream monitors 'daisy-chained' together or
2) DisplayPort multi-stream hub – hub requires power through power cable provided. DisplayPort multi-stream hub provides 4 DisplayPort ports, adapters are required for support of DVI, VGA or HDMI displays.

WEBCAM & MIC

Optional integrated 2 MP full HD webcam & dual microphone array; maximum resolution of 1920 x 1080

STORAGE*

2.5" SATA Hard Drive
320 GB, 7200 rpm, SATA 6.0 Gb/s, SMART IV
500 GB, 7200 rpm, SATA 6.0 Gb/s, SMART IV

2.5" M.2 PCIe Solid State Drive
128GB M.2 PCIe Solid State Drive

2.5" Solid State Drive
128 GB, SATA, non- SED, Solid State Drive
256 GB, SATA, non- SED, Solid State Drive

2.5" Self-Encrypting Solid State Drive
120 GB, SATA, Self-Encrypting Solid State Drive
128 GB, SATA, Self-Encrypting Solid State Drive
180 GB, SATA, Self-Encrypting Solid State Drive
256 GB, SATA, Self-Encrypting Solid State Drive

2.5" Self-Encrypting Drive
500 GB, SATA, Self-Encrypting Drive

2.5" Solid State Hybrid Drive
500 GB, SATA, Solid State Hybrid Drive
1 TB SATA, Solid State Hybrid Drive

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

Optical Disc Drive
Slim Tray-load SATA DVD-ROM
Slim Tray-load SATA SuperMulti DVD Writer
Slim Tray-load SATA BDXL Blu-ray Writer
No included Optical Disc Drive

Removable
HP Slim Removable SATA HDD

Media Card Reader (optional)
5-in-1 SD Media Card Reader - PCIe Interface

- Supports Secure Digital (SD, SDXC, SDHC, UHS-I, UHS-II)

Standard Features and Configurable Components

MEMORY*

Type
Non-ECC, DDR3 SDRAM, 1600 MT/s, SODIMM

Maximum
16 GB

# of Slots
2
204-pin supporting dual-channel memory
Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

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

Memory modules support data transfer rates up to 1600 MT/s; actual data rate is determined by the system's configured processor. See processor specifications for supported memory data rate.

NETWORKING/COMMUNICATIONS

Ethernet (RJ-45)
Integrated Broadcom NetXtreme Gigabit Ethernet Plus Gigabit Network Connection

Wireless LAN (optional)*
HP 802.11 a/b/g/n wireless PCIe minicard with Bluetooth Combo
Up to 300 mbps data rate
Bluetooth 4.0 compliant
Works with a wide range of Bluetooth devices

Intel® 802.11 a/b/g/n wireless 7260 PCIe minicard
Up to 300 mbps data rate

Intel® 802.11 a/b/g/n wireless 7260 PCIe minicard with Bluetooth Combo
Up to 300 mbps data rate

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

Near Field Communications (NFC) (optional)
HP Module with NXP NFC Controller with Embedded Secure Element, PN65O
Supports Windows 8.1, Proximity Events
Support Windows 7, PC/SC
NFC Forum Compliant

AUDIO/MULTIMEDIA

DTS Studio Sound™

Realtek ALC 3228 Audio – 16 & 24-bit PCM

High performance integrated stereo speakers

Volume control and mute buttons

Stereo headphone jack

Microphone in

Stereo line out

Integrated 2.0 MP webcam (up to 30 frames/sec) & dual microphone array (optional)

KEYBOARDS AND POINTING DEVICES

Keyboard

HP PS/2 Keyboard	104 keys plus special functions for Mute, Volume Up, Volume Down, Sleep Separate numeric keypad Cable length 70.87 in (180 cm)
HP USB Keyboard	104 keys plus special functions for Mute, Volume Up, Volume Down, Sleep Separate numeric keypad Cable length 51 in (130 cm)
HP Wireless Keyboard & Mouse (Keyboard contains 25% post-consumer recycled plastic material)	104 keys plus special functions for Mute, Volume Up, Volume Down, Sleep Separate numeric keypad; two buttons with scroll wheel acting as third button Operates at ~ 2.4 GHz and supports a working distance of up to 32 ft (10m) Cable length 6ft (1.8m)
HP USB SmartCard CCID Keyboard	104, 105, 106, 107, 109 layout (depending upon country) All ISO 7816 smart cards
HP USB PS/2 Washable Keyboard**	SpillSeal® keyboard technology protection USB & PS/2 support in one solution Separate numeric keypad Cable length 7ft (2.2m)

Mice

HP PS/2 Mouse	800 dpi support Two buttons with scroll wheel 72.8 in (185 cm)
HP USB Optical Mouse	800 dpi support Two buttons with scroll wheel 72.8 in (185 cm)
HP USB 1000dpi Laser Mouse	1000 dpi support Two buttons with scroll wheel Cable length 70.8 in (180 cm)

HP USB PS/2 Washable Scroll Mouse **	SpillSeal® mouse technology protection Two buttons with scroll wheel 8.8 ft total 70 cm+ 2m extension

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

HP BIOSphere

Key features of the HP BIOS include:

- Deployment and manageability - HP BIOS provides several technologies that help integrate the HP EliteOne 705 Business PC into the enterprise, such as PXE, remote configuration, remote control, and F10 Setup support for 12 languages.
- Stability - HP BIOS supports the HP stable product roadmap by releasing only critical BIOS changes to the factory and advanced change notification.
- Support UEFI specification 2.3.1
- Absolute Data Protect agent - For tracking and tracing services, available in select countries, separate software and purchase of a subscription is required.
- Thermal and power management - The HP BIOS provides and enables thermal and power management technologies so component temperatures are managed for high reliability and to assist in operating the HP Business Desktop computer in any enterprise environment.
- 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 Elite 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.

SECURITY

USB port disable

Lockable Access Panel

Lockable I/O security cover

Security Screw

HP Keyed Cable Lock (optional)

Common Criteria Certified, Infineon TPM SLB9656TT1.2- 4.32 FW

Intrusion Detector

Wall/Arm/Cart Mountable via VESA bracket

Support for Nobel Locking Plate (3rd party option)

Support for 3M Privacy Screen (3rd party option), for non-touch models

POWER

Internal 200W, up to 93% efficient, active PFC
100-240V AC

High Efficiency	200W active PFC
	90/92/89% efficient at 20/50/100% load (100/115V)
	90/93/91% efficient at 20/50/100% load (230V)
Operating Voltage Range	90 - 264 VAC
Rated Voltage Range	100 - 240 VAC
Rated Line Frequency	50/60 Hz
Operating Line Frequency	47 – 63 Hz
Rated Input Current	3A

Rated Input Current with Energy Efficient* Power Supply	3A
Current Leakage (NFPA 99)	< 275 µA
Power Supply Fan	30mm variable speed
Power cord length	6.0 ft. (1.83 m)

SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS

Included	Windows 7	Windows 8.1
Security	Absolute Persistence Module[11] Device Access Manager with Just In Time Authentication Drive Encryption (FIPS 140-2)[1] HP File Sanitizer (SSDs and Hybrid Drives not supported)[2] Disk Sanitizer (External Edition)[3,4] HP Client Security HP SpareKey Microsoft Security Essentials[5]	Absolute Persistence Module[11] Device Access Manager with Just In Time Authentication Drive Encryption (FIPS 140-2)[1] File Sanitizer (Activated via Wizard)[2] Disk Sanitizer (External Edition) [3,4] HP Client Security HP SpareKey Microsoft Defender[6]
Multimedia	Cyberlink Power DVD, BD Cyberlink Power2Go (Secure Burn) Cyberlink YouCam BE[7]	Cyberlink Power DVD, BD Cyberlink Power2Go (Secure Burn)
Communication		HP Wireless Hotspot
HP Value Add	HP ePrint Driver[8] HP Manageability (Activation Required) HP PageLift[9] HP Recovery Disk Creator HP Recovery manager HP Support Assistant	HP ePrint Driver[8] HP Manageability (Activation Required) HP PageLift[9] HP Recovery Manager HP Support Assistant
3rd Party	Box 50GB Offer[10] Foxit PhantomPDF Express Skype	Box Application Foxit PhantomPDF Express Skype
Microsoft Products	Buy Office	Buy Office

[1] Drive Encryption 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.
[2] For the use cases outlined in the DOD 5220.22-M Supplement. Does not support Solid State Drives (SSDs). Initial setup required. Web history deleted only in Internet Explorer and Firefox browsers and must be user enabled. With Windows 8.1, user must turn off Enhanced Protection Mode in IE11 for shred on browser close feature.
[3] Available via download.
[4] For the use cases outlined in the DOD 5220.22-M Supplement. Does not support Solid State Drives (SSDs). Requires Disk Sanitizer, External Edition for Business Desktops from hp.com.
[5] Requires Windows 7 and internet access.
[6] Requires Windows 8 and internet access.

