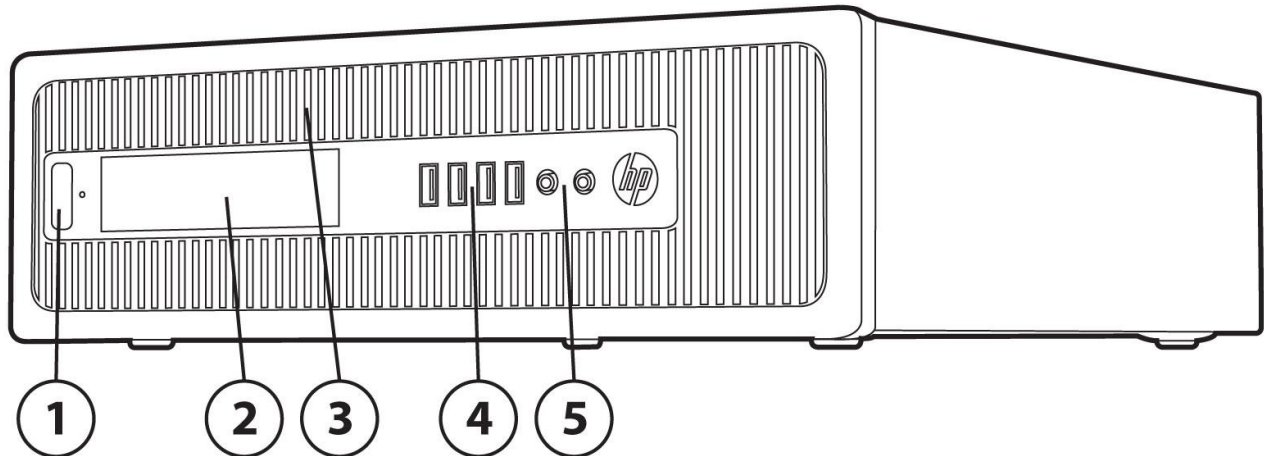


### Overview

### HP EliteDesk 700 G1 Small Form Factor Business PC



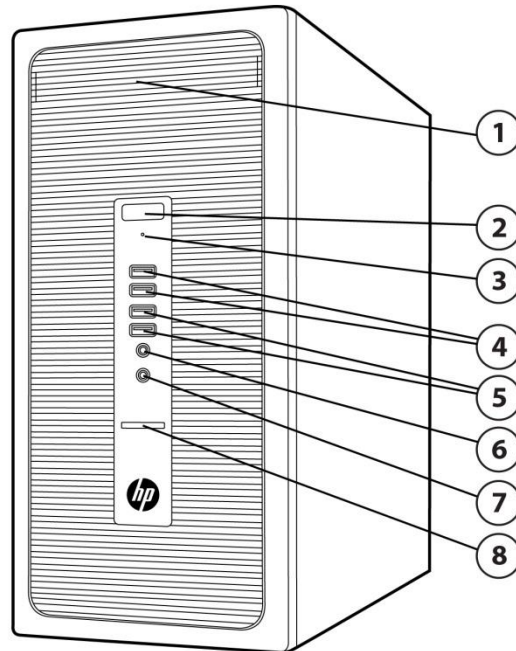
1. Power button and PC status LED
2. 3.5" external drive bay; used for installing a Media Card Reader or 2<sup>nd</sup> data storage drive
3. Slim drive bay supporting an optical disk drive (located behind removable bezel)
4. (2) USB 3.0 ports, (2) USB 2.0 ports
5. 3.5mm headphone output and microphone jack

#### Not Shown

- Slots (2) PCI Express x16 graphics connectors; one wired as a x4  
(2) PCI Express x1 accessory connectors
- Bays (1) 2.5" internal storage drive bay  
(2) 3.5" internal storage drive bay (2<sup>nd</sup> bay available with/out MCR)
- Rear I/O (2) USB 3.0 ports; (4) USB 2.0 ports  
(1) VGA video port; (2) DisplayPort with multi-stream video ports  
(1) RJ-45 network connector  
(1) RS-232 serial port  
3.5mm audio in/out jacks  
PS/2 keyboard and mouse ports

### Overview

## HP EliteDesk 700 G1 Microtower Business PC



1. Slim drive bay supporting an optical disk drive (located behind removable bezel)
2. Power button
3. PC status LED
4. (2) USB 2.0 ports
5. (2) USB 3.0 ports
6. 3.5mm headphone output
7. Microphone jack
8. SD Card Reader bay

#### Not Shown

Slots (2) PCI Express x16 graphics connectors; one wired as a x4  
(2) PCI Express x1 accessory connectors

Bays (1) Slim optical drive bay  
(2) 3.5" internal storage drive bays

Rear I/O (2) USB 3.0 ports; (4) USB 2.0 ports  
(1) VGA video port; (2) DisplayPort with multi-stream video ports  
(1) RJ-45 network connector  
(1) RS-232 serial port  
3.5mm audio in/out jacks  
PS/2 keyboard and mouse ports

### Overview

#### At A Glance

- Choice of two chassis form factors: Microtower and Small Form Factor
- PC chassis and all internal components and modules are manufactured with low halogen content
- HP developed and engineered UEFI BIOS supporting security, manageability and software image stability
- Intel® Q87 chipset supporting Intel 4th generation Core processors, featuring integrated Intel HD Graphics and Intel® vPro™ Technology (available with select processors)
- Intel® Ethernet Connection I217L GbE LOM integrated network connection
- DDR3 Synchronous Dynamic Random Access Memory (SDRAM)
- Multi-independent monitor support via VGA and dual digital DisplayPort video interfaces with multi-stream
- DTS Studio Sound audio management software
- Standard and high efficiency energy saving power supply options
- Optional Intel Smart Response Technology disk cache modules
- ENERGY STAR® qualified and certified EPEAT® Gold models
- Lengthy purchase lifecycles and image stability

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

#### CHIPSET

Intel® Q87 Express

#### PROCESSORS\*

##### Intel® 4th Generation Core™ i5 Processors

###### Intel® Core™ i5-4570 Processor

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

6 MB cache, 4 cores, 4 threads

Intel HD Graphics 4600

Supports DDR3 memory up to 1600 MT/s data rate

Supports Intel® vPro™ Technology and Intel® Stable Image Platform Program (SIPP)

###### Intel® Core™ i5-4590 Processor

Up to 3.7 GHz Max. Turbo Frequency (3.3 GHz base frequency)

6 MB cache, 4 cores, 4 threads

Intel HD Graphics 4600

Supports DDR3 memory up to 1600 MT/s data rate

Supports Intel® vPro™ Technology and Intel® Stable Image Platform Program (SIPP)

##### Intel® 4th Generation Core™ i3 Processors

###### Intel® Core™ i3-4130 Processor

3.4 GHz base frequency

3 MB cache, 2 cores, 4 threads

Intel HD Graphics 4400

Supports DDR3 memory up to 1600 MT/s data rate

###### Intel® Core™ i3-4150 Processor

3.5 GHz base frequency

3 MB cache, 2 cores, 4 threads

Intel® HD Graphics 4400

Supports DDR3 memory up to 1600 MT/s data rate

### Standard Features and Configurable Components

#### Intel® Core™ i3-4160 Processor

3.6 GHz base frequency

3 MB cache, 2 Cores, 4 Threads

Intel® HD Graphics 4400

Supports DDR3 memory up to 1600 MT/s data rate

\*Multi-Core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. 64-bit computing on Intel® architecture requires a computer system with a processor, chipset, BIOS, operating system, device drivers, and applications enabled for Intel® 64 architecture. Processors will not operate (including 32-bit operation) without an Intel® 64 architecture-enabled BIOS. Performance will vary depending on your hardware and software configurations. Intel's numbering is not a measurement of higher performance.

## GRAPHICS

### System Integrated Graphics

Intel HD Graphics on all models (integrated on processor)

NOTE: HD content required to view HD images.

## ADAPTERS AND CABLES

HP DMS-59 to Dual DisplayPort Cable

HP DMS-59 to Dual DVI Cable

HP DMS-59 to Dual VGA Cable

HP DisplayPort Cable

HP DisplayPort to DVI-D Adapter

HP DisplayPort to HDMI Adapter

HP DisplayPort To HDMI 1.4 Adapter

HP DisplayPort to VGA Adapter

HP Serial Port Adapter

HP Parallel Port Adapter

## STORAGE\*

### Hard Disk Drives (HDD)

500 GB 7200 rpm HDD

500 GB 7200 rpm SED HDD

1 TB 7200 rpm HDD

2 TB 7200 rpm HDD

500GB 7200 RPM SATA 2.5 SED HDD

### Solid State Hybrid Drives (SSHD)

500 GB SSHD (8 GB cache)

1 TB SSHD (8 GB cache)

### Standard Features and Configurable Components

#### Solid State Drives (SSD) & Self-encrypting Solid State Drives (SED)

- 120 GB Opal SED
- 128 GB SSD Non-SED
- 128 GB Opal SED
- 180 GB Opal SED
- 256 GB Opal SED
- 256 GB Opal Non-SED SSD
- 120GB SATA 2.5 Non-SED SSD (with 3.5" adapter when needed)
- 180GB SATA 2.5 Non-SED SSD (with 3.5" adapter when needed)
- 120GB SATA 2.5 Opal2 SED SSD (with 3.5" adapter when needed)
- 180GB SATA 2.5 Opal2 SED SSD (with 3.5" adapter when needed)

#### PCI Cards

- 128 GB Turbo Drive SSD (PCIe card)

#### Optical Disc Drives

- Slim DVD-ROM
- Slim BDXL Blu-ray Writer
- Slim SuperMulti DVD Writer

#### Removable

- HP Slim Removable SATA HDD Frame/Carrier

\*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 30 GB (for Windows 8.1) of system disk is reserved for the system recovery software.

