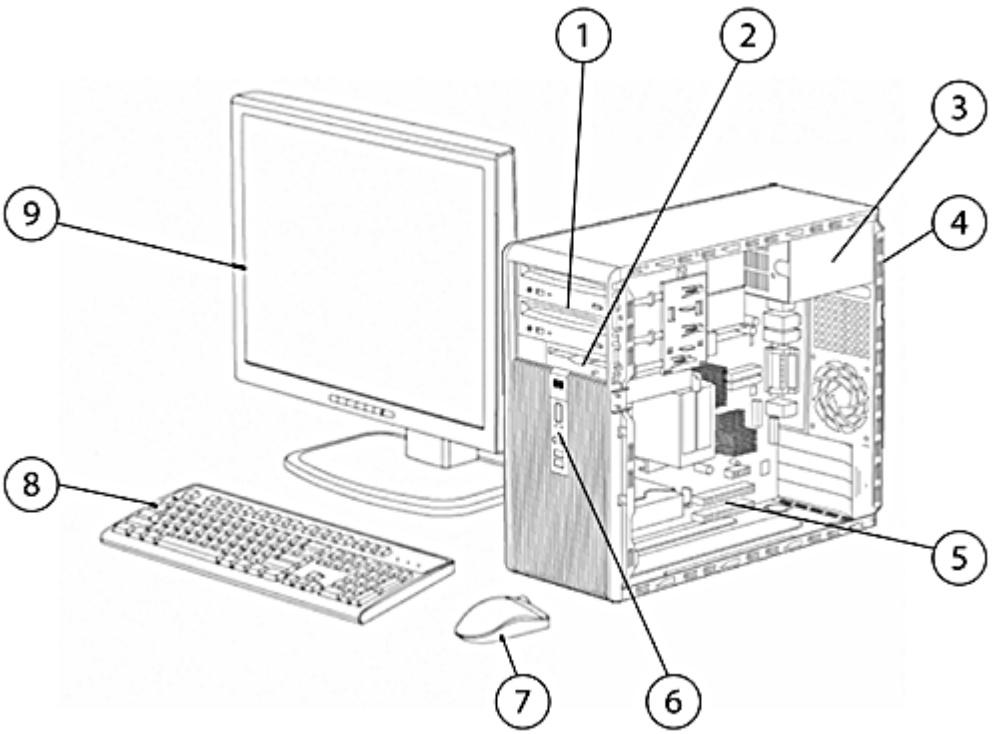
HP recommends
Windows Vista™ Business

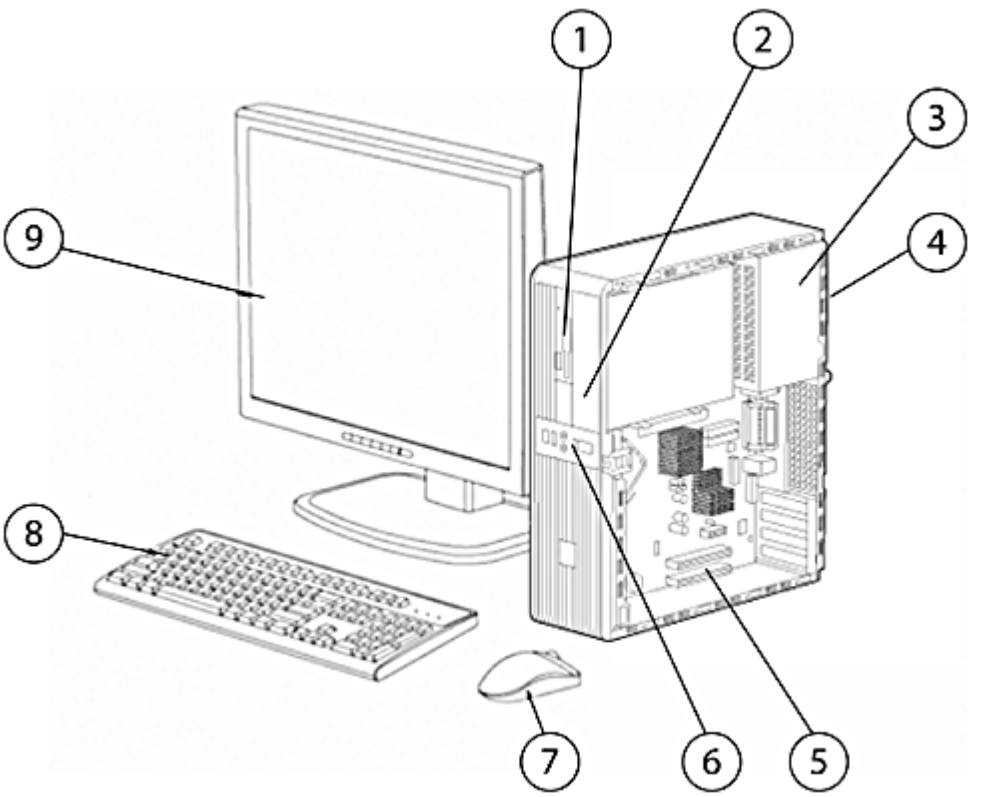
Microtower



1. (2) 5.25" external bays and (2) 3.5" internal bays
2. (1) 3.5" external bay for optional HP 16-in-1 Media Card Reader, diskette drive, or other 3.5" device
3. 300-watt power supply or 80PLUS Power Supply (80% efficient)
4. Rear I/O: (6) USB 2.0, (1) standard serial port, (1) optional serial port, (1) parallel port, (2) PS/2, (1) RJ-45, (1) VGA, audio in/out
5. (2) full-height PCI slots, (1) full-height PCIe x1 slot, (1) SDVO/ADD2 connector
6. Front I/O: (2) USB 2.0, headphone and microphone, Dual Color Diagnostic LEDs
7. 2-Button Scroll Mouse (PS/2) or Optical Scroll Mouse (PS/2 or USB)
8. HP Standard Keyboard (PS/2 or USB) or HP USB Smartcard Keyboard
9. Monitor (sold separately)

Overview

Small Form Factor



1. (1) 3.5" external bay for optional HP 16-in-1 Media Card Reader, diskette drive, or other 3.5" device; (1) 3.5" internal bay
2. (1) 5.25" external bay for optional optical drive, or other 5.25" device (bay tilts up for device removal and insertion)
3. 240-watt power supply or 80PLUS Power Supply (80% efficient)
4. Rear I/O: (6) USB 2.0, (1) standard serial port, (1) optional serial port, (1) parallel port, (2) PS/2, (1) RJ-45, (1) VGA, audio in/out
5. (2) low profile PCI slots, (1) low profile PCIe x1 slot, (1) SDVO/ADD2 connector
6. Front I/O: (2) USB 2.0, headphone and microphone, Dual Color Diagnostic LEDs
7. 2-Button Scroll Mouse (PS/2) or Optical Scroll Mouse (PS/2 or USB)
8. HP Standard Keyboard (PS/2 or USB) or HP USB Smartcard Keyboard
9. Monitor (sold separately)