[7] Preinstalled on models with webcam.
[8] 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.
[9] Requires Windows 7 or higher.
[10] Requires Box registration. Offer available to new Box users only. Box App requires Windows 8 or 8.1. Offer subject to change without notice.
[11] *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.

AMD® DASH TECHNOLOGY CAPABLE

The DASH standards are designed to assist in the remote management of common desktop infrastructure tasks, such as deploying new operating systems, monitoring of computer system health, power control and power state monitoring, and asset inventory collection. As new hardware technologies are introduced or additional requirements are placed on the IT infrastructure, DASH will continue to evolve to include new functionality.

DASH has been designed to solve many of the pitfalls and constraints of previous management standards by leveraging well-proven technologies from the Service Oriented Architecture domain, advancements in security standards, and extensive modeling of management components, configuration data and relationships first introduced in the server management domain.

DASH is a web services-based management protocol and relies on security and network routing concepts familiar to web site and web **services** administrators.

Key Features

- Service availability without the requirement of an installed operating system and/or system power states
- Interoperability between various DASH-capable device implementations and management consoles
- Descriptive data model allowing for the discovery of iterative specification updates (new profiles) or vendor-specific extensions (custom profiles)
- Well understood transport level security (HTTPS basic and digest authentication models with optional TLS client/server certificate support)
- Secured setup with support for multiple DASH users and multiple access roles (administrator, operator, auditor)
- DASH ecosystem can coexist with legacy Alert Standard Format (ASF) infrastructure
- Control boot sources, redirect boot to a redirected USB sessions
- Forward POST logs to specified destination
- Monitor and inventory the HW of the managed clients

Management Profiles
A management profile is a specification that defines a normative set of behaviors and characteristics for addressing a particular management domain.

A profile consists of the following information:

- A data model representing the problem domain that consists of objects, properties and methods exposed by the profile
- Use cases to be addressed by the profile
- Steps required to traverse the data model and derive results

When a substantive block of new profiles become available, or fundamental changes are introduced to the DASH ecosystem, the DASH Implementation Requirements document is updated to reflect a new version of the standard. Profiles are continually being developed by the DMTF and DASH is designed to support them as they become available.

AMD® STANDARD MANAGEABILITY

Includes DASH 1.0/1.1 compliance plus:

- System Defense
- Agent Presence
- SOL/IDE Redirection
- CISCO NAC/SDN support
- ME Wake on LAN
- Host Based Configuration
- ME Firmware Rollback
- IPv6 Support

DASH 1.0/1.1 compliance:

- Boot Control
- HW Inventory
- SW Inventory
- Power State Management
- HW Alerting

Feature	DMTF Specification(s)
Alert Standard Format (ASF 2.0)	DSP0136
DASH Implementation Requirements	DSP0232
System inventory and control	DSP1058, DSP1033, DSP1029, DSP1027, DSP1026, DSP1023, DSP1022, DSP1015, DSP1013, DSP1012, DSP1011
Boot control	DSP1012
User account management	DSP1034, DSP1039
BIOS management	DSP1061
Offline mailboxes/Opaque management data	DSP1070
Indications	DSP1054
In-band NIC management	DSP1014
Sensors	DSP1009
Text console redirection (+Telnet and SSHv2)	DSP1024
Broadcom defined SMBIOS Extensions for Sensors	DSP0134
MCTP / SMBus	DSP0236, DSP0237, DSP0239
PLDM	DSP0240, DSP0241, DSP0245
PLDM for SMBIOS Data Transfer	DSP0246
PLDM for BIOS Control and Configuration	DSP0247
PLDM Numeric Sensors	DSP0248
WMI provider for Ethernet port & SW inventory	DSP1014, DSP1023
WMI provider for User account Mgmt	DSP1034, DSP1039
WMI provider for firmware update	DSP1025
USB redirection (storage media; read only)	DSP1077
Power State management or Power Control (including graceful shutdown	DSP1027
Event logging	DSP1010, DSP8007
Record log audit or security log	DSP1010
WMI provider for Opaque Mgmt data	DSP1070
PLDM Platform Event Messages	DSP0248
Service Processor	DSP1018
Physical Computer System View	in progress

ENVIRONMENTAL & INDUSTRY

Standard Features and Configurable Components

ENERGY STAR® qualified models available

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

Industry standard certifications:

UL
CSA
FCC compliance
ENERGY STAR®
EPEAT® Gold*
EUP Lot6 Tier2
CCC
CECP
SEPA
TCO AiO and TCO Edge
Optimized for Microsoft Lync
Low halogen
Arsenic Free
80 PLUS®
TAA compliant

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

WEIGHTS & DIMENSIONS

Weight

Product Weight	Without stand	Basic stand	Height adjustable/reclining stand
Unboxed	17.4 – 17.8 lbs 7.89 – 8.09 kg	22.2 – 22.6 lbs 10.06 – 10.26 kg	31.6 – 32 lbs 14.32 – 14.52 kg
Shipping Weight			Height adjustable/reclining stand
Box	Without stand 26.06 lbs 11.82 kg	Basic stand 29.23 lbs 13.26 kg	39.38 lbs 17.86 kg
Shipping Weight	Without stand (24 units) 510.41 lbs	Basic stand (24 units) 743.49 lbs	Height adjustable/reclining stand (12 units) 514.38 lbs
Pallet	231.48 kg	337.24 kg	233.32 kg

Dimensions (W x D x H)

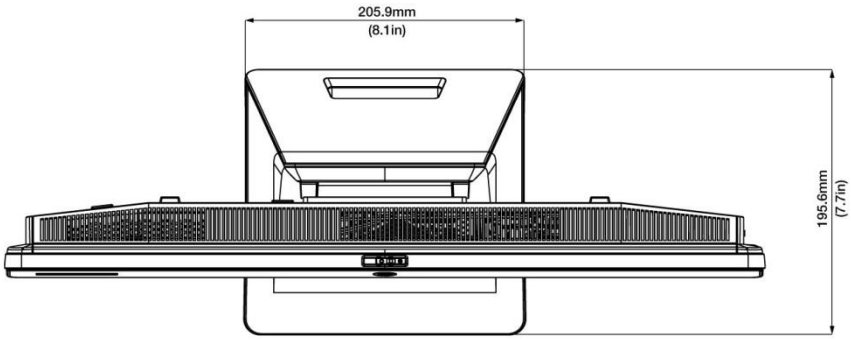
Product Dimensions	Without stand 22 x 1.98 x 15.3 in 560 x 50.3 x 389 mm	Basic stand 22 x 6 x 17.2 in 560 x 153.4 x 437.2 mm	Height adjustable/reclining stand 0 degrees 22 x 7.7 x 20.8 in 560 x 194.8 x 528.9 mm Height adjustable/reclining stand 60 degrees

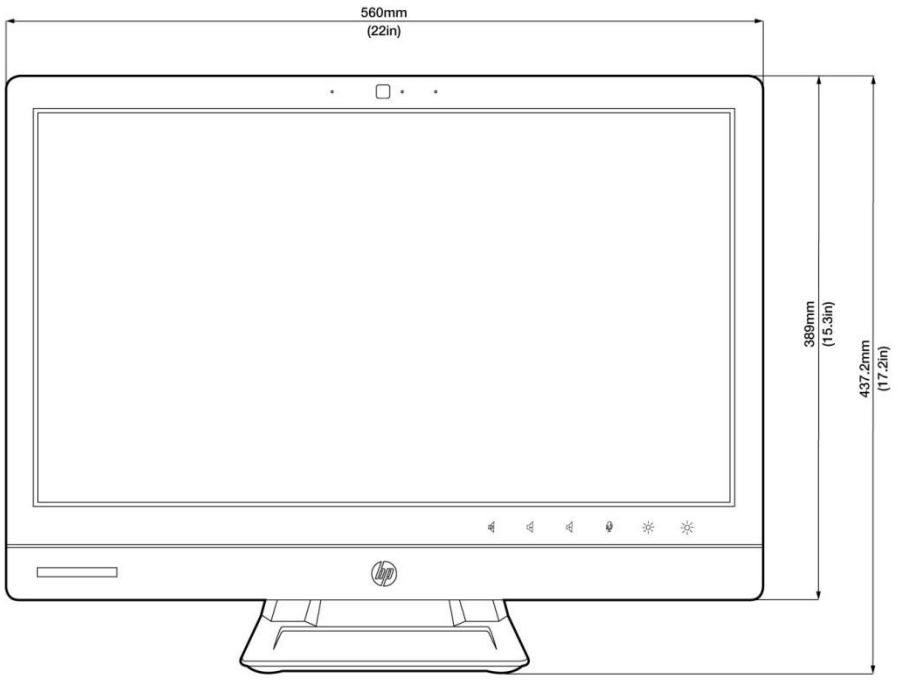
			22 x 14.6 x 10.5 in 560 x 370.2 x 265.9 mm