### MEMORY\*

Form Factor	Type	Maximum	# of Slots
Small Form Factor	DDR3 non-ECC Up to 1600 MT/s	32 GB	4 DIMM
Microtower	DDR3 non-ECC Up to 1600 MT/s	32 GB	4 DIMM

\* 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.

### PERFORMANCE

#### Intel® Smart Response Technology Disk Cache Modules

- 2.5" Solid State Disk Cache

### Standard Features and Configurable Components

#### NETWORKING/COMMUNICATIONS

##### Ethernet (RJ-45)

Intel I217LM Gigabit Network Connection (standard)

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

##### Wireless\*

Intel 7260 802.11 a/b/g/n PCI Express x1

Wireless Network Connection (optional)

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

**NOTE:** Either the integrated network connection or the Intel Centrino wireless NIC is required to support Intel vPro Technology features.

#### Audio/Multimedia

HD audio with Realtek ALC221 codec (all ports are stereo)

DTS Studio Sound audio management technology

Microphone\* and headphone front ports (3.5mm)

Line-out and Line-In rear Ports\* (3.5mm)

Multi-streaming capable\*

Internal speaker (standard)

\* The front microphone port is re-taskable as a Line-in, Microphone-in or Headphone-out port. Rear audio input ports are re-taskable as a Line-in or Microphone-in port. External speakers must be powered externally. Multi-streaming can be enabled in the Realtek control panel to allow independent audio streams to be sent to/from the front and rear jacks. This allows for different audio applications to use separate audio ports on the system. For example, the front jacks could be used with a headset for a communications application while the rear jacks are being used with external speakers and a multimedia application.

#### KEYBOARDS AND POINTING DEVICES

##### Keyboard

HP PS/2 Keyboard

HP USB Keyboard

USB Smart Card (CCID) Keyboard

HP USB and PS/2 Washable Keyboard\*

HP Wireless Keyboard and Mouse Combo\*

HP USB Antimicrobial Keyboard

\*Keyboard contains 25% post-consumer recycled plastic material.

##### Mice

HP PS/2 Mouse

HP USB Mouse

HP USB 1000dpi Laser Mouse

HP USB and PS/2 Washable Mouse

HP USB Antimicrobial Mouse

### Standard Features and Configurable Components

#### HP BIOS

Key features of the HP BIOS include:

- Deployment and manageability – HP BIOS provides several technologies that help integrate the HP EliteDesk 700 G1 Business PC into the enterprise, such as PXE, remote configuration, remote control, and F10 Setup support for 12 languages.
- Select models feature either Intel Standard Manageability or Intel Core vPro Processor Technology.
- Stability – HP BIOS supports the HP stable product roadmap by releasing only critical BIOS changes to the factory and advanced change notification.
- UEFI specification 2.1
- Absolute Persistence agent – For tracking and tracing services, available in select countries, separate software and purchase of a subscription is required.
- Thermal and power management – The HP BIOS provides and enables thermal and power management technologies so component temperatures are managed for high reliability and to assist in operating the HP Business Desktop computer in any enterprise environment.
- Acoustic performance – Industry leading acoustic emissions across the range of operating conditions.
- Serviceability – HP BIOS provides diagnostic and detailed service information.
- Upgrades and recovery – HP BIOS provides numerous ways to upgrade HP Business Desktop computers, including BIOS updates from within DOS (DOSFlash), BIOS updates from within Windows (HPQFlash), HP Client Manager, and fail-safe recovery. In addition, the HP Business Desktop BIOS Utilities tool enables replicated BIOS setup throughout the Enterprise; it is available from within the BIOS software and from the support website.
- HP BIOS uses PKI signing of the BIOS for trusted BIOS upgrades and recovery.

Additional HP BIOS Features:

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

#### SECURITY

	<b>SFF/MT</b>
Common Criteria Certified, Infineon TPM SLB9656TT1.2- v4.32 FW	<b>X</b>
SATA port disablement (via BIOS)	<b>X</b>
Drive lock	<b>X</b>
RAID configurations	<b>X</b>
Intel® Identify Protection Technology (IPT) <sup>1</sup>	<b>X</b>
Serial, parallel, USB enable/disable (via BIOS)	<b>X</b>
Optional USB Port Disable at factory (user configurable via BIOS)	<b>X</b>
Removable media write/boot control	<b>X</b>
Power-On password (via BIOS)	<b>X</b>

### Standard Features and Configurable Components

Setup password (via BIOS)	X
Solenoid Hood Lock / Sensor	X
Support for chassis padlocks and cable lock devices	X

<sup>1</sup>Models configured with Intel Core processors have the ability to utilize advanced security protection for online transactions. IPT, used in conjunction with participating web sites, provides double identity authentication by adding a hardware component in addition to the usual user name and password. IPT is initialized through an HP Client Security module

### ENVIRONMENTAL & REGULATORY

ENERGY STAR® qualified models available

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

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

TAA compliant

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

### PORTS

#### I/O Ports – Standard

	<u>SFF/MT</u>
USB 2.0	2 (front); 4 (rear)
USB 3.0	2 (front); 2 (rear)
Serial (RS-232)	1
PS/2	1 keyboard (purple) 1 mouse (green)
Video	1 ea. VGA 2 ea. DisplayPort with multi-stream
Audio	Front: headphone/mic Rear: line in/out 3.5mm diameter
Network Interface	RJ-45

#### I/O Ports – Optional

	<u>SFF/MT</u>
2nd Serial (RS-232)	1
Parallel	1

### SLOTS

	<u>SFF</u>	<u>MT</u>
PCI Express Mini Card	N/A	N/A
MXM Graphics	N/A	N/A
mSATA	N/A	N/A

### Standard Features and Configurable Components

M.2	N/A	N/A
PCI Express x1 (v2.0)	2 ea. 2.5" low profile 6.6" length 10W max. power	2 ea. 4.2" full height 6.6" length 10W max. power
PCI Express x16 (v2.0) (wired as a x4)	1 ea. 2.5" low profile 6.6" length 35W max. power	1 ea. 4.2" full height 6.6" length 35W max. power
PCI Express x16 (v3.0)	1 ea. 2.5" low profile 6.6" length 35W max. power	1 ea. 4.2" full height 6.6" length 75W max. power
Optional PCI (v2.3)	N/A	1 ea. 4.2" full height 6.6" length

**NOTE:** The MT can support a single graphics card up to 75W. When configured with dual graphics cards support is limited to 35W for each.

### BAYS

	<u>MT/SFF</u>
3.5" Media Card Reader	1 ea.
5.25" Half Height ODD	N/A
Slim ODD	1 ea.
Secure Digital (SD) Reader	N/A
2.5" internal storage drive	1 ea.
3.5" internal storage drive	1 ea.

### 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 an optional Care Pack. To choose the right level of service for your HP product, visit HP Care Pack Central: [www.hp.com/go/cpc](http://www.hp.com/go/cpc)

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

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

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

### SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS

Included

Windows 7

Windows 8.1

### Standard Features and Configurable Components

<b>Security</b>	Absolute Persistence(status tracing) <sup>1</sup> Device Access Manager Drive Encryption <sup>4</sup> File Sanitizer (Activated via Wizard) <sup>5</sup> Disk Sanitizer (external version) <sup>2</sup> Microsoft Security Essentials HP Client Security	Absolute Persistence(status tracing) <sup>1</sup> Device Access Manager Drive Encryption <sup>4</sup> File Sanitizer (Activated via Wizard) <sup>5</sup> Disk Sanitizer (external version) <sup>2</sup> Microsoft Defender Secure Erase <sup>6</sup> HP Client Security <sup>7</sup>
<b>MultiMedia</b>	Cyberlink Power DVD, BD Cyberlink Power2Go (Secure Burn)	Cyberlink Power DVD, BD Cyberlink Power2Go (Secure Burn)
<b>Communication</b>		HP Wireless Hotspot
<b>HP Value Add</b>	HP ePrint Driver <sup>3</sup> HP Manageability (Activation Required) HP PageLift <sup>8</sup> HP Recovery Manager HP Support Assistant HP Recovery Disk Creator	HP ePrint Driver <sup>3</sup> HP Manageability (Activation Required) HP PageLift <sup>8</sup> HP Recovery Manager HP Support Assistant
<b>3<sup>rd</sup> Party</b>	Box 50GB Offer <sup>9</sup> Foxit PhantomPDF <i>Express</i> Skype	Box Application Foxit PhantomPDF <i>Express</i> Skype
<b>Microsoft Products</b>	Buy Office	Buy Office

<sup>1</sup> 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.