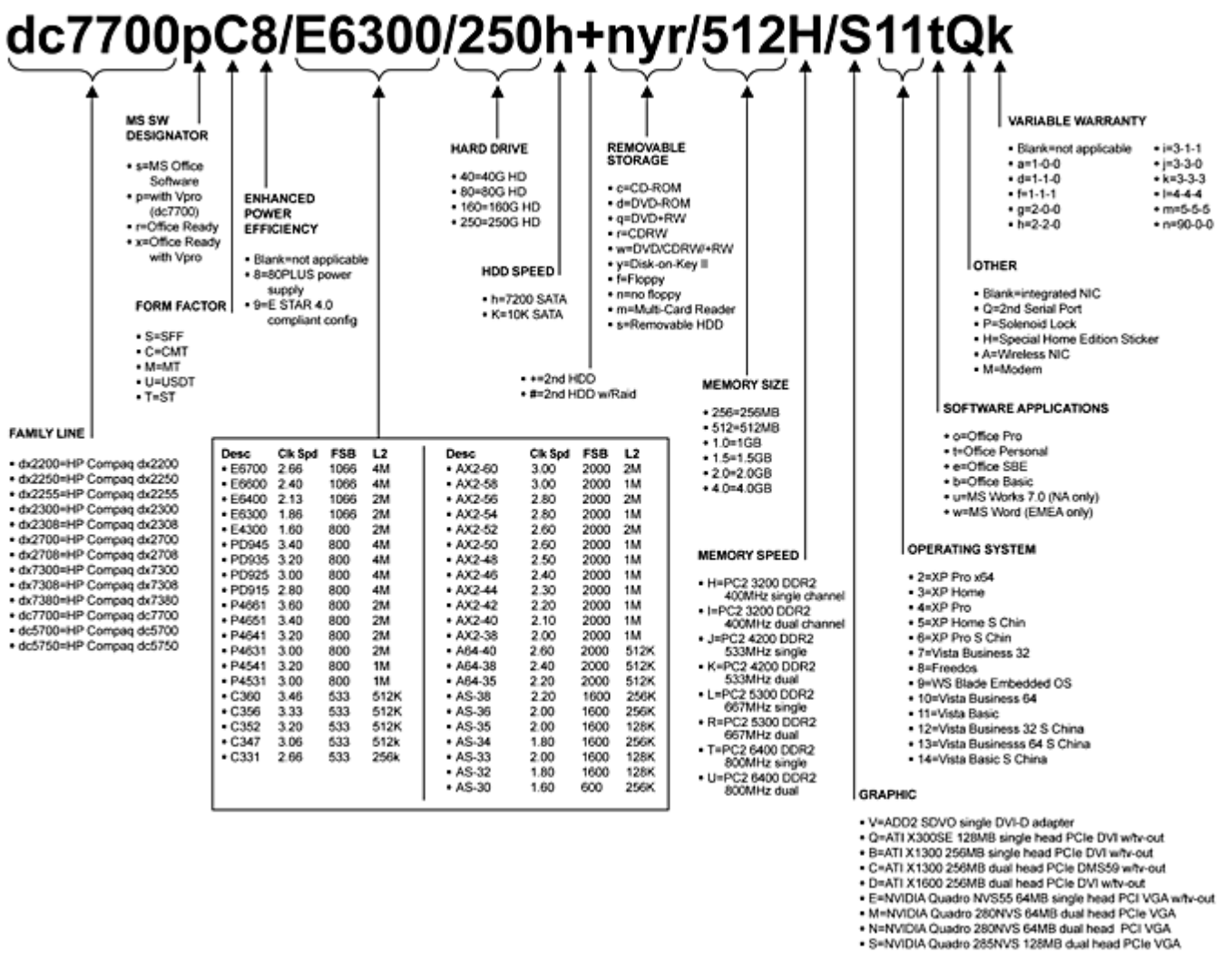
At A Glance

- The HP Compaq dc5700 offers a stable solution with mainstream features and flexibility that exceed basic business requirements
- Intel® Q963 Express chipset, Intel Core™ 2 Duo processors, Intel Pentium® D dual core processors, and Intel Pentium 4 processors
- Embedded TPM1.2 compliant security module (Vista Bit-Locker ready)
- Support for SMART III 3.0Gb/s Serial ATA hard drives
- Value-added software available pre-loaded on select models:
  - HP ProtectTools Security Software Suite (purchased separately), including Credential Manager, Smart Card Manager, and BIOS Configuration
  - HP OpenView and Altiris manageability software agents
  - Symantec Antivirus 10.0 with 60 day Live Update Subscription
  - HP Backup and Recovery Manager
- Fully compatible software OS image across all models (Microtower, Small Form Factor)
- HP BIOS for security, manageability and software image stability
- Standard 3-years parts, 3-years labor, and 3-years on-site warranty services
- HP Insight Diagnostics software
- Selected configurations with global availability easily set up and ordered through HP.com Business to Business portals (http://h10019.www1.hp.com/business-site/index.html)
- Tailored HP Factory Express deployment and lifecycle services available (http://h71028.www7.hp.com/enterprise/cache/97688-0-0-225-121.aspx)

Configurable Components - Select Models (localized by Regions)

Model Key and Example

NOTE: This diagram is an example that illustrates how to read the model number. It is not intended to give every available configuration choice specified in the body of this document and may include references to modules that are out of date and no longer available.



Standard Features and Configurable Components

Operating System – One of the following	**Preinstalled**	Genuine Windows Vista Business 32* Genuine Windows Vista Business 64* Genuine Windows XP Professional SP2 FreeDOS
	Supported	Genuine Windows 2000

* Certain Windows Vista product features require advanced or additional hardware. See http://www.microsoft.com/windowsvista/getready/hardwarereqs.mspx and http://www.microsoft.com/windowsvista/getready/capable.mspx for details. Windows Vista Upgrade Advisor can help you determine which features of Windows Vista will run on your computer. To download the tool, visit http://www.windowsvista.com/upgradeadvisor.

NOTE: Drivers for Windows Vista are continually being made available for download from http://www.hp.com.

Value-added Software (on select models; not included with FreeDOS)

- HP ProtectTools Security Software Suite*
- HP Client Management Solutions (visit http://www.hp.com/go/easydeploy)
- HP Backup and Recovery Manager
- HP Insight Diagnostics
- Computer Setup Utility
- Symantec AntiVirus with 60 day Live Update Subscription
- Intervideo WinDVD (supplied with DVD drive)
- Microsoft Office 2007 Basic
- Microsoft Office 2007 Personal
- Microsoft Office 2007 Professional
- Microsoft Office 2007 Small Business
- Microsoft Works
- Microsoft Internet Explorer
- PDF Complete
- HP Smart Desktop Management System (SDMS) Free Trial
- HP Open View Radia Management Agent
- Altiris Deployment Solution Agent

* optional purchase

Value-added Services and Features

- HP Stable Platform Program with Product Change Notification
- Business-to-Business Portals
- HP Global Series Services
- Factory Express Deployment and Lifecycle Services
- TPM 1.2* Vista Bit-Locker Ready
- Tool-less Serviceability

* TPM module disabled where use is restricted by law; for example, Russia.

Service and Support

On-site Warranty and Service Note 1: This three-year (3-3-3), limited warranty and service offering delivers three years of parts, labor and on-site repair. Response time is next business-day Note 2 and includes free telephone support Note 3 24 x 7. Global coverage Note 2 ensures that any product purchased in one country and transferred to another non-restricted country will remain fully covered under the original warranty and service offering. Some countries/regions do not offer one year onsite and labor.

NOTE 1: Terms and conditions may vary by country. Certain restrictions and exclusions apply.

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, HP and HP-qualified, third-party hardware and software. Toll-free calling and 24 x 7 support may not be available in some countries.

Standard Features and Configurable Components

	Microtower	Small Form Factor
Chassis Dimensions (H x W x D)	14.85”H x 6.95”W x 16.85”D	4.5”H x 15.5”W x 13.5”D
System weight*	23.44 lb (10.63 kg)	17.86 lb (8.10 kg)
System volume	1739 cu in	941.63 cu in
Shipping weight*	32.12 lb (14.57 kg)	26.70 lb (12.11 kg)
Shipping box dimensions (H x W x D)	12.0 x 19.76 x 23.62 in	9.72 x 19.68 x 22.67 in

* Configured with 1 hard drive, 1 optical drive, no diskette drive, and no PCI card.