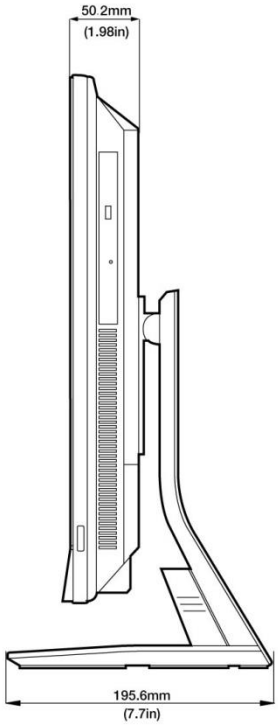
Shipping Dimensions

	Without stand	Basic stand	Height adjustable/reclining stand
Shipping Dimensions Boxed	25.83 x 10.59 x 20.39 in 656 x 269 x 518 mm	25.83 x 10.59 x 20.39 in 656 x 269 x 518 mm	26.46 x 12.56 x 21.10 in 672 x 319 x 536 mm
	Without stand (24 units)	Basic stand (24 units)	Height adjustable/reclining stand (12 units)
Shipping Dimensions Pallet	47.24 x 39.37 x 86.30 in 1200 x 1000 x 2129 mm	47.24 x 39.37 x 86.30 in 1200 x 1000 x 2129 mm	47.24 x 39.37 x 68.03 in 1200 x 1000 x 1728 mm

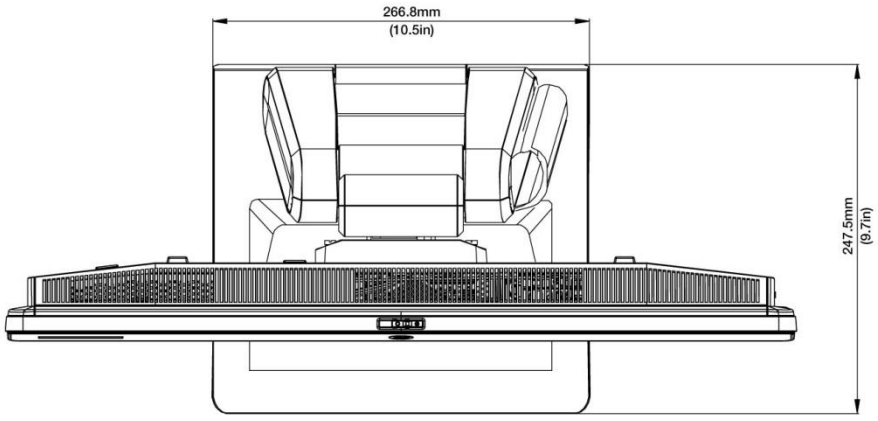
BASIC STAND DIMENSIONS

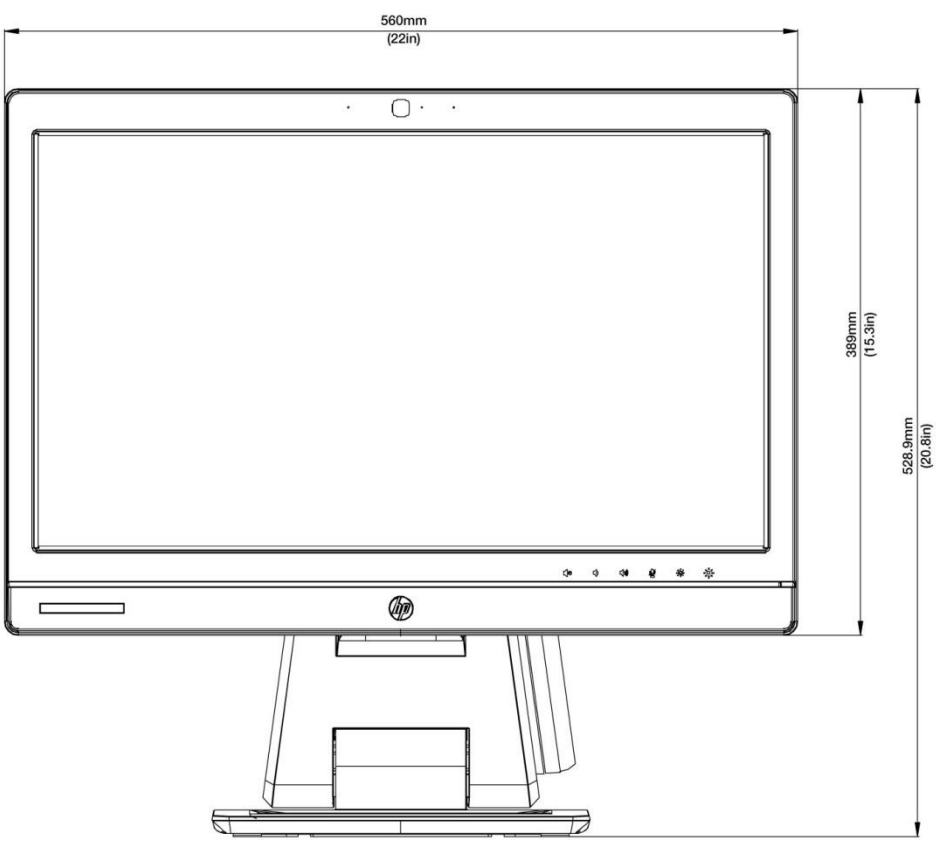


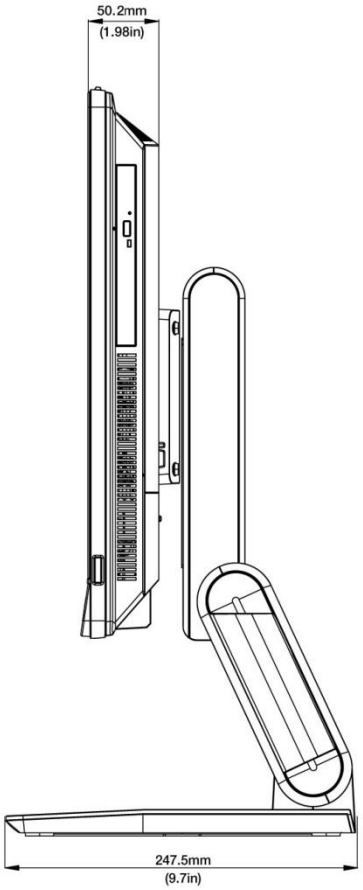




HEIGHT ADJUSTABLE/RECLINING STAND DIMENSIONS







TEMPERATURE, HUMIDITY, ALTITUDE

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

PORTS

I/O Ports - Standard

4 – USB 3.0 (2 side including 1 fast charging, 2 rear)

2 – USB 2.0 (2 rear)

USB Fast Charging Port:

- Up to 2.5A charging current (5 times the maximum current supported by a USB 2.0 port; 2.8 times the maximum current supported by a USB 3.0 port)
- D+/D– CDP/DCP Modes per USB Battery Charging Specification 1.2
- D+/D– Shorted Mode per Chinese Telecommunication Industry Standard YD/T 1591-2009
- Supports non-BC1.2 Charging Modes by Automatic Selection
- D+/D– Divider Modes 2.0V/2.7V and 2.7/2.0V
- D+/D- 1.2V Mode
- Supports Sleep-Mode Charging
- Automatic SDP/CDP Switching for Devices That do not Connect to CDP Ports

2 – PS/2 (legacy) (one keyboard, one mouse)

1 – Microphone in (side)

1 – Headphone jack (side)

1 – Serial RS-232 (rear)

1 – Stereo audio line out (rear)

1 – Power connector (rear)

1 – RJ-45 (rear)

1 – DisplayPort 1.2 supporting up to three (3) external displays

DisplayPort connector supports multimode technology to support connection to DVI-D, HDMI and VGA monitors with optional adapters or to a DisplayPort monitor with a DisplayPort Cable.

DisplayPort Cable	Provides a direct connection between the PC's DisplayPort interface to the display's DisplayPort interface
DisplayPort To DVI-D Adapter	Provides a connection from the PC's DisplayPort interface to the display's DVI-D interface; adapts the DP output to the DVI-D input

DisplayPort To HDMI Adapter	Provides a connection from the PC's DisplayPort interface to the display's HDMI interface; adapts the DP output to the HDMI input
DisplayPort To VGA Adapter	Provides a connection from the PC's DisplayPort interface to the display's analog VGA interface; adapts the digital DP output to the analog VGA input

SLOTS

1 – Mini PCIe half-length (used by wireless LAN module)

1 – M.2 PCIe SSD

BAYS

1 – 2.5" internal; Supports up to Two – 2.5" hard drives (HDD/SSD/SED/SSHD)

1 – 5.25" external; Slim Line Optical Drive

SERVICE AND SUPPORT

On-site Limited Warranty [1]: Three-year (3-3-3) limited warranty delivers three years of on-site, next business day [2] service for parts and labor and includes free telephone support [3] 24 x 7. Three-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 Compaq and third-party HP qualified hardware and software. Toll-free calling and 24 x 7 support may not be available in some countries.