<sup>2</sup> Disk Sanitizer is 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](http://hp.com). Requires Windows on business desktops and notebooks.

<sup>3</sup> 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](http://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.

<sup>4</sup> 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.

<sup>5</sup> File Sanitizer is 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.

<sup>6</sup> Secure Erase is for the methods outlined in the National Institute of Standards and Technology Special Publication 800-88.

<sup>7</sup> HP Client Security requires Windows.

<sup>8</sup> HP PageLift requires Windows 8.

<sup>9</sup> Box offer requires Box registration. Offer available to new Box users only. Offer subject to change without notice. Box app requires Windows 8 or 8.1.

### Technical Specifications – Core vPro Processors

#### **INTEL 4th GENERATION CORE vPRO PROCESSORS**

All HP EliteDesk 700 G1 Business PC models featuring this technology include processors that are part of the Intel 2013 Stable Image Platform Program (SIPP) designed to ensure the stability promise inherent in the value proposition of the HP EliteDesk 700 G1 Business PC, thus making these models the most stable, secure, and manageable platforms available to enterprises today.

**Intel® Advanced Management Technology (AMT) v9.0** – An advanced set of remote management features and functionality which provides network administrators the latest and most effective tools to remotely discover, heal, and protect networked client systems regardless of the system's health or power state. AMT 9.0 includes the following advanced management functions:

- Power Management (on, off, reset)
- Hardware Inventory (includes BIOS and firmware revisions)
- Hardware Alerting
- Agent Presence
- System Defense Filters
- SOL/IDER
- Cisco NAC/SDN Support
- ME Wake-on-LAN
- DASH 1.1 compliance
- IPv6 Support
- Fast Call for Help - a client inside or outside the firewall may initiate a call for help via BIOS screen, periodic connections, or alert triggered connection
- Remote Scheduled Maintenance - pre-schedule when the PC connects to the IT or service provider console for maintenance. Remote PCs can get required patches, be inventoried, etc by connecting to their IT console or Service Provider when it's convenient.
- Remote Alerts - automatically alert IT or service provider if issues arise
- Access Monitor - Provides oversight into Intel® AMT actions to support security requirements
- PC Alarm Clock
- Microsoft NAP Support
- Host Base set-up and configuration
- Management Engine (ME) firmware roll back
- Wireless AMT functionality on Desktop (WoDT)
- Enhanced KVM resolution

### Technical Specifications - Graphics

<b>Intel HD Graphics</b>		
<b>VGA Controller</b>	Integrated	
<b>DisplayPort</b>	Multimode capable; supports HDCP, Display Port Audio (2 streams), HBR2 link rates and Multi-Stream Technology for a maximum of 3 displays (including the integrated panel)	
<b>Bus Type</b>	N/A	
<b>RAMDAC</b>	N/A	
<b>Memory</b>	<p>Intel graphics do not have dedicated memory but utilizes some of the computer's system memory. The amount of memory used for graphics depends on the amount of system memory installed, BIOS settings, operating system, and system load. 32 MB is pre-allocated for graphics use at system boot time. Additional memory can be allocated at boot time by the BIOS for PAVP (Protected Audio Video Playback) support for playback of protected video content.</p> <p>Additional memory is allocated for graphics as needed using Intel's Dynamic Video Memory Technology (DVMT), to provide an optimal balance between graphics and system memory use.</p>	
<b>Maximum Graphics Memory</b>	Microsoft Windows 7	Windows 8.1
	Up to 1.7GB	Up to 1.8GB
	Note: the actual amount of maximum graphics memory can be less than the amounts listed above depending upon your computer's configuration.	
<b>Maximum Color Depth</b>	32 bits/pixel	
<b>Graphics/Video API Support</b>	<p>4th Generation Core processors:</p> <ul style="list-style-type: none"> <li>• The Processor Graphics contains a refresh of the seventh generation graphics core enabling substantial gains in performance and lower power consumption. Up to 16 EU support.</li> <li>• Next Generation Intel Clear Video Technology HD Support is a collection of video playback and enhancement features that improve the end user's viewing experience               <ul style="list-style-type: none"> <li>○ Encode/transcode HD content</li> <li>○ Playback of high definition content including Blu-ray Disc</li> <li>○ Superior image quality with sharper, more colorful images</li> </ul> </li> <li>• DirectX Video Acceleration (DXVA) support for accelerating video processing               <ul style="list-style-type: none"> <li>○ Full AVC/VC1/MPEG2 HW Decode</li> </ul> </li> <li>• Advanced Scheduler 2.0, 1.0</li> <li>• Windows 7, Windows 8, Linux OS Support</li> <li>• DirectX 11.1</li> <li>• OpenGL 4.3</li> <li>• Open CL 1.2</li> </ul>	
<b>Supported Display Resolutions and Refresh Rates</b>		
<b>Note:</b> other resolutions may be available but are not recommended as they may not have been tested and qualified by HP		
	<b>Resolution</b>	<b>Refresh Rates</b>
	800x600	60 Hz
	1024x768	60 Hz
	1152x864	60 Hz
	1280x600	60 Hz

### Technical Specifications - Graphics

1280x720	60 Hz
1280x800	60 Hz
1280x960	60 Hz
1280x1024	60 Hz
1360x768	60 Hz
1366x768	60 Hz
1400x1050	60 Hz
1440x900	60 Hz
1600x900	60 Hz
1600x1200*	60 Hz
1680x1050	60 Hz
1920x1080	60 Hz
1920x1200*	60 Hz
1920x1440*	60 Hz
2560x1440*	60 Hz
2560x1600*	60 Hz
3840x2160*	60 Hz

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

### Technical Specifications – Hard Disk and Solid State Storage

#### Introduction:

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

SATA provides faster data transfer speeds, better system cooling airflow, more bandwidth, more headroom for speed increases in future generations and better data integrity. A next-generation technology, the SATA interface connects hard drives to the PC platform enabling easy aggregation of multiple hard drives into a single PC. This offers you the additional benefits of dedicated bandwidth, the ability to more easily identify device failures and scalability. The HP EliteDesk 700 G1 Series Business PC 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:** GB = 1 billion bytes. Actual available capacity is less.

### Redundant Array of Independent Drives (RAID)

Flexible implementation:

- DriveLock is supported while in RAID mode. Users can manage the DriveLock password from within F10 Setup. Locked drives will be displayed as such in the RAID option ROM interface.
- Hard drive information can be viewed within F10 Setup while in RAID mode. Previously, the hard drives will not appear in Drive Configuration when switching to RAID mode.
- DPS Self-Test can be executed on physical hard drives while in RAID mode.

### Technical Specifications – Hard Disk and Solid State Storage

- The RAID Setup Utility (accessed through CTRL-I) can be protected by the F10 Setup password.

**NOTE:**

RAID 1 is the only RAID configuration offered via factory configurations. The pre-configured systems:

- Are only available on the SFF and MT form factors.
- Are complete RAID systems and have both drives installed.
- Have the necessary Option ROM configuration.
- Are pre-loaded and pre-installed with all required Intel software.
- Include a preinstalled operating system that is mirrored mode out of the box.

<b>HP Turbo Drive 128 GB PCIe SSD</b>	
<b>Capacity</b>	128 GB SSD*
<b>NAND Type</b>	MLC
<b>Read Bandwidth (128KB)</b>	1.00 GB/s
<b>Write Bandwidth (1MB)</b>	450 MB/s
<b>Random Read IOPS (4KB)</b>	110K
<b>Random Write IOPS (4KB)</b>	40K
<b>Endurance (Total Bytes Written)</b>	73 TB
<b>Weight</b>	1.8oz (51g)
<b>Form Factor</b>	Half-height, half-length**
<b>Endurance (Total Bytes Written)</b>	73 TB
<p>*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.</p> <p>**Roughly, actual length is 4 inches (100cm)</p>	

### Technical Specifications – Hard Disk and Solid State Storage

<b>2 TB* 7.2K rpm SATA 6.0Gb/s 2.5” Hard Disk Drive</b>		
<b>Unformatted Capacity</b>	2 TB	
<b>Rotational Speed</b>	7,200 rpm	
<b>Interface</b>	SATA 6 Gb/s	
<b>Cache, Multisegmented (MB)</b>	64 MB	
<b>Seek Time</b> (average)	Read	<8.5 ms
	Write	<9.5 ms
<b>Height</b>	1.028 in/26.11 mm	
<b>Width</b>	4.0 in/101.6 mm	
<b>Depth</b>	5.787 in/146.99 mm	
<b>Weight</b>	1.38 lb/626 g	
<b>Operating Temperature</b>	41° to 131° F (5° to 55° C)	
* For hard drives and solid state disk drives, GB means 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30GB (for Windows 8) is reserved for system recovery software.		