Power Supply	300W power supply – passive PFC	240W power supply – passive PFC
80Plus Power Supply	300W 80Plus* power supply – active PFC	240W 80Plus* power supply – active PFC

* This alternate 80% efficient power supply is a requirement for US Energy Star 4.0 compliance in conjunction with a select range of processors and modules.

Ports		
USB 2.0	8 (2 front, 6 rear)	8 (2 front, 6 rear)
Serial	1 standard with 2nd optional	1 standard with 2nd optional
Parallel	1	1
PS/2	1 keyboard, 1 mouse	1 keyboard, 1 mouse
Video	analog for integrated graphics	analog for integrated graphics
DVI output*	available via ADD2 card in SDVO connector	available via ADD2 card in SDVO connector
Support for Multi-Monitor*	available via ADD2 card in SDVO connector or by using NVIDIA Quadro NVS 280 64-MB PCI dual head VGA graphics adapter	available via ADD2 card in SDVO connector or by using NVIDIA Quadro NVS 280 64-MB PCI dual head VGA graphics adapter
Audio	Integrated High Definition audio with internal speaker Front – mic and headphone Rear** – line in, line out	Integrated High Definition audio with internal speaker Front – mic and headphone Rear** – line in, line out
NIC (RJ-45)	Integrated Broadcom 5755 Gigabit Ethernet	Integrated Broadcom 5755 Gigabit Ethernet

NOTES:

* The dc5700 supports Normal (or Non-reversed) layout ADD2 (Advanced Digital Display 2) adapter cards inserted into the SDVO (Serial Digital Video Output) connector on the system board. This connector has the physical appearance of a PCIe x16 connector; however, conventional PCIe cards are not supported in this connector.

** Rear audio ports are re-taskable as Line-in, Line-out, or Microphone-in.

		MT	SFF
Chipset	Intel Q963 Express chipset	X	X

Standard Features and Configurable Components

Processor and Speed* One of the following	**Intel® Celeron® D Processors:**		
	Intel® Celeron® D 331 Processor (2.66-GHz, 256K L2 cache, 533-MHz FSB)	X	X
	Intel® Celeron® D 347 Processor (3.06-GHz, 512K L2 cache, 533-MHz FSB)	X	X
	Intel® Celeron® D 352 Processor (3.20-GHz, 512K L2 cache, 533-MHz FSB)	X	X
	Intel® Celeron® D 356 Processor (3.33-GHz, 512K L2 cache, 533-MHz FSB)	X	X
	Intel® Celeron® D 360 Processor (3.46-GHz, 512K L2 cache, 533-MHz FSB)	X	X
	Intel® Celeron® M 420 Processor (1.60-GHz, 512K L2 cache, 800-MHz FSB)	X	X
	Intel® Celeron® M 430 Processor (1.80-GHz, 512K L2 cache, 800-MHz FSB)	X	X
	Intel® Celeron® M 440 Processor (2.00-GHz, 512K L2 cache, 800-MHz FSB)	X	X
	Intel Pentium 4 Processors with HT Technology:		
	Intel Pentium 4 531 Processor (3.0-GHz, 1-MB L2 cache, 800-MHz FSB)	X	X
	Intel Pentium 4 541 Processor (3.20-GHz, 1-MB L2 cache, 800-MHz FSB)	X	X
	Intel Pentium 4 631 Processor (3.0-GHz, 2-MB L2 cache, 800-MHz FSB)	X	X
	Intel Pentium 4 641 Processor (3.20-GHz, 2-MB L2 cache, 800-MHz FSB)	X	X
	Intel Pentium 4 651 Processor (3.40-GHz, 2-MB L2 cache, 800-MHz FSB)	X	X
	Intel Pentium 4 661 Processor (3.60-GHz, 2-MB L2 cache, 800-MHz FSB)	X	X
	Intel Pentium D Dual Core Processors:		
	Intel Pentium D 915 Processor (2.8-GHz, 2x2-MB L2 cache, 800-MHz FSB)	X	X
	Intel Pentium D 925 Processor (3.0-GHz, 2x2-MB L2 cache, 800-MHz FSB)	X	X
	Intel Pentium D 935 Processor (3.2-GHz, 2x2MB L2 cache, 800-MHz FSB)	X	X
	Intel Pentium D 945 Processor (3.4-GHz, 2x2-MB L2 cache, 800-MHz FSB)	X	X
	Intel Dual Core Processors:		
	Intel Dual Core E2140 Processor (1.60-GHz, 1 MB L2 cache, 800-MHz FSB)	X	X
	Intel Dual Core E2160 Processor (1.80-GHz, 1 MB L2 cache, 800-MHz FSB)	X	X
	Intel Core 2 Duo Processors:		
	Intel Core 2 Duo E4300 Processor (1.80-GHz, 2 MB L2 cache, 800-MHz FSB)	X	X
	Intel Core 2 Duo E4400 Processor (2.00-GHz, 2 MB L2 cache, 800-MHz FSB)	X	X
	Intel Core 2 Duo E6300 Processor (1.86-GHz, 2 MB L2 cache, 1066-MHz FSB)	X	X
	Intel Core 2 Duo E6320 Processor (1.86-GHz, 4 MB L2 cache, 1066-MHz FSB)	X	X
	Intel Core 2 Duo E6400 Processor (2.13-GHz, 2 MB L2 cache, 1066-MHz FSB)	X	X
	Intel Core 2 Duo E6420 Processor (2.13-GHz, 4 MB L2 cache, 1066-MHz FSB)	X	X
	Intel Core 2 Duo E6600 Processor (2.40-GHz, 4 MB L2 cache, 1066-MHz FSB)	X	X
	Intel Core 2 Duo E6700 Processor (2.66-GHz, 4 MB L2 cache, 1066-MHz FSB)	X	X

* Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families.

Standard Features and Configurable Components

Memory

DDR2 SYNCH DRAM NON-ECC MEMORY
Memory upgrades are accomplished by adding single or multiple DIMMs of the same or varied sizes. This chart does not represent all possible memory configurations. The Intel Q963 Express chipsets support non-ECC DDR2 PC2-5300 (667-MHz)

HP recommends dual-channel symmetric configurations for maximum performance.
For best performance, add the same amount of total memory to each channel and do not mix speeds. For dual-channel symmetric performance, the total amount of memory in each channel must be equal. If speeds are mixed, speed will default to the slowest DIMM.

Microtower and Small Form Factor

Maximum Memory

Supports up to 4-GB of DDR2 SYNCH DRAM. *Slot 1 is black and must always be populated. Not all memory configurations possible are represented below.*
NOTE: Above 3-GB, all memory may not be available due to system resource requirements.

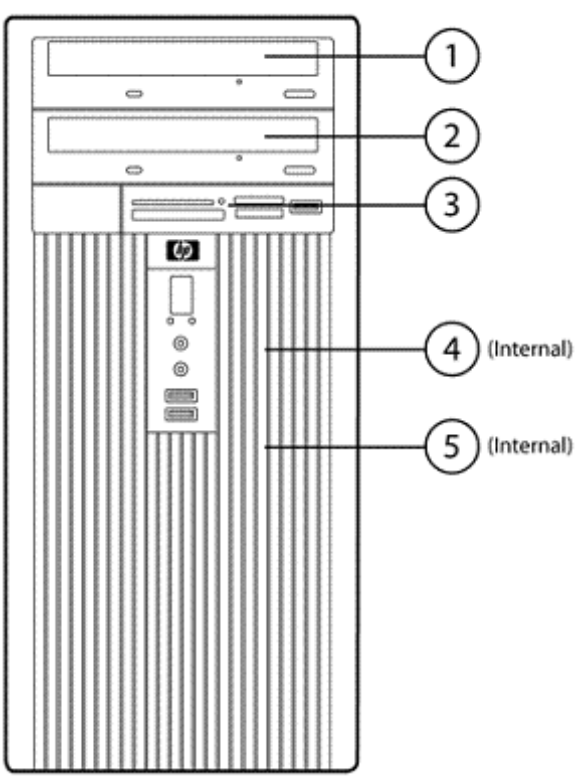
DIMM Size	Slot			
	Channel A		Channel B	
	1 (black)	**2** (white)	**3** (black)	**4** (white)
256-MB	256-MB			
512-MB	512-MB			
512-MB (dual-channel symmetric)	256-MB		256-MB	
1-GB	1-GB			
1-GB (dual-channel symmetric)	512-MB		512-MB	
1-GB (dual-channel symmetric)	256-MB	256-MB	256-MB	256-MB
2-GB (dual-channel symmetric)	1-GB		1-GB	
2-GB (dual-channel symmetric)	512-MB	512-MB	512-MB	512-MB
4-GB maximum (dual-channel symmetric)	1-GB	1-GB	1-GB	1-GB