Integrated AMD HD Graphics		
VGA Controller	Integrated	

DisplayPort	• DP++
	• DisplayPort audio:
	  ○ Linear PCM, Dolby Digital (AC-3), Dolby TrueHD, DTS, and DTS-HD Master Audio
	  ○ LPCM at sample rates: 32 kHz, 44.1 kHz, 48 kHz, 88.2 kHz, 96 kHz, 176.4 kHz, and 192 kHz, Bits per sample: 16, 20, and 24
	  ○ Supports up to 8 channels
	• 4, 2, or 1-lane transmission
	• 5.4 Gbps (HBR2), 2.7 Gbps, and 1.62 Gbps link bit rates
	• DisplayPort Multi-Stream Transport (MST) for up to four independent video and audio streams on one connector
	• Maximum resolution of 4096 x 2160 at 30 Hz and 24 bpp (single stream)
	  ○ Supports 2560 x 1600 at 60 Hz (single stream)
	  ○ Support for tiled displays with resolution of up to 4096 x 2160 at 60 Hz DisplayPort 1.2 MST
	Supports stereoscopic 3D gaming, Blu-ray 3D, and stereoscopic 3D video for 120-Hz frame sequential monitors	

Memory	Allocated at system startup and configurable using F10 setup with values of 128MB, 256MB, 512MB and 1024MB. Additional memory that is not in use by the host will be dynamically allocated and will vary depending on the total installed system memory.	
Maximum Graphics Memory	Microsoft Windows 7	Windows 8.1
	Variable*	Variable*
	* Actual amount of maximum graphics memory can vary depending on the amount of installed system memory	
Maximum Color Depth	32 bits/pixel, 8-bits per color component	
Graphics/Video API Support	• Discrete-level graphics processor embedded alongside the x86 CPU complex • Dedicated graphics memory controller **AMD Eyefinity** AMD Eyefinity support for up to four displays when at least two displays are operating with DisplayPort 1.2 multi-streaming. **Power Management** • AMD PowerPlay™ power management technology ○ Dynamic power gating for GPU, UVD, VCE, GFX, DCE, and Graphics Memory Controller (GMC) • Dynamic refresh rate supported with digital panels that support this feature • Dynamic refresh rate • Frame Buffer Compression • Panel Self-Refresh **3D Acceleration Features** DirectX® 11.1 compliant, including full speed 32-bit floating point per component operations:	

	Shader Model 5 geometry and pixel support in a unified shader architecture ○ Graphics Core Next (GCN) architecture ○ Advanced shader instructions, including flexible flow control with CPU-level flexibility on branching ○ Read/Write caching system, replacing texture cache with a unified read-write two-level cache ○ Vertex, pixel, geometry, compute, domain, and hull shaders ○ 32-bit and 64-bit floating point processing per component ○ High performance dynamic branching and flow control ○ Shader instruction store, using an advanced caching system ○ Advanced shader design, with ultra-threading sequencer for high efficiency operations ○ Advanced, high performance branching support, including static and dynamic branching ○ High dynamic range rendering with floating point blending, texture filtering, and anti-aliasing support ○ 16-bit and 32-bit floating point components for high dynamic range computations ○ Full anti-aliasing on render surfaces up to and including 128-bit floating point formats • Support for OpenCL™ 1.2, DirectCompute 11 and Microsoft C++ AMP • Support for OpenGL 4.1/4.1+ **Motion Video Acceleration Features** • Supports DVD, Blu-ray, and SDTV/HDTV content playback with low CPU usage • Supports stereoscopic 3D Blu-ray • Video compression engine: ○ Dedicated hardware (VCE 2.0) assisted encoding of HD video streams to H.264 (main profile) ○ Support H.264 SVC temporal scalability ○ Real-time transcoding by encoding the output from UVD with reduction of CPU utilization and power consumption • Motion video decode acceleration technology: ○ Dedicated hardware (UVD) for H.264, MPEG4, VC-1, MVC, and MPEG2 decode: • H.264 implementation based on the ISO/IEC 14496-10 specification • MPEG**6** implementation based on the ISO/IEC 14496-2 specification • VC-1 implementation based on the SMPTE 421M specification • MPEG2 implementation based on the ISO 13818-2 specification • Multi View Coding (MVC) for Blu-ray 3D content • WMV-9 implementation ○ Real time high-definition and standard definition stream decode ○ Real time dual high-definition stream decode

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 EliteOne 705 G1 Series supports the latest SATA 6.0Gb/s specification.

HP Drive Lock

HP Serial ATA Hard Drives offer enhanced security via a new Drive Lock. When enabled, this ATA security feature set prevents software access to user data on the drive until one or two user-defined passwords are provided.

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:** 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) of system disk is reserved for the system recovery software.

HP 320 GB* 7.2K SATA 6.0Gb/s 2.5" Hard Disk Drive		
Capacity	320,072,933,376 bytes	
Rotational Speed	7,200 rpm	
Interface	SATA 6 Gb/s	
Buffer Size	16 MB	
Logical Blocks	488,397,168	
Seek Time (typical reads, includes controller overhead, including settling)	Single Track:	2.0 ms
	Average:	12 ms
	Full-Stroke:	22 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)	

HP 500 GB* 7.2K SATA 6.0Gb/s 2.5" Hard Disk Drive		
Capacity	500,107,862,016 bytes	
Rotational Speed	7,200 rpm	
Interface	SATA 6 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)

HP 128 GB* M.2 PCIe SSD		
Unformatted Capacity	128 GB*	
Architecture	NAND Flash Memory which has a high reliability and a high technology in a small form factor for using a SSD and supporting PCIe interface up to 4 lanes.	
Form Factor	PCIe SATAe Ultrathin	
Dimensions (Width x Length x Thickness)	.899 x 3.149 x .146 in (22 x 80 x 3.73 mm)	
Weight	0.017 lb (8 g) Max	
Bandwidth Performance - Performance measured using IOMeter 2008 on Windows 8 64bit. Actual performance may vary depending on use conditions and environment.	Sustained Sequential Read (128KB):	Up to 920 MB/ss
	Sustained Sequential Write (128KB):	Up to 430 MB/s
	Random Read (4KB):	up to 8500 IOPs
	Random Write (4KB):	up to 32000 IOPs
Power	Allowable voltage	3.3V ± 5%
	Total power consumption:	5.8 W (Active) ; 80 mW; (Idle)
MTBF	1.5 M hours	
Environmental (all conditions, non-condensing)	Operating Temperature:	32° to 158° F (0° to 70° C)
	Relative Humidity (operating):	5% to 95%
	Shock:	1,500 G
Regulations	Safety TUV UL CB c-UL-us	TUV
		UL CB

		c-UL-us
		TUV
	EMC/EMI	CE (EU)
		BSMI (Taiwan)
		KCC (South Korea)
		VCCI (Japan)
		C-Tick (Austrailia)
		FCC (USA)

* 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) 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
	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 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.		

256 GB* SATA (non-SED) Solid State Drive		
Unformatted Capacity	256 GB*	
Architecture	Three storage layers: • Volatile cache - DDR DRAM cache • nCache™ - A non-volatile flash write cache • Mass storage – MLC NAND flash	
Form Factor	SATA 2.5”	
Dimensions (Width x Length x Thickness)	2.75 x 3.95 x .27 in (69.85 x 100.5 x 7 mm)	
Weight	0.08 lb (36.5 g)	
Bandwidth Performance	Sustained Sequential Read:	Up to 515 MB/ss
	Sustained Sequential Write:	Up to 465 MB/s
	Random Read (4KB):	up to 8500 IOPs
	Random Write (4KB):	up to 22000 IOPs
Latency	Read:	60ms (TYP)
	Write:	65ms (TYP)
Power	DC power requirement:	5V ± 5%
Useful Drive Life	Up to 2 million device hours**	
Environmental (all conditions, non-condensing)	Operating Temperature:	32° to 158° F (0° to 70° C)
	Relative Humidity (operating):	5% to 85%

	Shock:	1,500 G/0.5 ms
Regulations	FCC Part 15 Class B, IECS-003 Class B, EN 55022 Class B, EN 55024, KCC No. 2008-39, KCC No. 2008-38, CNS 13438 2006 (full version), VCCI: VCCI rules and regulations (latest rev), AS/NZS CISPR 22: 2009	
* 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.		