<b>1 TB* 7.2K rpm SATA 6.0Gb/s 3.5” Hard Disk Drive</b>		
<b>Capacity</b>	1,000,204,886,016 bytes	
<b>Rotational Speed</b>	7,200 rpm	
<b>Interface</b>	Serial ATA 3.0 (6.0 Gb/s)	
<b>Buffer Size</b>	32 MB	
<b>Logical Blocks</b>	1,953,525,168	
<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	Single Track:	2.0 ms
	Average:	11 ms
	Full-Stroke:	21 ms
<b>Height</b> (nominal)	1 in/2.54 cm	
<b>Width</b> (nominal)	Media diameter: 3.5 in/8.89 cm	

### Technical Specifications – Hard Disk and Solid State Storage

	Physical size: 4 in/10.2 cm
<b>Operating Temperature</b>	41° to 131° F (5° to 55° C)
* For hard drives and solid state disk drives, GB means 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30GB (for Windows 8) is reserved for system recovery software.	

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

<b>Capacity</b>	500,107,862,016 bytes	
<b>Rotational Speed</b>	7,200 rpm	
<b>Drive Type</b>	Self-Encrypting Drive (SED) with SATA interface	
<b>Interface</b>	SATA Interface conforming to Serial ATA International Organization: Serial ATA Revision 2.6	
<b>Segmented Buffer with write cache</b>	32768 KB - A portion of buffer capacity used for firmware	
<b>Number of Sectors</b>	976,773,168	
<b>Seek Time</b> (typical reads)	Single Track:	1.0 ms
	Average:	13 ms
	Full-Stroke:	25 ms
<b>Media Diameter</b>	2.5 in/63.5 mm	
<b>Height</b>	0.267 in/6.8 mm, ±0.2mm	
<b>Width</b>	2.75 in/69.85 mm, ±0.25mm	
<b>Length</b>	3.945 in/100.2 mm, ±0.25mm	
<b>Weight</b>	3.35 oz/95 g (max)	
<b>Operating Temperature</b>	32° to 140° F (0° to 60° C)	
* For hard drives and solid state disk drives, GB means 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30GB (for Windows 8) is reserved for system recovery software.		

#### 500 GB\* 7.2K SATA 6.0Gb/s 2.5” Hard Disk Drive

<b>Capacity</b>	500,107,862,016 bytes
<b>Rotational Speed</b>	7,200 rpm

### Technical Specifications – Hard Disk and Solid State Storage

<b>Interface</b>	Serial ATA 2.0 (6.0 Gb/s)	
<b>Buffer Size</b>	16 MB	
<b>Logical Blocks</b>	976,773,168	
<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	Single Track:	2.0 ms
	Average:	12 ms
	Full-Stroke:	25 ms
<b>Height</b> (nominal)	0.374 in/9.5 mm	
<b>Width</b> (nominal)	Media diameter: 2.5 in/63.5 mm	
	Physical size: 2.75 in/70 mm	
<b>Operating Temperature</b>	41° to 131° F (5° to 55° C)	
<p>* For hard drives and solid state disk drives, GB means 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30GB (for Windows 8) is reserved for system recovery software.</p>		

### 1TB\* SATA 6G 2.5" 8GB Solid State Hybrid Drive (SSHD)

<b>Formatted Capacity</b>	1 TB	
<b>Spindle Speed</b>	5,400 rpm +/- 0.2%	
<b>Drive Type</b>	Solid State Hybrid Drive (SSHD) technology with NAND Flash	
<b>Interface</b>	Serial ATA (SATA)	
<b>Cache Buffer</b>	64 MB	
<b>NAND Flash Commercial Multilevel Cell (cMLC)</b>	8 GB	
<b>Number of Sectors</b>	976,773,168	
<b>Seek Time</b> (typical reads)	Single Track:	2.0 ms
	Average:	12 ms
<b>Height</b>	0.374 +/- .008 in (9.5 +/- 0.2 mm)	
<b>Width</b>	2.750 +/- 0.010 in (69.85 +/- 0.25 mm)	
<b>Length</b>	3.951 +0.008 / -0.010 in (100.35 +0.20 / -0.25 mm)	

### Technical Specifications – Hard Disk and Solid State Storage

<b>Weight</b>	0.254 lb/115 g (max)
<b>Operating Temperature</b>	32° to 140° F (0° to 60° C)
* For hard drives and solid state disk drives, GB means 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30GB (for Windows 8) is reserved for system recovery software.	

<b>500 GB* SATA 6G 2.5" 8GB Solid State Hybrid Drive (SSHD)</b>		
<b>Formatted Capacity</b>	500 GB	
<b>Spindle Speed</b>	5,400 rpm +/- 0.2%	
<b>Drive Type</b>	Solid State Hybrid Drive (SSHD) technology with NAND Flash	
<b>Interface</b>	Serial ATA (SATA)	
<b>Cache Buffer</b>	64 MB	
<b>NAND Flash Commercial Multilevel Cell (cMLC)</b>	8 GB	
<b>Number of Sectors</b>	976,773,168	
<b>Seek Time (typical reads)</b>	Single Track:	2.0 ms
	Average:	12 ms
<b>Height</b>	0.268 +/- .008 in (6.8 +/- 0.2 mm)	
<b>Width</b>	2.750 +/- 0.010 in (69.85 +/- 0.25 mm)	
<b>Length</b>	3.951 +0.008 / -0.010 in (100.35 +0.20 / -0.25 mm)	
<b>Weight</b>	0.209 lb/95 g (max)	
<b>Operating Temperature</b>	32° to 140° F (0° to 60° C)	
* For hard drives and solid state disk drives, GB means 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30GB (for Windows 8) is reserved for system recovery software.		

<b>120 GB* SATA 2.5" Opal1 SED Solid State Drive</b>	
<b>Unformatted Capacity</b>	234,442,648 Unformatted Capacity (Total User Addressable Sectors in LBA mode)
<b>Architecture</b>	Self-Encrypting (SED) Solid State Drive with 20nm MLC NAND Flash and SATA interface

### Technical Specifications – Hard Disk and Solid State Storage

<b>Interface</b>	Serial ATA (6.0 Gb/s)	
<b>NAND Flash</b>	20nm MLC NAND Flash	
<b>Form Factor</b>	2.5 inch	
<b>Thickness</b>	7 mm	
<b>Weight</b>	Up to 78 g	
<b>Bandwidth Performance</b>	Sustained Sequential Read:	Up to 540 MB/s
	Sustained Sequential Write:	Up to 480 MB/s
	Random 4k Read:	Up to 41K IOPs
	Random 4k Write:	Up to 80K IOPs
<b>Power</b>	SATA power consumption:	195 mW (active average); 125 mW (idle average)
<b>Mean Time Between Failure (MTBF)</b>	1,200,000 hours	
<b>Environmental</b> (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
* For hard drives and solid state disk drives, GB means 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30GB (for Windows 8) is reserved for system recovery software.		

### 128 GB\* Solid State Drive

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

### Technical Specifications – Hard Disk and Solid State Storage

	Sustained Sequential Write:	Up to 260 MB/s
	Random Read (4KB):	up to 46K IOPs
	Random Write (4KB):	up to 56K IOPs
<b>Latency</b>	Read:	55ms (TYP)
	Write:	55ms (TYP)
<b>Power</b>	DC power requirement:	Min 4.5 V; Max 5.5 V
	Total power consumption:	160 mW (Active) ; <85 mW; (Idle)
<b>Useful Drive Life</b>	1.2 million device hours**	
<b>Environmental</b> (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
<b>Regulations</b>	UL, CSA, EN 60950-2000, CISPR Pub 22 Class B, CNS 13438, AS/NZS CISPR 22:2002 Class B, Korea KCC, CE Mark	
<p>* For hard drives and solid state disk drives, GB means 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30GB (for Windows 8) is reserved for system recovery software.</p> <p>** The product achieves a mean time between failure (MTBF) based on population statistics not relevant to individual units.</p>		

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

<b>Unformatted Capacity</b>	128 GB 250,069,680 (User Addressable Sectors)
<b>Architecture</b>	Self-Encrypting (SED) Solid State Drive with NAND Flash and SATA interface. Trusted Computing Group(TCG) OPAL compliant encrypted solid state drive
<b>Interface</b>	Serial ATA (6.0 Gb/s)
<b>Form Factor</b>	2.5 inch
<b>Height</b>	6.80 mm ± 0.20
<b>Width</b>	69.85 mm ± 0.25
<b>Length</b>	100.20 mm ± 0.25
<b>Weight</b>	Up to 55 g

### Technical Specifications – Hard Disk and Solid State Storage

<b>Bandwidth Performance</b>	Sustained Read: Sequential	Up to 520 MB/s
	Sustained Write: Sequential	Up to 340 MB/s
<b>Power</b>	Power consumption:	Active: 0.78A / 3.891W; Idle: 0.005A / 0.026W
<b>Mean Time Between Failure (MTBF)</b>	1,500,000 hours	
<b>Environmental</b> (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
* For hard drives and solid state disk drives, GB means 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30GB (for Windows 8) is reserved for system recovery software.		