		MT	SFF
Memory Configurations One of the following	256-MB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (1 x 256)	X	X
	512-MB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (1 x 512)	X	X
	512-MB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (2 x 256)	X	X
	1-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (2 x 512)	X	X
	1-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (1 x 1GB)	X	X
	2-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (4 x 512)	X	X
	2-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (2 x 1GB)	X	X
	4-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (4 x 1GB)	X	X

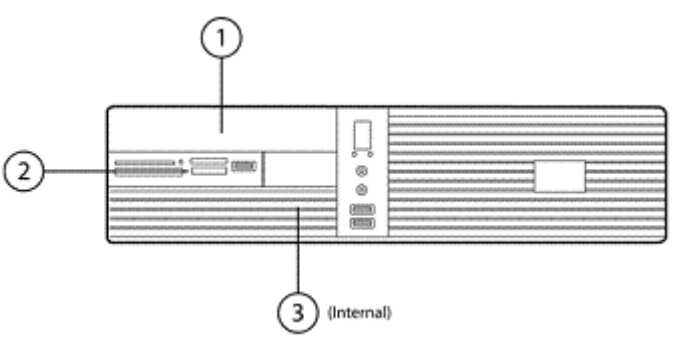
Standard Features and Configurable Components

Expandability	Microtower	Small Form Factor
PCI slots	2 Full Length 5V 32 bit PCI slots	2 LP 5V 32 bit PCI slots
Max power per slot	25W	25W
PCIe x1 slot	1	1
Max power per slot	10W	10W
SDVO/ADD2 slot	1	1
External Bays		
3.5"	1	1
5.25"	2	1
IDE		
Internal 3.5" HDD Bays	2	1
Hard Drive Controller (SATA) **Supported**	SATA	SATA
Hard Drive Interfaces Supported	SATA 3.0Gb/s	SATA 3.0Gb/s

Microtower



Small Form Factor



Standard Features and Configurable Components

Storage – Drive Support						
	Microtower			Small Form Factor		
	Media Card Reader or Diskette Drive (optional)	**5.25" Serial ATA Devices**	**3.5" Serial ATA Devices**	**Media Card Reader or Diskette Drive** (optional)	**5.25" Serial ATA Devices**	**3.5" Serial ATA Devices**
Quantity Supported	1	2	2	1	1	2
Position Supported	③	①,②	③,④,⑤	②	①	②,③
Controller	USB/Diskette	SATA	SATA	USB/Diskette	SATA	SATA

		MT	SFF
Hard Drive One or two of the following	80-GB SATA 3.0-Gb/s Hard Drive (7200 rpm)	X	X
	160-GB SATA 3.0-Gb/s Hard Drive (7200 rpm)	X	X
	250-GB SATA 3.0-Gb/s Hard Drive (7200 rpm)	X	X
	Removable 3.5" 80GB SATA 3.0 Gb/s (7200 rpm)	X	X
	Removable 3.5" 160GB SATA 3.0 Gb/s (7200 rpm)	X	X
	Removable 3.5" 250GB SATA 3.0 Gb/s (7200 rpm)	X	X
	2nd hard drive, 80-GB SATA 3.0-Gb/s Hard Drive (7200 rpm)	X	X
	2nd hard drive, 160-GB SATA 3.0-Gb/s Hard Drive (7200 rpm)	X	X
	2nd hard drive, 250-GB SATA 3.0-Gb/s Hard Drive (7200 rpm)	X	X
Removable Storage – One or more of the following depending on form factor (see Storage – Drive Support section above)	**Diskette Drives**		
	1.44-MB Diskette Drive	X	X
	Media Reader		
	HP 16-in-1 Media Reader (USB connection on the system board)	X	X
	Optical Drives		
	SATA DVD-ROM Drive	X	X
	SATA CD-RW/DVD-ROM Combo Drive	X	X
	SATA DVD+/-RW (DL/DF) LightScribe Drive	X	X
	SATA DVD+/-RW (DL/DF) SuperMulti LightScribe Drive	X	X
Security	1.2 TPM Embedded Security Chip* integrated with Broadcom NIC	X	X
	HP ProtectTools Security Software Suite with BIOS Configuration (Serial, Parallel, USB Enable/Disable), Credential Manager, Smart Card Manager	X	X
	HP Desktop Security lock kit (lock and cable)	X	X
	Security cable with Kensington lock	X	X
	* TPM module disabled where use is restricted by law; for example, Russia.		
NIC	Broadcom 5755 Gigabit Ethernet integrated on system board	X	X
	Intel PRO/1000 PT PCIe Gigabit NIC Card	X	X

Standard Features and Configurable Components

Wireless	Wireless A+G PCI Card (full height bracket)	X	
	Wireless A+G PCI Card (low profile bracket)		X
Modem	2006 Agere PCI 56K International SoftModem (full height)	X	
	2006 Agere PCI 56K International SoftModem (low profile)		X
Graphics	Integrated Intel Graphics Media Accelerator 3000	X	X
	DVI ADD2 SDVO single head Graphics Adapter (SDVO connector) *	X	X
	NVIDIA Quadro NVS 280 64-MB PCI dual head VGA**	X	X
	NVIDIA Quadro NVS 55 64MB PCI low profile DVI w/TV-Out	X	X
	NOTES: * The dc5700 supports Normal (or Non-reversed) layout ADD2 (Advanced Digital Display 2) adapter cards inserted into the SDVO (Serial Digital Video Output) connector on the system board. This connector has the physical appearance of a PCIe x16 connector; however, conventional PCIe cards are not supported in this connector. ** Two NVIDIA Quadro NVS 280 PCI graphics cards can be installed to provide support for four monitors.		
Audio	Integrated High Definition audio with Realtek 2 channel ALC260 codec (all ports are stereo)	X	X
	Microphone and Headphone front ports	X	X
	Line-out and Line-In rear ports*	X	X
	Aux Input connection on system board	X	X
	Internal Speaker	X	X
	***NOTE:** Rear audio ports are re-taskable as Line-in, Line-out, or Microphone-in. External speakers must be powered externally.		
Input Devices	**Keyboard** – One of the following		
	HP PS/2 Standard Keyboard	X	X
	HP USB Standard Keyboard	X	X
	HP USB Smartcard Keyboard	X	X
	Mouse – One of the following		
	PS/2 2-Button Scroll Mouse	X	X
	PS/2 2-Button Optical Scroll Mouse	X	X
	USB 2-Button Optical Scroll Mouse	X	X
Miscellaneous	HP FireWire / IEEE 1394 PCI Card (full height)	X	
	HP FireWire / IEEE 1394 PCI Card (low profile)		X
	2nd serial port adapter	X	
	2nd serial port adapter (low profile)		X
	Tower stand		X