120 GB* SATA 2.5" Self-Encrypting (SED) Solid State Drive		
Unformatted Capacity	120 GB	
Architecture	Self-Encrypting (SED) Solid State Drive with 20nm MLC NAND Flash and SATA interface	
Form Factor	2.5 inch	
NAND Flash	20nm MLC NAND Flash	
Height	.275 in/7mm	
Width	2.75 in/69.85 mm	
Length	3.95 in/100.5 mm	
Weight	Up to 0.171 lb (78 g)	
Bandwidth Performance	Sustained Sequential 128k Read:	Up to 540 MB/s
	Sustained Sequential 128k Write:	Up to 480 MB/s
	Random 4k Read:	Up to 24K IOPs
	Random 4k Write:	Up to 80K IOPs
Latency	Read:	80 µs
	Write:	85 µs
Power	Power consumption:	195 mW (active average); 125 mW (Non DevSleep Idle)
MTBF	≥ 1.2 million hours	
Environmental (all conditions, non-condensing)	Operating Temperature:	32° to 158° F (0° to 70° C)
	Relative Humidity:	5% to 95%

	Shock:	1,500 G/0.5 ms

HP 128 GB* SATA 2.5" Self-Encrypting (SED) Solid State Drive		
Unformatted Capacity	128 GB	
Architecture	Self-Encrypting (SED) Solid State Drive using NAND Flash and SATA interface	
Interface	SATA 6 Gb/s	
Height	.267 in/6.80 mm	
Width	2.75 in/69.85 mm	
Length	3.94 in/100.2 mm	
Weight	0.121 lb (55 g) max	
Performance	Host Transfer Rate:	600 MB/s
	Sequential Read:	Up to 520 MB/s
	Sequential Write:	Up to 340 MB/s
	* For hard drives, GB = 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. ** Notes : 1. Measured at HP 8570p@Win7 x64 2. Performance measured using CrystaldiskMark 3.01c 3. Drive was connected as primary	
Power	System power consumption:	Active* - 0.78A / 3.891W (typical)
		Idle** - 0.005A / 0.026W (typical)
	* Active power is measured during execution of IOMeter 2006 in Windows 7 ** Idle power is measured on DOS Idle status with DIPM on	
System Reliability	MTBF - 1,500,000 Hours	
	Operating Temperature:	32° to 158° F (0° to 70° C)

Environmental (all conditions, non-condensing)	Relative Humidity:	5% to 95%
	Shock:	1500G, duration 0.5ms, Half Sine Wave

180 GB* SATA 2.5" Self-Encrypting (SED) Solid State Drive		
Unformatted Capacity	180 GB	
Architecture	Self-Encrypting (SED) Solid State Drive with 20nm MLC NAND Flash and SATA interface	
Form Factor	2.5 inch	
NAND Flash	20nm MLC NAND Flash	
Height	.275 in/7mm	
Width	2.75 in/69.85 mm	
Length	3.95 in/100.5 mm	
Weight	Up to 0.171 lb (78 g)	
Bandwidth Performance	Sustained Sequential 128k Read:	Up to 540 MB/s
	Sustained Sequential 128k Write:	Up to 490 MB/s
	Random 4k Read:	Up to 41K IOPs
	Random 4k Write:	Up to 80K IOPs
Latency	Read:	80 µs
	Write:	85 µs
Power	Power consumption:	195 mW (active average); 125 mW (Non DevSleep Idle)
MTBF	≥ 1.2 million hours	
Environmental (all conditions, non-condensing)	Operating Temperature:	32° to 158° F (0° to 70° C)
	Relative Humidity:	5% to 95%
	Shock:	1,500 G/0.5 ms

HP 256 GB* SATA 2.5" Self-Encrypting (SED) Solid State Drive		
Unformatted Capacity	256,186,209,271 bytes	
Architecture	Self-Encrypting (SED) Solid State Drive with 25nm MLC NAND Flash and SATA interface	
Interface	SATA 6 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

* For hard drives, GB = 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.

HP 500 GB* 7200 RPM SATA 2.5" Self-Encrypting (SED) Hard Disk Drive	
Capacity	500,107,862,016 bytes

Technical Specifications – Hard Disk and Solid State Storage

Rotational Speed	7,200 rpm	
Drive Type	Self-Encrypting Drive (SED) with SATA interface	
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	32° to 140° F (0° to 60° C)	

* For hard drives, GB = 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.

HP 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	SATA 6 Gb/s
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	32° to 140° F (0° to 60° C)	

* For hard drives, GB = 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.

HP 1 TB* 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	SATA 6 Gb/s	
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

Technical Specifications – Hard Disk and Solid State Storage

Height	0.374 +/-.008 in (9.5 +/- 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	0.254 lb/115 g (max)
Operating Temperature	32° to 140° F (0° to 60° C)

For hard drives, GB = 1 billion bytes. TB = 1 trillion 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.

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)	5.0 x 0.5 x 5.0 in (128 x 13.6 x 129 mm)	
Weight	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
	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 90%
	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	N/A
	CD-R	Up to 24X	N/A
	CD-RW	Up to 24X	N/A
		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	N/A
	DVD+R	Up to 8X	Up to 8X
	DVD+RW	Up to 8X	N/A
	BDMV (AACS Compliant Disc)	Up to 6X/2X (Read/Play)	N/A
	DVD-RAM	Up to 5X	N/A

	DVD-Video (CSS Compliant Disc)	Up to 8X/4X (Read/Play)	N/A
	CD-R/RW/ROM	Up to24X	N/A
	CD-DA(DAE)	Up to 20X/10X (Read/Play)	N/A
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

Technical Specifications – Removable Storage

Access time (typical reads, including settling)	Random	DVD-ROM: 170 ms (typical), CD-ROM: 170 ms (typical)
	Full Stroke	DVD-ROM: 320 ms (typical), CD-ROM: 320 ms (typical)
Power	Source	Slimline SATA DC power receptacle
	DC Power Requirement	5 VDC ± 5%-100 mV ripple p-p
	DC Current	5 VDC - <1000 mA typical, < 1600 mA maximum
Environmental (all conditions non-condensing)	Temperature	41° to 122° F (5° to 50° C)
	Relative Humidity	10% to 80%
	Maximum Wet Bulb Temperature (operating)	84° F (29° C)

*Duplication of copyrighted material is strictly prohibited. Actual speeds may vary. Double Layer media compatibility will widely vary with some home DVD players and DVD-ROM drives. Note that DVD-RAM cannot read or write to 2.6GB Single Sided/5.2 Double Sided-Version 1.0 Media.

System Memory Support

The HP EliteOne 705 G1 All-in-One Business PC supports the AMD® A-Series PRO processor family. Based on a new PC micro-architecture, the processor is designed for a two-chip platform consisting of a processor and Fusion Controller Hub (FCH). The processor includes an integrated memory controller (IMC). The IMC supports DDR3 protocols with two independent, 64-bit wide channels each accessing one SODIMM.

- Two channels of non-ECC DDR3 unbuffered small outline dual in-line memory modules (SODIMM) with a maximum of one SODIMM per channel
- Single-channel and dual-channel memory organization modes
- Data burst length of eight for all memory organization modes
- DDR3 memory data transfer rates of up to 1600 MT/s; actual supported DDR3 data transfer rate determined by the configured processor
- 64-bit wide channels
- DDR3 system memory I/O voltage of 1.5V and 1.35V
- Theoretical Maximum Memory Bandwidth:
  - 10.6 GB/s in single-channel mode of 21.3 GB/s in dual-channel mode assuming DDR3 1333 MT/s
  - 12.8 GB/s in single-channel mode or 25.6 GB/s in dual-channel mode assuming DDR3 1600 MT/s
  - 16 GB maximum memory support

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.

Memory Configurations:

Slot 1 must always be populated. Not all memory configurations possible are represented below.

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.