### Intel 180 GB\* SATA 2.5" Opal1 SED Solid State Drive (Pro 1500)

<b>Unformatted Capacity</b>	351,651,888 Unformatted Capacity (Total User Addressable Sectors in LBA mode)	
<b>Architecture</b>	Self-Encrypting (SED) Solid State Drive with 20nm MLC NAND Flash and SATA interface	
<b>Interface</b>	Serial ATA (6.0 Gb/s)	
<b>NAND Flash</b>	20nm MLC NAND Flash	
<b>Form Factor</b>	2.5 inch	
<b>Thickness</b>	7 mm	
<b>Weight</b>	Up to 78 g	
<b>Bandwidth Performance</b>	Sustained Read: Sequential	Up to 540 MB/s
	Sustained Write: Sequential	Up to 490 MB/s
	Random 4k Read:	Up to 41K IOPs
	Random 4k Write:	Up to 80K IOPs

### Technical Specifications – Hard Disk and Solid State Storage

<b>Power</b>	SATA power consumption:	195 mW (active average); 125 mW (idle average)
<b>Mean Time Between Failure (MTBF)</b>	1,200,000 hours	
<b>Environmental</b> (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
* For hard drives and solid state disk drives, GB means 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30GB (for Windows 8) is reserved for system recovery software.		

### 256 GB\* SATA 2.5" Opal2 SED Solid State Drive

<b>Unformatted Capacity</b>	256 GB 500,118,192 (User Addressable Sectors)	
<b>Architecture</b>	Self-Encrypting (SED) Solid State Drive with NAND Flash and SATA interface. Trusted Computing Group(TCG) OPAL compliant encrypted solid state drive	
<b>Interface</b>	Serial ATA (6.0 Gb/s)	
<b>Form Factor</b>	2.5 inch	
<b>Height</b>	6.80 mm ± 0.20	
<b>Width</b>	69.85 mm ± 0.25	
<b>Length</b>	100.20 mm ± 0.25	
<b>Weight</b>	Up to 55 g	
<b>Bandwidth Performance</b>	Sustained Sequential Read:	Up to 520 MB/s
	Sustained Sequential Write:	Up to 500 MB/s
<b>Power</b>	Power consumption:	Active: 0.78A / 3.891W; Idle: 0.005A / 0.026W
<b>Mean Time Between Failure (MTBF)</b>	1,500,000 hours	

### Technical Specifications – Hard Disk and Solid State Storage

<b>Environmental</b> (all conditions, non-condensing)	Operating Temperature:	32° to 158° F (0° to 70° C)
	Relative Humidity:	5% to 95%
	Shock:	1,500 G/0.5 ms
<p>* For hard drives and solid state disk drives, GB means 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30GB (for Windows 8) is reserved for system recovery software.</p>		

### Technical Specifications - Removable Storage

<b>HP Slim SuperMulti DVD Writer Drive</b>		
<b>Height</b>	12.7mm height	
<b>Orientation</b>	Either horizontal or vertical	
<b>Interface type</b>	SATA/ATAPI	
<b>Disc recording capacity</b>	Up to 8.5 GB DL or 4.7 GB standard	
<b>Dimensions (W x H x D)</b>	5.04 x 0.5 x 5.0 in (128 x 12.7 x 127 mm) without bezel	
<b>Weight (max)</b>	0.42 lb (190 g)	
<b>Write speeds</b>	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
<b>Read speeds</b>	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
<b>Access time</b> (typical reads, including settling)	Random	DVD-ROM: 170 ms (typical), CD-ROM: 170 ms (typical)
	Full Stroke	DVD-ROM: 320 ms (typical), CD-ROM: 320 ms (typical)
	Stop Time	6 seconds (typical)
<b>Power</b>	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)
<b>Environmental conditions</b> (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)

### Technical Specifications - Removable Storage

<b>HP Slim Blu-ray BDXL Drive</b>			
<b>Height</b>	12.7mm height		
<b>Orientation</b>	Either horizontal or vertical		
<b>Interface type</b>	SATA/ATAPI		
<b>Disc recording capacity</b>	Up to 128 GB QL, 100 GB TL, 50 GB DL or 25 GB standard SL		
<b>Dimensions (W x H x D)</b>	5.04 x 0.5 x 5.0 in (128 x 12.7 x 127 mm) without bezel		
<b>Weight (max)</b>	Up to 0.37 lb (170 g) without bezel		
		<b>Triple-layer</b>	<b>Quadruple-layer</b>
<b>Write speeds</b>	BD-R	Up to 4X	Up to 4X
	BD-RE	Up to 2X	Not supported
		<b>Single-layer</b>	<b>Double-layer</b>
	BD-R	Up to 6X	Up to 6X
	BD-RE	Up to 2X	Up to 2X
	DVD-R	Up to 8X	Up to 6X
	DVD-RW	Up to 6X	Not supported
	DVD+R	Up to 8X	Up to 6X
	DVD+RW	Up to 8X	Not supported
	DVD-RAM	Up to 5X	
	CD-R	Up to 24X	
	CD-RW	Up to 24X	
		<b>Triple-layer</b>	<b>Quadruple-layer</b>
	BD-R	Up to 4X	Up to 4X
	BD-RE	Up to 4X	Not supported
		<b>Single-layer</b>	<b>Double-layer</b>
	BD-ROM	Up to 6X	Up to 6X
BD-R	Up to 6X	Up to 6X	
<b>Read speeds</b>	BD-RE	Up to 6X	Up to 6X
	DVD-ROM	Up to 8X	Up to 8X
	DVD-R	Up to 8X	Up to 8X
	DVD-RW	Up to 8X	
	DVD+R	Up to 8X	Up to 8X
	DVD+RW	Up to 8X	
	BDMV (AACs Compliant Disc)	Up to 6X/2X (Read/Play)	

### Technical Specifications - Removable Storage

	DVD-RAM	Up to 5X
	DVD-Video (CSS Compliant Disc)	Up to 8X/4X (Read/Play)
	CD-R/RW/ROM	Up to 24X
	CD-DA(DAE)	Up to 20X/10X (Read/Play)
<b>Access time</b> (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)
<b>Power</b>	Source	Slimline SATA DC power receptacle
	DC Power Requirement	5 VDC $\pm$ 5%-100 mV ripple p-p
	DC Current	5 VDC -1200 mA typical, 2000 mA maximum
<b>Environmental conditions</b> (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)

<b>HP Slim DVD-ROM Drive</b>		
<b>Height</b>	12.7mm	
<b>Orientation</b>	Either horizontal or vertical	
<b>Interface type</b>	SATA/ATAPI	
<b>Dimensions (W x H x D)</b>	5.04 x 0.5 x 5.0 in (128 x 12.7 x 127 mm) without bezel	
<b>Weight (max)</b>	Up to 0.37 lb (170 g) without bezel	
<b>Read speeds</b>	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
<b>Access time</b> (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)
<b>Power</b>	Source	Slimline SATA DC power receptacle
	DC Power Requirement	5 VDC $\pm$ 5%-100 mV ripple p-p
	DC Current	5 VDC - <1000 mA typical, < 1600 mA maximum
<b>Environmental</b> (all conditions non-condensing)	Temperature	41° to 122° F (5° to 50° C)
	Relative Humidity	10% to 80%

### Technical Specifications - Removable Storage

	Maximum Wet Bulb Temperature (operating)	84° F (29° C)
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### Technical Specifications – Memory

#### System Memory Support

The HP EliteDesk 700 G1 Business PC supports the 4<sup>th</sup> generation Intel® Core™ processor family. Based on a new PC micro-architecture, the processor is designed for a two-chip platform consisting of a processor and Platform Controller Hub (PCH). Unlike previous generations, the 4<sup>th</sup> generation Intel® Core™ processor includes an Integrated Memory Controller (IMC). The IMC supports DDR3/DDR3L protocols with two independent, 64-bit wide channels each accessing one or two DIMMs.