After-Market Options

		MT	SFF	Part Number
Communications	**Wireless LAN**			
	HP Wireless A+G PCI Card (North America only)	X	X	EA118AA
	bt450 Bluetooth Wireless Printer and PC Adapter (IPG)	X	X	Q6398A#ABA
	NICs			
	Intel PRO/1000 PT PCIe Gigabit NIC Card	X	X	EH352AA
	Modem			
	Agere 2006 PCI 56K International Modem	X	X	EK694AA
	Connectivty			
	Bundle Connectivity Starter Kit – Surge Protector/LAN cable/Printer cable	X	X	RT174AA
Office 2007 Media-less License Kits (MLKs)	MS Office Basic Edition 2007 – Media-less License Kit	X	X	RZ361A#ABA
	MS Office Small Business Edition 2007 – Media-less License Kit	X	X	RZ365A#ABA
	MS Office Professional Edition 2007 – Media-less License Kit	X	X	RZ363A#ABA
Graphics	**Single head solutions**			
	DVI ADD2 Graphics Card (SDVO connector)*	X	X	DY674A
	NVIDIA Quadro NVS 55 64MB PCI DVI w/TV Out	X	X	EK561AA
	Multi head solutions			
	NVIDIA Quadro NVS 280 PCI Graphics Card	X	X	DY599A
	HP DMS59 DVI Dual-head Connector Cable	X	X	DL139A
	*__NOTE:__ The dc5700 supports Normal (or Non-reversed) layout ADD2 (Advanced Digital Display 2) adapter cards inserted into the SDVO (Serial Digital Video Output) connector on the system board. This connector has the physical appearance of a PCIe x16 connector; however, conventional PCIe cards are not supported in this connector.			
Hard Drives	HP 80-GB SATA 3.0-Gb/s Hard Drive	X	X	PY276AA
	HP 160-GB SATA 3.0-Gb/s Hard Drive	X	X	PY277AA
	HP 250-GB SATA 3.0-Gb/s Hard Drive	X	X	PY278AA
Input/Output Devices	HP PS/2 Standard Keyboard	X	X	DT527A#ABA
	HP USB Standard Keyboard	X	X	DT5287A#ABA
	HP USB Smartcard Keyboard	X	X	ED707AA#ABA
	HP PS/2 2-Button Scroll Mouse	X	X	DD440B
	HP PS/2 2-Button Optical Scroll Mouse	X	X	EY703AA
	HP USB 2-Button Optical Scroll Mouse	X	X	DC172B

After-Market Options

Memory (DIMMs)	**PC2-5300 (DDR2, 667 MHz) DIMMs Non-ECC**			
	HP 2 GB PC2-5300 (DDR2-667) DIMM	X	X	PX977AA
	HP 1 GB PC2-5300 (DDR2-667) DIMM	X	X	PX976AA
	HP 512 MB PC2-5300 (DDR2-667) DIMM	X	X	PX975AA
	HP 256 MB PC2-5300 (DDR2-667) DIMM	X	X	PX974AA
Monitors	**CRTs**			
	HP s7540 17" (16.0" vis) CRT Monitor			PF997AA#ABA
	TFTs			
	HP L1506 15" TFT Flat Panel Monitor – Analog only			PX848AA#ABA
	HP L1706 17" TFT Flat Panel Monitor – Analog only			PX849AA#ABA
	HP L1740 17" TFT Flat Panel Display – Analog/Digital			PL766AA#ABA
	HP L1745 17" TFT Flat Panel Display – Analog/Digital			GE178AA#ABA
	HP L1906 19" TFT Flat Panel Display – Analog only			PX850AA#ABA
	HP L1940T 19" TFT Flat Panel Display – Analog/Digital			EM869AA#ABA
	HP LP1965 19" TFT Flat Panel Display – Analog/Digital			RA373AA#ABA
	HP LP2065 20" TFT Flat Panel Display – Analog/Digital			EF227A4#ABA
	Widescreen TFTs			
	HP L2045w 20" Widescreen Flat Panel Display – Analog/Digital			RD125AA#ABA
	HP LP2465 24" TFT Widescreen Flat Panel Display – Analog/Digital			EF224A4#ABA
	HP LP3065 30" TFT Widescreen Flat Panel Display – Analog/Digital			EZ320A4#ABA
	GSA Monitors			3PO Offering
	Touchscreen TFT			
	HP L5006tm 15" Touch Screen Flat Panel Display			RB146AA#ABA
	Options			
	HP Flat Panel Speaker Bar			EE418AA
Multimedia	HP USB Powered Speakers	X	X	RD628AA
	Flat Panel Speaker Bar	X	X	EE418AA
Optical Drives	**DVD-ROM Drive**			
	HP SATA DVD-ROM Drive	X	X	AH047AA
	Combo Drive			
	HP SATA CD-RW/DVD-ROM Combo Drive	X	X	AH046AA
	DVD+/-RW Drive			
	HP SATA DVD+/-RW (DL/DF) LightScribe Drive	X	X	AH048AA
	HP SATA DVD+/-RW (DL/DF) SuperMulti LightScribe Drive	X	X	GF343AA

After-Market Options

Removable Storage	**Diskette and Digital Drives**			
	HP 1.44-MB Internal Diskette Drive	X	X	AH053AA
	Multimedia			
	HP 16-in-1 Media Card Reader	X	X	EM718AA
	Removable Hard Drive			
	HP Removable SATA Hard Drive Enclosure (Frame & Carrier)	X	X	RY102AA
	HP Removable SATA Hard Drive Enclosure (Carrier Only)	X	X	RY103AA
Security	Kensington lock	X	X	PC766A
	HP Business PC Security Lock	X	X	TBD
	HP USB Biometric Fingerprint Reader	X	X	EM717AA
	HP USB Smartcard Keyboard	X	X	ED707AA#ABA
	Protect Tools	X	X	RG984AA
Manageability	HP OpenView Client Configuration Manager	X	X	T3488AA (use T3489AA for 1000 licenses)
	HP Client Foundation Suite Includes: HP Client Manager HP Systems Insight Manager Connector Altiris Local Recovery Pro Altiris Inventory Solution Altiris Deployment Solution	X	X	EF117AA (use EF118AA for 1000+ licenses)
	HP Client Premium Suite Includes: HP Client Manager HP Systems Insight Manager Connector HP OpenView Connector Altiris Connector Solution Altiris Local Recovery Pro Altiris Audit Express Altiris Client Management Suite Level 1	X	X	EF119AA (use EF120AA for 1000+ licenses)
Miscellaneous Accessories	HP 2nd Serial Port adapter	X	X	PA716A
	Belken USB to Serial Adapter	X	X	EM449AA
	HP FireWire / IEEE 1394 PCI Card	X	X	PA997A
	Tower Stand-Carbonite		X	RG048AA
	5.25" Blank Bezel Kit (Carbonite 50/Bulk Pack)	X	X	DC177B
	DVI to DVI Cable	X	X	DC198A
	Local Area Network (LAN) cable	X	X	AH122AA
	Firewire (1394) Cable	X	X	AH123AA
	7-outlet Surge Protector	X	X	AG290AA#ABA

Unit Environment and Operating Conditions	Microtower	Small Form Factor
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)	
***NOTE:** 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.		