Total Memory	Socket	
	Channel A (black)	Channel B (black)
4 GB	4 GB	Unpopulated
8 GB (dual channel)	4 GB	4 GB
8 GB	8 GB	Unpopulated
16 GB (dual channel)	8 GB	8 GB

Broadcom NetXtreme Gigabit Ethernet Plus Gigabit Network Connection (integrated)		
Connector	RJ-45	
System Interface	Integrated on PCA	
Controller	Broadcom BCM5762 GbE	
Memory	24 KB FIFO packet buffer memory Two Queues (Tx & Rx)	
Data rates supported	10/100/1000 Mbps	
IEEE Compliance	802.1P 802.1Q 802.1as/1588 802.3 802.3ab 802.3az 802.3u	
Bus architecture	PCI Express and SMBus	
Data transfer mode	PCIe-based interface for active state operation (S0 state) and SMBus for host and management traffic (Sx low power state)	
Power requirement	Requires 3.3Vdc with integrated regulators Thermal Design Power (TDP) 0.535 Watts	
Boot ROM support	Yes	
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:	0° to 85° C

	Operating Humidity:	60**%** RH
Management	WOL, auto MDI crossover, PXE, Muti-port teaming, RSS, Advanced cable diagnostic, Smart speed operation	
Alerting	ASF 2.0 support; AMT 7.0 support	

HP WLAN 802.11a/b/g/n Wireless 2x2 Dual-Band Minicard with Bluetooth Combo		
Dimensions (L x H)	1.18 x 1.06 in (30 x 26.8 mm)	
Chipset	Atheros AR9462	
System interface	PCI-Express Mini Card	
Network standard	802.11 a/b/g/n	
Frequency band	Bluetooth: 2.402 - 2.480 GHz	
	Wi-Fi: 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 802.11b/g/n 2.402-2.482 GHz	
Bluetooth	The WLAN + Bluetooth Combo Mini Card meets all of the requirements to support Bluetooth 4.0 and is backwards compatible with 2.1 with EDR and 3.0 High speed.	
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 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) (WLAN Associated)	250mW
	Idle mode (WLAN unassociated)	100mW
	Radio disabled	75mW
	Bluetooth	
	Peak Operating	330 mW
	Receive	230 mW
	USB Selective Suspend	17 mW
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 V5	
	WAPI	
Antenna	Dual antenna connectors	

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: 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 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 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) (WLAN Associated)	250mW
	Idle mode (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.	

Intel Dual Band Wireless-N 7260AN 802.11 a/b/g/n (2x2) WiFi + Bluetooth 4.0 Combo Adaptor	**Wireless LAN Standards**	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n	
	Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliant with Microsoft Windows 7, Windows Vista and XP (details at: http://www.hp.com/go/notebooks/WLAN)	
	Frequency Band	802.11b/g/n	2.402 - 2.482 GHz
		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
	Antenna Structure	2 transmit; 2 receive (2x2)	
	Data Rates	802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)	
	Modulation	Direct Sequence Spread Spectrum CCK, BPSK, QPSK, 16-QAM, 64-QAM	
	Security[1]	○ IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only ○ AES-CCMP: 128 bit in hardware ○ 802.1x authentication ○ WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. ○ WPA2 certification ○ IEEE 802.11i	

	○ Cisco Certified Extensions, all versions through CCX4 and CCX Lite ○ WAPI
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
Network Architecture	Ad-hoc (Peer to Peer)
Models	Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between band Access Points
Output Power[2]	○ 2.4G: +13.5dBm minimum ○ 5G: +12dBm minimum
Power Consumption	Transmit: 2.0 Watts Receive: 1.6 Watts Idle mode[3]: 250 mW (WLAN Associated) Idle mode: 100 mW (WLAN unassociated) Radio off: 75 mW
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity[4]	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) 802.11b:-95 dBm (1 Mbps), -93 dBm (2 Mbps), -91 dBm (5.5 Mbps), -88 dBm (11 Mbps) 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) 802.11n:-69 dBm (150 Mbps), -66 dBm (300 Mbps)
Antenna Connections	2 U.FL type connectors (output impedance of 50 ± 2 ohms)
Form Factor	PCI-Express Half-MiniCard
Dimensions	0.12 x 1.06 x 1.18 in (3.1 x 26.8 x 30.0 mm)
Weight	3.1g
Operating Voltage	3.3v +/- 9%
Temperature	Operating 14° to 158° F (-10° to 70° C) Non-operating -40° to 176° F (-40° to 80° C)

Humidity	Operating Non-operating	10% to 90% (non-condensing) 5% to 95% (non-condensing)
Altitude	Operating Non-operating	0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)
LED Activity	LED Amber - Radio OFF; LED White - Radio ON	

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. In Power Save Polling mode and on battery power.
4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
5. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.

HP Integrated Module with Bluetooth 4.0+EDR Wireless Technology

Bluetooth Specification	4.0+EDR Compliant
Dimensions	1.18 x 0.26 x 0.13 in (30 x 6.5 x 3.25 mm)
Frequency Band	2402 to 2480 MHz
Number of Available Channels	79 (1 MHz) available channels
Data Rates and Throughput	3 Mbps data rate; throughput up to 2.17 Mbps Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric
Transmit Power	-1.5 dBm to 4 dBm (Bluetooth Class II)
Receiver Sensitivity	Better than -20 dBM at 0.1 % raw bit error rate
Power Consumption	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW
Antenna	Internally integrated within module
Range	Up to 33 ft (10 m)

Technical Specifications – Networking and Communications

Electrical Interface	USB 2.0 compliant
	Microsoft Windows Plug and Play compliant
Bluetooth Software Supported	Broadcom Bluetooth for Windows
	Microsoft Windows Bluetooth Software
Link Topology	Point to Point, Multipoint Pico Nets up to 7 slaves
Security	Full support of Bluetooth Security Provisions
Power Management	Microsoft Windows ACPI, and USB Bus Support
	Self-configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff
Certifications	All necessary regulatory approvals for supported countries, including:
	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
	ETS 300 328, ETS 300 826
	Low Voltage Directive IEC950
	UL, CSA, and CE Mark
Bluetooth Profiles Supported	Serial Port Profile (SPP)[1] Service Discovery Application Profile (SDAP) Dial-Up Networking (DUN)[1,2] Generic Object Exchange Profile (GOEP)[1,2] Object Push Profile (OPP)[1,2] File Transfer Profile (FTP) Synchronization Profile (SYNC) Hard Copy Cable Replacement (HCRP)[1,2] Personal Area Networking Profile (PAN)[1,2] Human Interface Device Profile (HID)[1,2] FAX Profile (FAX) Basic Imaging Profile (BIP)[2] Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP)

Near Field Communications Controller, with Embedded Secure Element	
Dimensions (L x W x H)	Module 10mm by 17mm by 1.8mm
Chipset	NXP PN650 (PN544C3 and P5CN145 dies in a single VFBGA64 package)
System interface	I^2C
NFC RF standards	ISO/IEC 14443 A ISO/IEC 14443 B ISO/IEC 15693 ISO/IEC 18092 ECMA-340 NFCIP-1 Target and Initiator ECMA-320 NFCIP-2
NFC Forum Support	Tag Type 1, Type 2, Type3 and Type 4, NFCIP-1 and NFCIP-2
Reader (PCD-VCD) Mode(1)	ISO/IEC 14443 A ISO/IEC 14443 B ISO/IEC 15693 MIFARE 1K MIFARE 4K FeliCa
Card Emulation (PICC-VICC) Mode(1)	ISO/IEC 14443 A ISO/IEC 14443 B and B' MIFARE FeliCa
Frequency	13.56 MHz
NFC Modes Supported	Reader/Writer, Peer-to-Peer, Card Emulation
Raw RF Data Rates	106, 212, 424 kbps

Embedded Secure Element	144 KB EEPROM, Data Memory or Program Memory 264 KB User ROM 7.5 KB RAM PKI (Public Key Infrastructure) coprocessor Dual Triple DES Key coprocessor NFC-WI interface to NFC controller, PN544 MIFARE 4 KB card emulation EEPROM data retention time 20 years, minimum	
Operating temperature	0°C to 70°C	
Storage temperature	-40° to 80°C	
Humidity	10-90% operating 5-95% non-operating	
Supply Operating voltage	2.97 to 5.25 Volts	
I/O Voltage	1.8V or 3.3V	
Power Consumption (Supply 3.3 Volts)	**Mode**	**Power Consumption, Typical(2)**
	Reset	10 µW
	Standby	150 µW
	Card Emulation within Polling Loop	297 µW
	When generating RF	120 mW
	Transmitter Supply Current (Continuous wave)	30 mA
Antenna	Antenna connector, 0.5mm pitch, 5 connector FPC. Antenna matching is external to module.	

(1) With application or UICC support
(2) Actual Power Consumption is dependent on NFC antenna and matching circuit and on the particular polling sequence and period configured.