- Two channels of non-ECC DDR3/DDR3L unbuffered dual in-line memory modules (UDIMM) or DDR3/DDR3L unbuffered small outline dual in-line memory modules (SO-DIMM) with a maximum of two DIMMs per channel
- Single-channel and dual-channel memory organization modes
- Data burst length of eight for all memory organization modes
- Memory data transfer rates of up to 1600 MT/s; actual supported data transfer rate determined by the configured processor.
- 64-bit wide channels
- DDR3/DDR3L system memory I/O voltage of 1.5V
- Theoretical maximum memory bandwidth of:
  - 21.3 GB/s in dual-channel mode assuming 1333 MT/s
  - 25.6 GB/s in dual-channel mode assuming 1600 MT/s

#### Platform Memory Support

- The Small Form Factor (SFF) and Tower (TWR) platforms support up to four (4) industry-standard DDR3-SDRAM DIMMs.
- The Ultra-slim Desktop (USDT) and Desktop Mini (DM) support up to two (2) industry-standard DDR3-SDRAM SO-DIMMs.

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

**NOTE:** For systems configured with more than 3 GB of memory and a 32-bit operating system, all memory may not be available due to system resource requirements. Addressing memory above 4 GB requires a 64-bit operating system.

### Technical Specifications – Networking and Communications

<b>Intel® I217LM GbE Network Connection (integrated)</b>		
<b>Connector</b>	RJ-45	
<b>System Interface</b>	Integrated on PCA	
<b>Controller</b>	Intel I217LM GbE platform LAN connect networking controller	
<b>Memory</b>	24 KB FIFO packet buffer memory	
<b>Data rates supported</b>	10/100/1000 Mbps	
<b>IEEE Compliance</b>	802.1P 802.1Q 802.2 802.3 802.3ab 802.3az 802.3u	
<b>Bus architecture</b>	PCI Express and SMBus	
<b>Data transfer mode</b>	PCIe-based interface for active state operation (S0 state) and SMBus for host and management traffic (Sx low power state)	
<b>Power requirement</b>	Requires 3.3V and 0.9V or just 3.3V with integrated regulators Power consumption 0.733 Watts	
<b>Boot ROM support</b>	Yes	
<b>Network transfer mode</b>	Full-duplex	
	Half-duplex (not supported for the 1000BASE-T transceiver)	
<b>Network transfer rate</b>	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	
<b>Environmental</b>	Operating Temperature:	0° to 85° C
	Operating Humidity:	60% RH
<b>Management</b>	WOL, auto MDI crossover, PXE, Multi-port teaming, RSS, Advanced cable diagnostic, WFM 2.0	
<b>Alerting</b>	ASF 2.0 support; AMT 9.0 support	

### Technical Specifications – Networking and Communications

<b>Intel® Ethernet I210-T1 Gigabit Network Adapter</b>		
<b>Connector</b>	RJ-45	
<b>System Interface</b>	PCI Express x1	
<b>Controller</b>	Intel® I210 Gigabit Ethernet Controller	
<b>Memory</b>	Integrated Dual 48K configurable transmit receive FIFO Buffers	
<b>Data rates supported</b>	10/100/1000 Mbps	
<b>IEEE Compliance</b>	802.1P 802.1Q 802.2 802.3 802.3AB 802.3u 802.3x flow control	
<b>Bus architecture</b>	PCI-E 2.1	
<b>Data path width</b>	X1, 250 MB/s, Bi-directional interface	
<b>Data transfer mode</b>	Bus-master DMA	
<b>Hardware certifications</b>	FCC, B, CE, TUV-c, TUVus Mark Canada and United States, TUV-GS Mark for European Union	
<b>Power requirement</b>	Aux 3.3 V, 3.0 Watts in 1000 base-T and 1.0 Watts in 100 Base-T	
<b>Boot ROM support</b>	Yes 10BASE-T (half-duplex) 10 Mbps 10BASE-T (full-duplex) 20 Mbps	
<b>Network transfer rate</b>	10BASE-T (half-duplex) 10 Mbps	
	10BASE-T (full-duplex) 20 Mbps	
	100BASE-TX (half-duplex) 100 Mbps	
	100BASE-TX (full-duplex) 200 Mbps	
	1000BASE-T (full-duplex) 2000 Mbps (actual rate limited by PCI bus)	
<b>Environmental</b>	Operating Temperature:	32° to 132° F (0° to 55° C )
	Operating Humidity:	85% at 131° F (55° C)
<b>Management</b>	WOL, PXE, DMI, WFM 2.0	
<b>Intel Centrino Advance-N 6205 Wireless Network Interface Connection</b>		

### Technical Specifications – Networking and Communications

<b>Wireless LAN Standards</b>	IEEE 802.11a/b/g/n
	IEEE 802.11 e, 802.11i, 802.11d, 802.11d, 802.11h
<b>Interoperability</b>	Wi-Fi certified (802.11 a/b/g/n WMM, WPA, WPA2 and WPS)
	Tested with wireless access points from several major manufacturers
	OS compatible with Microsoft Windows, Win7 and XP
	Cisco Compatible Extensions Program compliant (802.11a/b/g only) with Microsoft Windows XP and Windows 7
<b>Frequency Band</b>	2.4 GHz and 5 GHz
<b>Antenna Structure</b>	2 transmit; 2 receive (2x2)
<b>Data Rates</b>	802.11b: 1, 2, 5.5, 11 Mbps
	802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
	802.11n: 66 possible data rates, ranging from 6 Mbps to 300 Mbps, depending on the combination of Bandwidth, Modulation Coding Scheme, and Guard Interval used, as defined in IEEE 802.11n specification
<b>Modulation</b>	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM
<b>Security</b>	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES (support for key sizes of 128bits), TKIP, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP, MSCHAP, PEAP-MSCHAPv2, LEAP, EAP-FAST, EAP-SIM, EAP-AKA PAP, CHAP, TLS, GTC
	Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows XP only.
<b>Sub-channels</b>	Multinational support with frequency bands and channels compliant to local regulations.
<b>Media Access Protocol</b>	CSMA/CA (Collision Avoidance) with ACK
<b>Network Architecture Models</b>	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required) Intel® My Wifi Technology (iPAN)
<b>Roaming</b>	Provide seamless roaming between like access points (same frequency band)
<b>Output Power (for CCK)</b>	15 dBm
<b>Output Power (for OFDM; power varies by data rate)</b>	15 dBm
<b>Power Consumption</b>	Transmit: 2.3 Watts (average, with one spatial streams)
	Receive: 1.9 Watts (average with two receive chains)
	Idle mode: 30mW – 40mW (average)
	Radio off: 20 mW (max)
<b>Power Management</b>	ACPI compliant power management 802.11 compliant power saving mode

### Technical Specifications – Networking and Communications

<b>Antenna Connections</b>	3 U.FL type connectors, 50 ohm nominal impedance	
<b>Range</b>	802.11 a - Typical (@6 Mbps)	600 feet - Outdoor Open Area 150 feet - Indoor, Office environment
	802.11 b - Typical (@1 Mbps)	1200 feet - Outdoor Open Area 300 feet - Indoor, Office environment
	802.11 g - Typical (@1 Mbps)	1200 feet - Outdoor Open Area 300 feet - Indoor, Office environment
<b>Form Factors</b>	USDT:	MiniPCI-Express
	CMIT & SFF:	PCIe
<b>Weight</b>	0.013 lb (4.0 g)	
<b>Dimensions</b>	1.1 x 1.2 in (26.8 x 30.0 mm)	
<b>Operating Voltage</b>	3.3V +/- 9%, 1.5V +/- 5%	
<b>Temperature</b>	<b>Operating:</b>	32° to 176° F (0° to 80° C)
	<b>Non-operating:</b>	-40° to 176° F (-40° to 80° C)
<b>Humidity</b>	<b>Operating:</b>	10% to 90% (non-condensing)
	<b>Non-operating:</b>	5% to 90% (non-condensing)
	Microsoft Windows XP	Microsoft Windows Win 7
<b>Configuration Utility</b>	<ul style="list-style-type: none"> <li>Microsoft Windows XP Wireless Network Connection Manager</li> <li>Intel PROSet for Microsoft Windows XP (required for Cisco Compatible Extensions support)</li> </ul>	Intel IHV extensions for Win7 available to support Cisco Compatible Extensions

### Technical Specifications - Audio

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

### Technical Specifications - Input/Output Devices

<b>HP PS/2 Keyboard</b>		
<b>Physical Characteristics</b>	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
<b>Electrical</b>	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
<b>Environmental</b>	Acoustics	50-dBA maximum sound pressure level
	Operating temperature	32° to 104° F (0° to 40° C)
	Non-operating temperature	-22° to 149° F (-30° to 65° C)
	Operating humidity	15% to 80% (non-condensing at ambient)
	Non-operating humidity	15% to 90% (non-condensing at ambient)
	Operating shock	N/A
	Non-operating shock	65 inch 2.9 ms, six surface; 30g 266 inch/second; 50g 266 inch/second six surface
	Operating vibration	2-g peak acceleration