	Microtower		Small Form Factor	
Power Supply	300-watt BTX power supply – Passive PFC 115v/230v line switch	300-watt 80Plus* BTX power supply – Active PFC	240-watt BTX power supply – Passive PFC 115v/230v line switch	240-watt 80Plus* BTX power supply – Active PFC
Operating Voltage Range	90 to 132VAC, or 180 to 264VAC	90 to 264VAC	90 to 132VAC, or 180 to 264VAC	90 to 264VAC
Rated Voltage Range	100 to 127VAC, or 200 to 240VAC	100 to 240VAC	100 to 127VAC, or 200 to 240VAC	100 to 240VAC
Rated Line Frequency	50/60 Hz	50/60 Hz	50/60 Hz	50/60 Hz
Operating Line Frequency Range	47–63 Hz	47–63 Hz	47–63 Hz	47–63 Hz
Rated Input Current	8A/4A	5A/2.5A	6A/3A	3.5A/1.75
Heat Dissipation	Typical 315 btu/hr (79 kg-cal/hr) Maximum 1575 btu/hr (397 kg-cal/hr)	Typical 270 btu/hr (68 kg-cal/hr) Maximum 1280 btu/hr (322 kg-cal/hr)	Typical 315 btu/hr (79 kg-cal/hr) Maximum 1260 btu/hr (317 kg-cal/hr)	Typical 270 btu/hr (68 kg-cal/hr) Maximum 1025 btu/hr (258 kg-cal/hr)
Power Supply Fan	Variable speed fan	Variable speed fan	Variable speed fan	Variable speed fan
Energy Star 3.0 Compliant	X	X	X	X
Energy Star 4.0 Compliant		X		X
FEMP Standby Power Compliant (<2W in S5 – Power Off)**	X	X	X	X

Power Consumption in ES Mode – Suspend to RAM (S3) (Instantly Available PC)	<4W	<3W	<4W	<3W
Environmental and Mechanical Engineering Support Center (EMESC) – Intranet Web Site only	http://env-webserver.ccm.cpqcorp.net/EMESC/default.htm			

NOTES:
* This 80% efficient power supply is a requirement for US Energy Star 4.0 compliance in conjunction with a select range of processors and modules.
** Power consumption in the Off/Apparent Off mode is measured and reported with the network interface controller "Wake on LAN" feature disabled in F10 Setup (default is "enabled").

ROM BIOS Information

Key features of the HP BIOS in the dc5700 include:

- Deployment and manageability – HP BIOS provides several technologies that help integrate the HP Business desktop computer 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.
- Security – HP BIOS offers a robust and flexible set of security features to help the system administrator secure their systems from removal of sensitive data, and help prevent access by unauthorized users, subversion of OS security policies, removal of hardware, flash of rogue BIOS images, and attacks on BIOS settings.
- Thermal and power management – The HP BIOS provides and enables thermal and power management technologies to assist in operating the HP Business Desktop computer in any enterprise environment.
- 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 (Flashlite), BIOS updates from within Windows (HPQFlash, SSM), 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.

Additional HP BIOS Features

- 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. Provides power conservation features under Windows XP.
- Ability to mute the internal speaker

Technical Specifications

Other Features	Description
ACPI-Ready Hardware	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.
SMBIOS Ver. 2.4	System Management BIOS, previously known as DMI BIOS, for system management information
Wired for Management Support	Intel-driven, industry-wide initiative to make Intel architecture-based PCs, servers and mobile computers more inherently manageable right out of the box and over the network
Dual-State Power Button	Power button acts as both an on/off button and suspend-to-sleep button

Serviceability Features of System		
Dual Color Power LED on Front of Computer (Indicates Normal Operations and Fault Conditions)		
Diagnostic LED Explanation Table	Number of 1-second red LED blinks followed by 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, bootblock recover mode	
• System/Emergency ROM	• Flash ROM	• CMOS Battery Holder for easy Replacement
• Flash Recovery with Video	• 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
• Restore CD	• Clear CMOS Button	• NIC LEDs (integrated) (Green & Amber)

Serviceability Features of Chassis		
• 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 upgraded on Microtower without removing any internal components	• Tool-less Hard Drive, CD & Diskette Removal
Feature	**Description**	
ASF 2.0 support (Alert Standard Format)	Industry-standard specification for network alerting and remote control in operating system-absent environments	
Towerable	Product can be oriented as a tower (in addition to desktop orientation)	

Drive Self Tests (DPS)	• Drive Protection System • A diagnostic hard drive self test. It scans critical physical components and every sector of the hard drive for physical faults and then reports any faults to the user. • Running independently of the operating system, it can be accessed through a Windows-based diagnostics utility or through the computer's setup procedure. It produces an evaluation on whether the hard drive is the source of the problem and needs to be replaced. • The system expands on the Self-Monitoring, Analysis, and Reporting Technology (SMART), a continuously running systems diagnostic that alerts the user to certain types of failures.
DPS Access through F10 Setup during Boot	
SMART Technology* (Self-Monitoring, Analysis and Reporting Technology)	Allows hard drives to monitor their own health and to raise flags if imminent failures were predicted
SMART I – Drive Failure Prediction	• Predicts failures before they occur. Tracks fault prediction and failure indication parameters such as re-allocated sector count, spin retry count, calibration retry count • By avoiding actual hard drive failures, SMART hard drives act as "insurance" against unplanned user downtime and potential data loss from hard drive failure
SMART II – Off-Line Data Collection	
SMART III – Off-Line Read Scanning with Defect Reallocation	

Technical Specifications - Audio

High Definition Audio	**Type**	Integrated
	High Definition Stereo Codec	Yes – Realtek ALC260
	Audio Jacks	Microphone-In (64-K ohm Input Impedance) Line-In (64-K ohm Input Impedance) Line-Out * (200 ohms Output Impedance, expects at least a 10-K ohm load) Headphone-Out (1 Ohm Output Impedance, expects at least a 32 ohm load)
	NOTE: *Internal Speaker Amplifier is for Internal Speaker only. External Speakers need to be powered externally.	
	Sampling	8 kHz – 192 kHz
	Wavetable Syntheses (software)	Yes – Uses OS soft wavetable
	Analog Audio	Yes
	Number of Channels on Line-Out (mono/stereo)	Stereo (Left & Right channels)
	Internal Audio Speaker Power Rating	1.5 W
	Internal Speaker	Yes; ability to mute internal speaker through F10 Setup
	External Speaker Jack (Line-Out)	Yes

Integrated Broadcom 5755 Gigabit Ethernet	**Connector**	RJ-45
	Controller	Broadcom 5755 PCI-Express LAN Controller
	Memory	Integrated 96Kb frame buffer memory
	Data rates supported	10/100/1000 Mbps
	Compliance	IEEE 802.1P, 802.1Q, 802.2, 802.3, 802.3AB and 802.3u compliant, 802.3x flow control
	Bus architecture	PCI-E
	Data path width	Single channel, PCI-E
	Data transfer mode	Bus-master DMA
	Hardware certifications	FCC, B, CE, TUV- cTUVus Mark Canada and United States, TUV- GS Mark for European Union
	Power requirement	1.33 watts @ +3.3V AUX supply with 5V tolerance
	Boot ROM support	Yes
	Network transfer mode	Full-duplex
		Half-duplex (not available for the 1000BASE-T transceiver)
	Network transfer rate	10BASE-T (half-duplex) 10 Mbps
		10BASE-T (full-duplex) 20 Mbps
		100BASE-TX (half-duplex) 100 Mbps
		100BASE-TX (full-duplex) 200 Mbps
		1000BASE-T (full-duplex) 2000 Mbps
	Environmental	**Operating temperature** 32° to 131°F (0° to 55° C)
		Operating humidity 85% at 131° F (55° C)
	Management capabilities	ASF 2.0, ACPI, WOL and DMI 2.0, PXE 2.0, WfM 2.0, Broadcom mgmt utility
	Alerting	ASF 2.0

Intel PRO/1000 PT PCIe Gigabit NIC	**Connector**	RJ-45
	Controller	Intel 82572EI Gigabit Ethernet Controller
	Memory	Integrated Dual 48K configurable transmit receive FIFO Buffers
	Data rates supported	10/100/1000 Mbps
	Compliance	IEEE 802.1P, 802,1Q, 802.2, 802.3, 802.3AB and 802.3u compliant, 802.3x flow control
	Bus architecture	PCI-E 1.0a
	Data transfer mode	Bus-master DMA
	Hardware certifications	FCC, B, CE, TUV- cTUVus Mark Canada and United States, TUV- GS Mark for European Union
	Power requirement	Aux 3.3V, 3.0 Watts in 1000base-T and 2.0 Watts in 100Base-T
	Boot ROM support	Yes
	Network transfer rate	10BASE-T (half-duplex) 10 Mbps
		10BASE-T (full-duplex) 20 Mbps
		100BASE-TX (half-duplex) 100 Mbps
		100BASE-TX (full-duplex) 200 Mbps
		1000BASE-T (full-duplex) 2000 Mbps (actual rate limited by PCI Bus)

	Environmental	**Operating temperature**	32° to 131°F (0° to 55° C)
		Operating humidity	85% at 131° F (55° C)
	Dimensions	6.4 x 2.6 x 0.8 in (16.3 x 6.6 x 1.9 cm)	
	Management capabilities	ASF, WOL, PXE, DMI, WFM 2.0.	