Realtek ALC3228 High Definition Audio	
Type	Integrated
HD Stereo Codec	Realtek ALC3228 4-channel codec
Ports	Line-In/Microphone input ports are 47K (nominal) at the pin
	Line-Out intended to drive an external 10K load (nominal) and an on board shunt resistor of 20-47K (nominal)
	Headphone-Out designed to drive 32 ohm (nominal) headphones or a 10K (nominal) load
	All ports are 3.5 mm
Internal Speaker Amplifier	2.2W/channel Class-D stereo BTL speaker amplifier@ 4 ohms and 5V
Sampling	The ALC3228 audio CODEC provides stereo 24- bit, full duplex resolution supporting sample rates up to 192kHz by the DAC and ADC. Additional sample rates are supported by the driver software.
Analog Audio	Yes
# of Channels on Line-Out	4 Channels (2 stereo DACs and 2 stereo ADCs) with 24-bit resolution
Internal Speaker	Yes

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

Technical Specifications – Audio

DTS Studio Sound Features	• The ultimate multimedia audio experience • Immersive surround sound from two speakers or headphones • Extracts acoustic placement cues from original audio signal and adds near and far depth to the sound field to maximize 3D surround effect • Custom-tuned solutions to provide superior natural sound from desktop speakers and headphones • Maximum volume from small speakers • Deep, rich bass and crystal clear dialog • Intuitive user interface with presets for ease of use
DTS Studio Sound Benefits	• Provides a remarkably immersive 3D surround sound experience for business multimedia applications, complete with deep, rich enveloping bass, and crystal clear dialog • Ability to personalize acoustic preferences with speaker and headphone optimization

HP USB Keyboard		
Physical characteristics	Keys	104, 105, 106, 107, 109 layout (depending upon country)
	Dimensions (L x W x H)	18.12 x 6.47 x 0.96 in (46.03 x 16.43 x 2.44 cm)
	Weight	2 lb (0.9 kg)
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	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	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)	30 in (76.2 cm) on concrete, 16-drop sequence
Approvals	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, KC	
Ergonomic compliance	ANSI HFS 100, ISO 9241-4, and TUVGS	
Kit contents	Keyboard	Installation Guide
	Warranty Card	Safety and Comfort Guide

HP 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
	Non-operating vibration	Starting at 5 Hz, vary the frequency of vibration from 5 to 500 Hz and back to 5 Hz at a Logarithmic sweep rate of 1 octave per minute.
	Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
	Drop (in box)	29.93 in (76 cm) on concrete, 16-drop sequence
Approvals	CUL, ICES-003 Class B, FCC, CE Mark,TUV GS, VCCI, BSMI, C-Tick, KC	
Ergonomic compliance	ANSI HFS 100, ISO 9241-4, and TUVGS	

HP USB Smart Card (CCID) Keyboard

Introduction:

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

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

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

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

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

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

Key Benefits:	• Protects against unauthorized access with smart card technology • Delivers even greater security when combined with a HP ProtectTools smart card and the HP ProtectTools Security Software • Combination of username and password or pin with a smart card or security token • Secures online transactions using digital signatures and certificates • Conforms to industry standards for ease of setup and use • Delivers long product life and quiet operation with high-impact materials and lubricated keys • Spill drain feature	
Physical Characteristics	Keys	104, 105, 106, 107, 109 layout (depending upon country
	Form factor	USB basic smart card keyboard
	Colors	Carbonite/Silver
	Dimensions (H x W x D)	18.2 x 6.3 x 1.3 in (46.3 x 16.1 x 3.3 cm)

Technical Specifications – Input/Output Devices

	Weight	2 lb (0.9 kg) minimum
Electrical	Operating voltage	+ 5VDC ± 5%
	Power consumption	100-mA maximum (with four LEDs ON)
	System interface	USB Type A plug connector
	ESD	CE level 4, 15-kV air discharge
	EMI - RFI	Conforms to FCC rules for a Class B computing device
	Microsoft PC 99 - 2001	Functionally compliant
Mechanical	Languages	30+ available
	Keycaps	Standard design
	Switch actuation	55 g nominal peak force with tactile feedback
	Switch life	20 million keystrokes (using Hasco modified tester)
	Switch type	Contamination-resistant membrane
	Key-leveling mechanisms	For all double-wide and greater-length keys
	Cable length	6 ft (1.8 m)
	Microsoft PC 99 - 2001	Mechanically compliant
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	
	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)	
		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
	Switch type	Contamination-resistant switch membrane
	Key-leveling mechanisms	For all double-wide and greater-length keys
	Cable length	7 ft (2.2 m)
	Microsoft PC 99 - 2001	Mechanically compliant
	Acoustics	43-dBA maximum sound pressure level
Environmental	Operating temperature	50° to 122° F (10° to 50° C)
	Non-operating temperature	4° to 149° F (-20° to 65° C)
	Operating humidity	10% to 95% (non-condensing at ambient)
	Non-operating humidity	0% to 95% (non-condensing at ambient)
	Operating shock	40 g, six surfaces
	Non-operating shock	80 g, six surfaces
	Operating vibration	2-g peak acceleration

	Non-operating vibration	4-g peak acceleration
	Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
	Drop (in box)	42 in (107 cm) on concrete, 16-drop sequence
Approvals	UL, cUL, FCC, CE, TUV GS, VCCI, BSMI, C-Tick, KCC, USB-IF, WHQL, EN/IEC 60601-1, IP66/NEMA4X	
Ergonomic compliance	ANSI HFS 100, ISO 9241-4, and TUVGS	

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)
	Cable Length – Minimum	6 ft (1.8 m)
	Range	32.8 ft (10 m)
System Requirements	Available USB port for the receiver CD-ROM Drive *This system may require upgraded and/or separately purchased hardware and/or a DVD drive to install the Windows 7 software and take full advantage of Windows 7 functionality. See http://www.microsoft.com/windows/windows-7/ for details.	
Approvals	Product Safety	UL; CSA /TUV (Europe only); CE Mark; CB Report
	Ergonomics	ANSI; ISO (Europe only); GS Mark (Germany only)
	EMC	FCC; CE; ACA (-tick); BSMI; KC ; VCCI
	CE Mark	EN 55022:2010; EN 55024; EN 301489-1; EN 61000
	Design Guidelines for PCs	PC 99 – connector overmold colors; PC 2001 – full functionality
	Telecom	All local telecom requirements and approvals for intended markets
	USA	FCC Title 47 CFR, Par 15, Subpart C; other local requirements

	Country Support	US, Belgium, Switzerland, Spain, Denmark, Netherlands, France, Germany, Italy, Portugal, Sweden, Norway, Finland, UK, Poland, Czech Republic, Turkey, Greece, Austria, Bulgaria, Cyprus, Estonia, Hungary, Ireland, Latvia, Lithuania, Luxemburg, Malta, Romania, Slovakia, Slovenia, Vietnam, HK, Australia, NZ, Malaysia, Singapore, Indonesia, Philippines, Thailand, Canada, China, Japan, Korea, Taiwan, India, Venezuela, Ecuador, Russia, Ukraine, Israel, Croatia, United Arab Emirates, Peru, Brazil, Chile, Argentina, Mexico, South Africa, and up to 193 countries worldwide.
Environmental	Keyboard contains 25% post-consumer recycled plastic material.	

HP PS/2 Mouse		
Dimensions (H x L x W)	1.46 x 2.48 x 4.53 in (3.70 x 6.29 x 11.50 cm)	
Weight	3.53 oz (100g; +10g/- 5 g)	
Environmental	Operating temperature	-32° to 104°F (0° to 40° C)
	Non-operating temperature	-4° to 140°F (-20° to 60° C)
	Operating humidity	10% to 90% (non condensing at ambient)
	Non-operating humidity	10% to 90% (non condensing at ambient)
	Operating shock	40 g, 6 surfaces
	Non-operating shock	80 g, 6 surfaces
	Operating vibration	2 g peak acceleration
	Non-operating vibration	4 g peak acceleration
	Drop (out of box)	80 cm height onto asphalt tile over concrete or equivalent, 5-drop in 5 direction except the cable face
Electrical	Operating voltage	5 VDC ± 10%

	Power consumption	100mA
	System consumption	PS/2 mini-din connector
	ESD	CE level 4, 15 kV air discharge
	EMI-RFI	Conforms to FCC rules for a Class B computing device
	Microsoft PC99 - 2001	Functionally compliant
Mechanical	Resolution	800 DPI
	Tracking speed	10 in/s (25.4 cm/s) maximum
	Acceleration	±15%
	Switch actuation	65±20 gf
	Switch life	3,000,000 operations (using Hasco modified tester)
	Switch type	Low force micro-switches
	Tracking mechanism life	80 km
	Cable length	6 ft (1.8 m)
	Microsoft PC99 - 2001	Mechanically compliant
Scroll wheel	Width	6 mm
	Diameter	22.5 ± 0.2 mm
	Maximum rotation force	50 gf-cm
	Switch type	Light force micro-switch
	Switch life	1 million operations
	Mechanical life	Minimum 200,000 revolutions
Regulatory Approvals	UL/cUL, FCC, CE Mark, TUV/GS, VCCI, KCC, BSMI, C-Tick	

HP USB Optical Mouse

Dimensions (H x L x W)	1.5x 4.5 x 2.5 in (3. 7x 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)
Mechanical	Resolution	1000dpi
	Tracking Speed	45 cm/sec
	Cable Length	70.9 in (180 cm)

HP USB PS/2 Washable Mouse		
Dimensions (H x L x W)	1.56 x 2.44 x 4.61 in (3.95 x 6.21 x 11.7 cm)	
Weight	4.44 oz (126 g)	
Environmental	Operating temperature	-32° to 104°F (0° to 40° C)