### Technical Specifications - Input/Output Devices

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

### HP USB Smart Card (CCID) Keyboard

<b>Key Benefits:</b>	<ul style="list-style-type: none"> <li>• Protects against unauthorized access with smart card technology</li> <li>• Delivers even greater security when combined with a HP Client Security smart card and the HP Client Security Security Software</li> <li>• Combination of username and password or pin with a smart card or security token</li> <li>• Secures online transactions using digital signatures and certificates</li> <li>• Conforms to industry standards for ease of setup and use</li> <li>• Delivers long product life and quiet operation with high-impact materials and lubricated keys</li> <li>• Spill drain feature</li> </ul>	
<b>Physical Characteristics</b>	Keys	104, 105, 106, 107, 109 layout (depending upon country)
	Form factor	USB basic smart card keyboard
	Colors	Carbonite/Silver
	Dimensions (H x W x D)	18.2 x 6.3 x 1.3 in (46.3 x 16.1 x 3.3 cm)
	Weight	2 lb (0.9 kg) minimum
<b>Electrical</b>	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
<b>Mechanical</b>	Languages	30+ available

### Technical Specifications - Input/Output Devices

	Keycaps	Standard design
	Switch actuation	55 g nominal peak force with tactile feedback
	Switch life	20 million keystrokes (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
<b>Environmental</b>	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
<b>SmartCard Function</b>	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)		

### Technical Specifications - Input/Output Devices

		Power supply compliant with ISO7816 and EMV (5V, 60 mA)		
		Supports 3-V and 5-V cards		
	Power consumption	100-mA maximum draw		
	Communication	From card	9600 bps to 330,000 bps	
		From computer	12 Mbps (USB transfer speed)	
	Landing mechanism	Contact device	Friction contact	
		Card insertions rating	Up to 100,000 insertion cycles	
	Interface modes	CCID protocol		
	Reader performance interface	USB connection		
	Electro-magnetic standards	Europe	2004/108/EC	
USA		USAFCC part 15		
<b>Approvals</b>	CE-Mark, UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC, EMV2000, USB-IF			
<b>Ergonomic Compliance</b>	ISO 9241-4, TUVGS			
<b>Kit Contents</b>	Keyboard, I/O Security and Documentation CD, warranty card			
<b>HP USB PS/2 Washable Keyboard</b>				
<b>Physical Characteristics</b>	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		
<b>Electrical</b>	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		
<b>Mechanical</b>	Keycaps	Stepped -profile design		
	Switch actuation	55-g nominal peak force with tactile feedback		
	Switch life	20 million keystrokes		

### Technical Specifications - Input/Output Devices

	Switch type	Contamination-resistant switch membrane
	Key-leveling mechanisms	For all double-wide and greater-length keys
	Cable length	7 ft (2.2 m)
	Microsoft PC 99 - 2001	Mechanically compliant
	Acoustics	43-dBA maximum sound pressure level
<b>Environmental</b>	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
<b>Operating system support</b>	Windows® 7, Windows Vista, Windows XP Professional	
<b>Approvals</b>	UL, cUL, FCC, CE, TUV GS, VCCI, BSMI, C-Tick, KCC, USB-IF, WHQL, EN/IEC 60601-1, IP66/NEMA4X	
<b>Ergonomic compliance</b>	ANSI HFS 100, ISO 9241-4, and TUVGS	

### HP PS/2 Mouse

<b>Dimensions</b> (H x L x W)	1.46 x 2.48 x 4.53 in (3.70 x 6.29 x 11.50 cm)	
<b>Weight</b>	3.53 oz (100g; +10g/- 5 g)	
<b>Environmental</b>	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

### Technical Specifications - Input/Output Devices

	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
<b>Electrical</b>	Operating voltage	5 VDC $\pm$ 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
<b>Mechanical</b>	Resolution	800 DPI
	Tracking speed	10 in/s (25.4 cm/s) maximum
	Acceleration	$\pm$ 15%
	Switch actuation	65 $\pm$ 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
<b>Scroll wheel</b>	Width	6 mm
	Diameter	22.5 $\pm$ 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
<b>Regulatory Approvals</b>	UL/cUL, FCC, CE Mark, TUV/GS, VCCI, KCC, BSMI, C-Tick	

### Technical Specifications - Input/Output Devices

<b>HP USB Mouse</b>	
<b>Dimensions</b> (H x L x W)	1.5 x 4.5 x 2.5 in (3.7 x 11.5 x 6.3 cm)
<b>Weight</b>	0.22 lb (0.10 kg)
<b>Cable length</b>	70.9 in (180 cm)
<b>System requirements</b>	Available USB port

<b>HP USB 1000dpi Laser Mouse</b>		
<b>Dimensions</b> (H x L x W)	1.47 x 4.53 x 2.47 in (37.3 x 114.97 x 62.86 mm)	
<b>Weight</b>	3.360 oz (102g)	
<b>Cable length</b>	70.9 in (180 cm)	
<b>System requirements</b>	Available USB port	
<b>Environmental</b>	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)
<b>Mechanical</b>	Resolution	1000dpi
	Tracking Speed	45 cm/sec
	Cable Length	70.9 in (180 cm)

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

### Technical Specifications - Input/Output Devices

	Non-operating temperature	-4° to 140°F (-20° to 60° C)
	Operating humidity	10% to 90% (non-condensing at ambient)
	Non-operating humidity	10% to 90% non-condensing
	Operating shock	40 g, 6 surfaces
	Non-operating shock	80 g, 6 surfaces
	Operating vibration	2 g peak acceleration
	Non-operating vibration	4 g peak acceleration
	Drop (out of box)	80 cm height onto asphalt tile over concrete or equivalent, 5-drop in 5 direction except the cable face
<b>Electrical</b>	Operating voltage	5 VDC ± 10%
	Power consumption	100mA
	System consumption	PS/2 mini-din connector or USB
	ESD	CE level 2 8 kV air discharge
	EMI-RFI	Conforms to FCC rules for a Class B computing device
	Microsoft PC99 - 2001	Functionally compliant
<b>Mechanical</b>	Resolution	1000 ± 20% DPI
	Tracking speed	14 in/s ( 35.56 cm/s) maximum
	Acceleration	2 g
	Switch actuation	70 g nominal peak force
	Switch life	3,000,000 operations (using Hasco modified tester)
	Switch type	Low force micro-switches
	Tracking mechanism life	8.8 ft total 70 cm+ 2m extension
	Cable length	Mechanically compliant

### Technical Specifications - Input/Output Devices

	Microsoft PC99 - 2001	1000 ± 20% DPI
<b>Scroll wheel</b>	Width	6 mm
	Diameter	1 in (25.4 mm)
	Maximum rotation force	48 rats/sec
	Switch type	Light force micro-switch
	Switch life	3 million operations
	Mechanical life	Minimum 200,000 revolutions
<b>Regulatory Approvals</b>	FCC, CE Mark, ICES-003-B, IP66/NEMA4X	

### Technical Specifications – Power

#### Unit Environment and Operating Conditions

##### General Unit Operating Guidelines

- Keep the computer away from excessive moisture, direct moisture and the extremes of heat and cold, to ensure that unit is operated within the specified operating range.
- Leave a 10.2 cm (4 in) clearance on all vented sides of the computer to permit the required airflow.
- Never restrict airflow into the computer by blocking any vents or air intakes.
- Do not stack computers on top of each other or place computers so near each other that they are subject to each other's re-circulated or preheated air.
- Occasionally clean the air vents on the front, back, and any other vented side of the computer. Lint, dust and other foreign matter can block the vents and limit the airflow.
- If the computer is to be operated within a separate enclosure, intake and exhaust ventilation must be provided on the enclosure, and the same operating guidelines listed above will still apply.

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

\*Operating temperature is de-rated 1.0 deg C per 300 m (1000 ft) to 3000 m (10,000 ft) above sea level, no direct sustained sunlight. Maximum rate of change is 10 deg C/Hr. The upper limit may be limited by the type and number of options installed.