HP Wireless A+G PCI	**Dimensions**	4.99 x 2.54 x 0.71 in (126.8 x 64.4 x 18.0 mm)	
	Weight	0.268 lb (65 g)	
	Controller system interface	Atheros AR5414X chipset PCI Spec 2.2	
	Network standard	IEEE 802.11a/b/g	
	Frequency band	5.1500 to 5.8500 GHz	
		2.4000 to 2.4835 GHz	
		2.4465 to 2.4835 GHz (Europe, Middle East, Asia and Asia Pacific - excluding Japan)	
		2.4000 to 2.4697 GHz (Japan)	
	Operating temperature	32° to 140° F (0° to 60° C), operating	
	Storage temperature	-4° to 176° F (-20° to 80° C), non-operating	
	Humidity	10% to 85% non-condensing	
	Operating voltage	5V ± 5%	
	Power consumption	Tx/Rx peak 560/250mA @ 3.3V (max.)	
	Output power (approximately)	15 dBM ±2dB	
	Receive sensitivity	-90dBm at 11 Mbps (typical)	
	Data transfer rate	Standard rates of 1, 2, 5.5, 11, 6, 9, 12, 18, 24, 48, 54 and Super AG Mode108-Mbps	
	Spreading	DSSS (Direct Sequence Spread Spectrum)	
	Security	64(40h) bit, 128(104h) bit, WPA, IEEE802.1X, AES-OCB, AES-CCM, Microsoft PEAP,TKIP, WEP.	
	Antenna	External 5dBi antenna	
	Throughput	108 Mbps (only with Belkin 54G or above router that supports 108 Mbps speed)	200 ft (60.96 m) – Indoor
		54 Mbps	200 ft (60.96 m) – Indoor
		11 Mbps	200 ft (60.96 m) – Indoor
	Certifications	Wi-Fi certified	
	Certifications for use by country	North America: United States, Canada	
		Europe: Austria, Belgium, Cyprus, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Liechtenstein, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom Australia	
		New Zealand	

Technical Specifications - Communications

2006 Agere PCI 56K International SoftModem

Data Transmission	Technology speeds: 56,000 Kbps maximum downstream data, controllerless
	NOTE: 56 Kbps technology refers to download speeds only and requires compatible modems at server sites. Other conditions may limit modem speed. FCC limitations allow a maximum of 53 Kbps during download transmissions.
Data Speeds	(Upload only) 33,600/31,200/28,800/26,400/21,600/19,200/16,800/14,400/12,000/ 9,600/7,200/4,800/2,400/1,200/300
Data Standards	ITU-T V.90, ITU-T, ITU-T V.34, V.44, V.42, V.42bis21, V.32bis, Bell 212A, and Bell 103
Fax Speeds	14,400/12,000/9,600/7,200/4,800/2,400/1,200/300 b/s
Fax Mode Capabilities	ITU-T T.31 class 1 FAX, V. 17, V.29, V.27ter, and V.21 Channel 2
Error Correction and Data Compression	V.44, 42bis, V.42 and MNP2-5
Power Management	ACPI; PPMI 1.1 and wake support with PME and Vaux; meets PCI 2.3 requirements and PC 2001 requirements
Upgradeability	Driver upgradeable for future enhancements
Video	ITU-T V.80 video ready interface
Other	TIA/EIA 602 standard AT command set
	Integrated DTE interface with speeds of up to 115.2 Kbps, parallel 16550a UART-compatible interface
	Optional ring wakeup signal
Operating Temperature	32° to 158° F (0° to 70° C)
Operating Humidity	20% to 90%, non-condensing
Power	Requires a 3.3-V auxiliary power rail on PCI bus
	Uses only one PCI load (i.e., one grant/request pair), one shared IRQ, one electrical load
Chipset	Agere Systems SV92PL – Integrated PCI interface with 5-V tolerant buffers and CardBus support
Dimensions (L X H)	Complies with PCI low profile specifications-6.7 x 2.3 in (17.0 x 5.8 cm) and supports high- and low-profile brackets
Connection	Single RJ-11 connector
Other Features	Digital line protection, call progress monitoring via on-board piezo device, support for high profile and low profile brackets, PnP ID support
Safety	UL recognized to UL 1950, 3rd edition (U.S. and Canada); IEC 950 (TUV, NEMKO, DEMKO, SEMKO); CE Mark, EC 950 (TUV, NEMKO, DEMKO, SEMKO, CE mark
EMC	FCC Part 15, IC ES003, EN 55022, 3rd edition, EN 55024, annex A, EN 61000-4-6, EN 61000-4-8
Telecom	FCC Part 68, IC-CS-03 (Canada); Worldwide PTT approvals Not available in Korea or the Republic of South Africa.
Health	Bare PCB material compliant to 94V-0 or better (marked as such)
Other	PC 2001 compliant, PCI version 2.3, WHQL approved; ACPI compliant

Integrated Graphics Media Accelerator 3000	**Graphics Controller**	Integrated GMA 3000
	Bus Type	Integrated
	RAMDAC	Single 400 MHz integrated
	Memory	UMA with DVMT 4.0 support for frame buffer sizes 8-256 MB
	Controller Clock Speed	667 MHz
	Overlay Planes	One 16-bit video overlay plane
	Maximum Color Depth	32 bpp
	Maximum Vertical Refresh Rate	85 Hz
	Multi-display Support	One VGA and one DVI-D, in conjunction with an ADD2 card, clone and extended desktop modes are supported
	Graphics/Video API Support	DirectX 9.0c, WGF 1.0, DirectX VA 2.0, Shader Model 3.0, OpenGL 1.5

Resolutions Supported[1]

Resolution	**Maximum Refresh Rate** (Hz)	
	Analog Monitor	**Digital Monitor**
640 x 480	85	60
800 x 600	85	60
1024 x 768	85	60
1280 x 1024	85	60
1600 x 1200	85	60
1920 x 1080	85	60-R[2]
1920 x 1200	85	60-R[2]
1920 x 1440	85	N/A
2048 x 1536	85	N/A

[1] Modes listed are supported with a single active display. The supported mode list for multiple active displays is a subset of this list. Not all modes will support video playback and some supported modes may use software MC (motion compensation) rather than hardware MC. Not all modes will support 3D acceleration depending on the system configuration (e.g., resolution selected, size of frame buffer, number of installed memory modules, etc.).

[2] -R denotes reduced blanking timings (some digital monitors may not support reduced blanking timings).

NOTE: Other resolutions and refresh rates may be selectable but are not recommended.