	Non-operating temperature	-4° to 140°F (-20° to 60° C)
	Operating humidity	10% to 90% (non condensing at ambient)
	Non-operating humidity	10% to 90% (non condensing at ambient)
	Operating shock	40 g, 6 surfaces
	Non-operating shock	80 g, 6 surfaces
	Operating vibration	2 g peak acceleration
	Non-operating vibration	4 g peak acceleration
	Drop (out of box)	80 cm height onto asphalt tile over concrete or equivalent, 5-drop in 5 direction except the cable face
Electrical	Operating voltage	5 VDC ± 10%
	Power consumption	100mA
	System consumption	PS/2 mini-din connector
	ESD	CE level 4, 15 kV air discharge
	EMI-RFI	Conforms to FCC rules for a Class B computing device
	Microsoft PC99 - 2001	Functionally compliant
Mechanical	Resolution	400 ± 20% DPI
	Tracking speed	10 in/s (25.4 cm/s) maximum
	Acceleration	100 in/s/s (2.54 m/s/s)
	Switch actuation	61 g nominal peak force
	Switch life	3,000,000 operations (using Hasco modified tester)
	Switch type	Low force micro-switches
	Tracking mechanism life	155 mi (250 km) at average speed of 10 in/s
	Cable length	6 ft (1.8 m)
	Microsoft PC99 - 2001	Mechanically compliant
Scroll wheel	Width	8 mm
	Diameter	1.01 in (25.6 mm)
	Maximum rotation speed	48 rats/sec
	Switch type	Light force micro-switch
	Switch life	1 million operations
	Mechanical life	Minimum 200,000 revolutions

Regulatory Approvals	Compliant	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC

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 Desktop model is based on a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.

Energy Consumption (in accordance with US ENERGY STAR® test method)	**115VAC, 60Hz**	**230VAC, 50Hz**	**100VAC, 60Hz**
Normal Operation (Short idle)	30.42 W	30.51 W	30.38 W
Normal Operation (Long idle)	19.01 W	19.18 W	19.02 W
Sleep	1.91 W	1.96 W	1.89 W
Off	1.42 W	1.40 W	1.39 W

Note:

Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family . HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.

Heat Dissipation*	**115VAC, 60Hz**	**230VAC, 50Hz**	**100VAC, 60Hz**
Normal Operation (Short idle)	104 BTU/hr	104 BTU/hr	104 BTU/hr
Normal Operation (Long idle)	65 BTU/hr	66 BTU/hr	65 BTU/hr
Sleep	7 BTU/hr	7 BTU/hr	6 BTU/hr
Off	5 BTU/hr	5 BTU/hr	5 BTU/hr

*NOTE: Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)	Sound Power (L_{WAd}, bels)	Sound Pressure (L_{pAm}, decibels)
Typically Configured – Idle	3.5	24
Fixed Disk – Random writes	4.0	29

Longevity and Upgrading

This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include:

- 6 USB ports
- 2 memory slots
- 1 Mini PCIe half-length slot
- 1 MXM 3.0 Type A - 35W slot
- 1 mSATA slot
- 1 2.5" internal bay supporting up to Two 2.5" hard drives (HDD/SSD/SED/SSHD)
- 1 5.25" external supporting optical drive

<edit list of features as required>

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

Batteries

This battery(s) in this product comply with EU Directive 2006/66/EC

Batteries used in the product do not contain:
Mercury greater the1ppm by weight
Cadmium greater than 20ppm by weight

Battery size: CR2032 (coin cell)
Battery type: Lithium

Technical Specifications – Environmental Data

Additional Information

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.
- This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.
- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
- This product is in compliance with the IEEE 1680 (EPEAT) standard at the <gold> level, see www.epeat.net
- Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.
- This product contains 36.9% post-consumer recycled plastic (by wt.)
- This product is 97.6% recycle-able when properly disposed of at end of life.

Packaging Materials

External:	PAPER/Corrugated	1516 g
	PAPER/Paper	94 g
Internal:	PLASTIC/EPE-Expanded Polyethylene	533 g
	PLASTIC/Polyethylene low density	39 g

The EPE foam packaging material is made from 25% recycled content.
The corrugated paper packaging materials contains at least 0% 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/qse.pdf):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants – may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

Technical Specifications – Environmental Data

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)

AFTER MARKET OPTIONS:

ADDITIONAL MONITORS FOR MULTI-DISPLAY CONFIGURATIONS	**Part Number**
HP EliteDisplay E190i 18.9-inch LED Backlit Monitor	E4U30AA
HP EliteDisplay E201 20-inch LED Backlit Monitor	C9V73AA
HP EliteDisplay E221 21.5-inch LED Backlit Monitor	C9V76AA
HP EliteDisplay E221c 21.5-inch Webcam LED Backlit Monitor	D9E49AA
HP EliteDisplay E231 23-inch LED Backlit Monitor	C9V75AA
HP EliteDisplay E241i 24-inch LED Backlit Monitor	F0W81AA
HP EliteDisplay E271i 27-inch LED Backlit Monitor	D7Z72AA
HP L2206tm 21.5-inch LED Backlit Touchscreen Monitor	B0L55AA
HP EliteDisplay S230tm 23-inch Touch Monitor	E4S03AA
MEMORY	**Part Number**
HP 4GB DDR3-1600 (PC3-12800) SODIMM	B4U39AA
HP 8GB DDR3-1600 (PC3-12800) SODIMM	B4U40AA
DATA STORAGE DRIVES AND ACCESSORIES	**Part Number**
HP 500GB SATA , 6G (8GB cache) Solid State Hybrid Drive (SSHD)	E1C62AA
HP 128GB SATA Solid State Drive	QV063AA
Intel Pro 1500 180GB SATA SED Opal1 Solid State Drive	G4M04AA
HP Slim SATA DVD-ROM Drive	VP033AA
HP Slim SATA BDXL Blu-Ray Writer Drive	E0X94AA
HP Slim SATA SuperMulti DVD Writer Drive	QS209AA
INPUT DEVICES – KEYBOARD AND MOUSE COMBO	**Part Number**
HP USB PS/2 Washable Keyboard & Mouse (Keyboard contains 25% post-consumer recycled plastic material)	BU207AA
HP Wireless Keyboard & Mouse (Keyboard contains 25% post-consumer recycled plastic material)	QY449AA
INPUT DEVICES – KEYBOARD	**Part Number**
HP PS/2 Keyboard	QY774AA
HP USB Grey Keyboard	B6B64AA
HP USB Smart Card (CCID) Keyboard	E6D77AA
HP USB Keyboard	QY776AA
INPUT DEVICES – MOUSE	**Part Number**

After-Market Options (availability may vary by region)

HP PS/2 Mouse	QY775AA
HP USB 1000dpi Laser Mouse	QY778AA
HP USB Mouse	QY777AA
HP USB Gray Mouse	K7W54AA
HP Mouse Pad	AT485AA
SECURITY	**Part Number**
HP UltraSlim Cable Lock	H4D73AA
GRAPHICS – VIDEO ADAPTERS AND CABLES	**Part Number**
HP DisplayPort Cable Kit	VN567AA
HP DisplayPort To DVI-D Adapter	FH973AA
HP DisplayPort To HDMI Adapter	BP937AA
HP DisplayPort To VGA Adapter	AS615AA
HP DVI Cable	DC198A
USB Graphics Adapter	NL571AA
Dual Output USB Graphics Adapter	C5U89AA
STANDS AND MONITOR ARM	**Part Number**
AiO Height Adjustable and Reclining Stand	C1N43AA
HP Single Monitor Arm	BT861AA
HP (Flat Panel Monitor) Quick Release	EM870AA
NETWORKING/COMMUNICATIONS	**Part Number**
Intel 7260 802.11 a/b/g/n PCIe x1 WLAN Card	F2P07AA
MISCELLANEOUS	**Part Number**
Belkin 7-Outlet Surge Protector for North America 120V	AG290AA
Belkin USB to Serial Adapter	EM449AA
Belkin CAT5e Patch Cable RJ45/RJ45	AH122AA
HP Business Headset	QK550AA
LANDESK SOFTWARE (E-DELIVERY)	
Contact your HP representative for available options.	

After-Market Options (availability may vary by region)

After-Market Options (availability may vary by region)

Date of change:	**Version History:**		**Description of change:**
May 23, 2014	From v1.7 to v1.8	Added	Intel 7260 802.11 a/b/g/n PCIe x1 WLAN Card as option and aftermarket.
		Added	Replaced power table.
June13, 2014	From v1.8 tov1.9	Changed	Footnotes, networking/communications, Power
September 10, 2014	From v1.9 to v3	Added	Added the whole Environmental data chart
November 12, 2014	From v3 to v4	Changes	Different changes from Rebeca's side across the file