#### Power Supply

##### SFF

##### MT

Standard Efficiency	240W active PFC	280W active PFC
80 PLUS Bronze	N/A	280W active PFC 82/85/82% efficient at 20/50/100% load (115V) 82/85/82% efficient at 20/50/100% load (230V)
80 PLUS Gold	240W active PFC 87/90/87% efficient at 20/50/100% load (115V) 89/91/90% efficient at 20/50/100% load (230V)	280W active PFC 87/90/87% efficient at 20/50/100% load (115V) 88/91/88% efficient at 20/50/100% load (230V)
80 PLUS Platinum	240W active PFC 90/92/89% efficient at 20/50/100% load (115V) 90/93/91% efficient at 20/50/100% load (230V)	280W active PFC 90/92/89% efficient at 20/50/100% load (115V) 91/93/90% efficient at 20/50/100% load (230V)
Operating Voltage Range	90 - 264 VAC	90 - 264 VAC
Rated Voltage Range	100 - 240 VAC	100 - 240 VAC
Rated Line Frequency	50/60 Hz	50/60 Hz
Operating Line Frequency	47 - 63 Hz	47 - 63 Hz
Rated Input Current	4A	3.6A

### Technical Specifications – Power

Rated Input Current with Energy Efficient* Power Supply	4A	3.6A
DC Output	N/A	N/A
Current Leakage (NFPA 99)	< 275 $\mu$ A	< 275 $\mu$ A
Power Supply Fan	92=>70mm variable speed	80mm variable speed
Power cord length	6.0 ft. (1.83 m)	6.0 ft. (1.83 m)
External Power Adapter		
Dimensions	N/A	N/A
Total Cord Length	N/A	N/A

### Technical Specifications – Weights & Dimensions

#### Weights & Dimensions

(configured with 1 HDD & 1 ODD; DM configured with 1 HDD only)

##### SFF

##### MT

Chassis (W x H x D)	13.3 x 3.95 x 14.9 in 338 x 100 x 379 mm	14.0 x 6.7 x 13.4 in 355 x 170 x 340 mm
System Volume	782.7 cu in 12.8 L	1252 cu in 20.5 L
System Weight*	16.7 lb 7.6 kg	14.0 lb 6.35 kg
Max Supported Weight (desktop orientation)	77.0 lb 35.0 kg	N/A
Stand Dimensions	1.1 x 7.0 x 7.9 in 29 x 178 x 200 mm	N/A
Packaging (H x W x D)	9.0 x 19.7 x 23.4 in 229 x 500 x 594 mm	11.7 x 20.3 x 18.8 in 299 x 517 x 478 mm
Shipping Weight	17.9 lb 8.1 kg	20.6 lb 9.3 kg
Palletization Profile	4-units per layer 10-layer max. 40-units per pallet	8-units per layer 4-layer max. 32-units per pallet

### Technical Specifications – Miscellaneous Features

#### Management Features

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

#### Serviceability Features

- Dual colored power LED on front of computer to indicate either normal or fault condition
- Diagnostic LED Explanation Table:
  - Number of 1-second red LED blinks followed by a 2-second pause, then repeats:
    - 2 - processor thermal protection activated
    - 3 - processor not installed
    - 4 - power supply failure
    - 5 -- memory error
    - 6 - video error
    - 7 - PCA failure (ROM detected failure prior to video)
    - 8 - invalid ROM, boot block recovery mode
    - 9 - system not fetching code
    - 10 - system hang while loading an option ROM
- HP PC Hardware Diagnostics UEFI:
  - This utility enables hardware level testing outside the operating system on many components. The diagnostics can be invoked by pressing F2 at POST, and is available as a download from HP Support
- System/Emergency ROM
- Flash ROM
- CMOS Battery Holder for easy replacement
- Flash Recovery with Video Configuration Record Software
- 5 Aux Power LED on System PCA
- Processor ZIF Socket for easy Upgrade
- Over-Temp Warning on Screen (Requires IM Agents)
- Clear Password Jumper
- DIMM Connectors for easy Upgrade
- Clear CMOS Button
- NIC LEDs (integrated) (Green & Amber)
- Dual Color Power and HD LED - To Indicate Normal Operations and Fault Conditions
- Color coordinated cables and connectors
- Tool-less Hood Removal
- Front power switch
- System memory can be upgraded without removing the system board or any internal components
- Tool-less Hard Drive, CD & Diskette Removal
- Green Pull Tabs, and Quick Release Latches for easy Identification

#### Additional Features

##### Towerable Orientation

Product can be oriented as either a desktop (horizontal) or a tower (vertical)

##### Drive Lock

Implementation of the industry standard ATA Security feature set. When enabled, it prevents software access to user data on the drive until one or two user-defined passwords are provided.

##### Drive Protection System

DPS Access through F10 Setup during Boot

### Technical Specifications – Miscellaneous Features

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

After-Market Options (availability may vary by region)

### Communication Devices

#### Part Number

Intel Ethernet I210 – T1 Gbe NIC

E0X95AA

Intel 6205 802.11 a/b/g/n PCIe x1 NIC

E0X93AA

### Graphics Solutions

#### Part Number

AMD Radeon HD 8350 Graphics (PCIe x16)

E1C63AA

AMD Radeon HD 8490 Graphics Card

E1C64AA

Nvidia NVS 310 Graphics (PCIe x16)

A7U59AA

Nvidia NVS 315 Graphics (PCIe x16)

E1C65AA

HP USB Graphics Adapter

NL571AA

HP DisplayPort Cable Kit

VN567AA

HP DisplayPort To Dual Link DVI-D Adapter

NR078AA

HP DisplayPort To DVI-D Adapter

FH973AA

HP DisplayPort to HDMI Adapter

BP937AA

HP DisplayPort To HDMI 1.4 Adapter

K2K92AA

HP DisplayPort to VGA Adapter

AS615AA

HP DMS-59 to Dual DVI Cable

DL139A

HP DMS-59 to Dual DisplayPort Adapter

XP688AA

### Data Storage Drives and Accessories

#### Part Number

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

QK554AA

HP 1-TB 7.2K rpm SATA 6.0Gb/s 3.5" Hard Disk Drive

QK555AA

HP 1-TB 10K rpm SATA 6.0Gb/s 3.5" Hard Disk Drive

C2T91AA

HP 128-GB SATA 3.0Gb/s Solid State Drive

QV063AA

HP 160-GB SATA 3.0Gb/s Solid State Drive

QV064AA\*

HP 500-GB SATA 3.0Gb/s Solid State Hybrid Drive

E1C62AA

HP 128-GB SED Opal 2 Solid State Drive

G1K24AA

128 GB Turbo Drive SSD (PCIe card)

J5V07AA

HP Slim Removable SATA Hard Drive Enclosure (frame & carrier)

C1N41AA

HP Slim Removable SATA Hard Drive Enclosure (carrier only)

E3F39AA

[\\*Not available in all regions.](#)

### Input Devices

#### Part Number

HP USB Keyboard

QY776AA

HP USB Gray Keyboard

B6B64AA

HP USB Smart Card (CCID) Keyboard

BV813AA

HP USB Keyboard and Mouse Kit

B1T09AA

HP USB Washable Keyboard

VF097AA

HP USB and PS/2 Washable Mouse

BM866AA

HP USB and PS/2 Washable Keyboard and Mouse Kit

BU207AA

HP USB Grey Mouse

K7W54AA

HP PS/2 Mouse

QY775AA

HP USB Mouse

QY777AA

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

HP USB 1000dpi Laser Mouse	QY778AA
HP Wireless Keyboard and Mouse Combination*	QY449AA
HP USB Antimicrobial Keyboard and Mouse (China Only)	K7X25AA
*Keyboard contains 25% post-consumer recycled plastic material	

### System Memory

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

### Multimedia Devices

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

### Removable Media Storage

	Part Number
HP 15-n-1 Media Card Reader	F4N90AA

### Security Devices

		Part Number
HP Solenoid Lock and Hood Sensor (USDT/SFF)		E0X97AA
HP Solenoid Lock and Hood Sensor (MT)	MT only	TBD
HP SFF Wall Mount/Security Sleeve	SFF only	VN570AA
HP UltraSlim Cable Lock		H4D73AA

### Stands and Accessories

		Part Number
HP Integrated Work Center Stand (SFF)	SFF only	QP897AA
HP SFF Tower Stand	SFF only	VN569AA
HP 800/600 SFF Bezel Kit	SFF only	E3F27AA
HP Serial Port Adapter (RS-232 compatible)		PA716A
HP Parallel Port Kit		KD061AA

### LANDesk Software (E-Delivery)

Contact your HP representative for available options

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After-Market Options (availability may vary by region)

June 2014

### Change Log

Date of change:	Version History:		Description of change:
July 2, 2014	From V1.4 to V1.5	Change	Update the footnote
July 28, 2014	From v1.5 to v2	Upgrade	Change the version so it would match on Concentra
November 11, 2014	From v2 to v3	Remove	Javier Lazaro, remove some values from the file
December 1, 2014	From v 3 to v4	Upgrade	Change version to sync up with concentra
January 28, 2015	From v4 to v5	Addition	Under Adapters and Cables, HP DisplayPort To HDMI 1.4 Adapter Under Storage, 500GB 7200 RPM SATA 2.5 SED HDD. 120GB SATA 2.5 Non-SED SSD (with 3.5" adapter when needed) 180GB SATA 2.5 Non-SED SSD (with 3.5" adapter when needed) 120GB SATA 2.5 Opal2 SED SSD (with 3.5" adapter when needed) 180GB SATA 2.5 Opal2 SED SSD (with 3.5" adapter when needed) Under PCI Cards 128 GB Turbo Drive SSD (PCIe card) Under Keyboards and Pointing DEvices HP USB Antimicrobial Keyboard, HP USB Antimicrobial Mouse Under Graphics and solutions, HP DisplayPort To HDMI 1.4 Adapter Under Data Storage Drives and Accessories, 128 GB Turbo Drive SSD (PCIe card) Under Input Devices, HP USB Antimicrobial Keyboard and Mouse (China Only)
		Changes	Change OpenGL 4.3, change from .0 to .3