DVI ADD2 Graphics[1]	**Models**	DY674A DVI ADD2 adapter for Microtower and Small Form Factor
	Form Factor	Low-profile card
	DVI-D Connector	Compliant with DDWG (Digital Display Working Group) and VESA specifications for a single-link digital DVI (DVI-D) connector.
	Dual Head Support	Yes, when used with the integrated VGA connector
	Display Devices Supported	HP L1530 HP L1740 HP L1755 HP L1940 HP L1955 HP L2035 HP L2335
		NOTE: The DVI ADD2 card offers optimal performance with any display that meets applicable VESA standards.
	Color Depth	32 bpp maximum

Host Interface Connector	Mechanically compliant with PCIe standard Complies with the Intel ADD2 and Intel Serial Digital Video Output (SDVO) specifications
Dot Clock	165 MHz maximum
Display Modes	Supports display modes with pixel clocks up to 165-MHz bandwidth on the link, as shown in the following table.

Resolution		**60-Hz, reduced blanking**	**60-Hz**
640 x 480	VGA	Yes	Yes
800 x 600	SVGA	Yes	Yes
1024 x 768	XGA	Yes	Yes
1280 x 1024	SXGA	Yes	Yes
1600 x 1200	UXGA	Yes	Yes
1920 x 1080	1080P	Yes	No
1920 x 1200	WUXGA	Yes	No

[1]The dc5700 supports Normal (or Non-reversed) layout ADD2 (Advanced Digital Display 2) adapter cards inserted into the SDVO (Serial Digital Video Output) connector on the system board. This connector has the physical appearance of a PCIe x16 connector; however, conventional PCIe cards are not supported in this connector.

NVIDIA Quadro NVS 280 64MB PCI Dual Head

Form Factor	Low profile (both ATX and low profile brackets included)
Graphic Controller	Integrated Quadro 280 2D graphics processor unit (GPU)
Bus type	PCI
RAMDAC	Dual 350 MHz integrated
Memory	64 MB DDR with frame buffer and texture storage
Connector	Single high-density DMS-59 Connector
Dimensions	Low-profile, 2.586 x 6.6 in (6.57 x 16.76 cm)
Controller clock speed	250 MHz
Color depth	32 bpp maximum
Overlay planes	One 16-bit video overlay plane
Maximum vertical refresh rate	85 Hz
Multi-monitor support	Dual analog or digital monitors
Dual DVI Support	Yes (with kit DL139A)
High-definition Video Processor (HDVP)	Full-screen, full-frame video playback of HDTV and DVD content DVD-ready motion compensation for MPEG-2 Independent hardware color controls for video overlay Hardware color-space conversion (YUV 4:2:2 and 4:2:0) IDCT motion compensation
Available graphics drivers	Microsoft Windows 2000 (Service Pack 4 or greater), Windows XP Home, Windows XP Professional (Provides full native Dual View mode, Span or Big Desktop mode, and Clone mode)

NOTE: HP qualified drivers may be preloaded or available from the HP support Web site: http://welcome.hp.com/country/us/eng/software_drivers.html.

Technical Specifications - Graphics

Analog Resolution	Maximum Refresh Rate
640 x 480	85 Hz
800 x 600	85 Hz
1024 x 768	85 Hz
1280 x 1024	85 Hz
1600 x 1200	85 Hz
1920 x 1200	85 Hz
1920 x 1440	75 Hz
2048 x 1536	60 Hz

Digital Resolution	Maximum Refresh Rate
640 x 480	60 Hz
800 x 600	60 Hz
1024 x 768	60 Hz
1280 x 1024	60 Hz
1600 x 1200	60 Hz (primary only)

NVIDIA Quadro NVS 55 64MB PCI DVI with TV-Out	**Form Factor**	Low profile, both ATX and low profile brackets included
	Graphic Controller	Integrated Quadro NVS 55 Graphics Processor Unit (GPU)
	Bus type	PCI 2.1, 32-bit, 5V
	Memory	64 MB DDR
	Connector	Single DVI-I connector Single S-Video connector
	Dimensions	Low profile, 2.586 x 6.6 in (6.57 x 16.76 cm)
	Controller clock speed	250 MHz
	Memory speed	200 MHz
	Color depth	32 bits per pixel max
	Overlay planes	One 16-bit video overlay plane
	Maximum vertical refresh rate	85 Hz
	Maximum pixel clock	Analog output: 350 MHz Digital output: 162 MHz
	Single DVI Support	Yes
	TV-out Support	Yes (S-Video 4 pin mini-Din)
	High-definition Video Processor (HDVP)	Full screen, full frame video playback of HDTV and DVD content DVD-ready motion compensation for MPEG-2 Independent hardware color controls for video overlay Hardware colorspace conversion (YUV 4:2:2 and 4:2:0) IDCT motion compensation Up to 5-tap horizontal by 3-tap vertical filtering
	Agency Approvals	ACA C-tick, BSMI, CE Mark, FCC, ICES/C.I.S.P.R, MIC, UL, VCCI
	Available graphics drivers	Microsoft Windows 2000 (Service Pack 4 or greater), Windows XP Home, Windows XP Professional HP qualified drivers may be preloaded or available from the HP support Web site: http://www.hp.com/country/us/en/support.html?pageDisplay=drivers

7200 rpm Serial ATA Hard Drives	**250-GB**	**Capacity**	250,059,350,016 bytes	
		Height	1 in (2.54 cm)	
		Width	Media diameter: 3.5 in (8.89 cm) Physical size: 4 in (10.2 cm)	
		Interface	Serial ATA (3.0 Gb/s)	
		Synchronous Transfer Rate (Maximum)	Up to 3 Gb/s	
		Buffer	8 MB	
		Seek Time (typical reads, includes controller overhead, including settling)	**Single Track**	1.0 ms
			Average	8.5 ms
			Full-Stroke	18 ms
		Rotational Speed	7,200 rpm	
		Logical Blocks	488,397,168	
		Operating Temperature	41° to 131° F (5° to 55° C)	
	160-GB	**Capacity**	163,928,604,672 bytes	
		Height	1 in (2.54 cm)	
		Width	Media diameter: 3.5 in (8.89 cm) Physical size: 4 in (10.2 cm)	
		Interface	Serial ATA (3.0 Gb/s)	
		Synchronous Transfer Rate (Maximum)	Up to 3 Gb/s	
		Buffer	8 MB	
		Seek Time (typical reads, includes controller overhead, including settling)	**Single Track**	0.9 ms
			Average	9.3 ms
			Full-Stroke	18 ms
		Rotational Speed	7,200 rpm	
		Logical Blocks	320,173,056	
		Operating Temperature	41° to 131° F (5° to 55° C)	

Technical Specifications - Hard Drives

80-GB	**Capacity**	80,026,361,856 bytes	
	Height	1 in (2.54 cm)	
	Width	Media diameter: 3.5 in (8.89 cm) Physical size: 4 in (10.2 cm)	
	Interface	Serial ATA (3.0 Gb/s)	
	Synchronous Transfer Rate (Maximum)	Up to 3 Gb/s	
	Buffer	8 MB	
	Seek Time (typical reads, includes controller overhead, including settling)	**Single Track**	2.0 ms
		Average	9.3 ms
		Full-Stroke	21 ms
	Rotational Speed	7,200 rpm	
	Logical Blocks	156,301,488	
	Operating Temperature	41° to 131° F (5° to 55° C)	

USB Standard Keyboard	**Physical characteristics**	**Keys**	104, 105, 106, 107, 109 layout (depending upon country)
		Dimensions (L x W x H)	18.0 x 6.4 x 0.98 in (45.8 x 16.3 x 2.5 cm)
		Weight	2 lb (0.9 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	**Languages**	38 available
		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
		Acoustics	43-dBA maximum sound pressure level
	Environmental	**Operating temperature**	50° to 122° F (10° to 50° C)
		Non-operating temperature	-22° to 140° F (-30° to 60° C)
		Operating humidity	10% to 90% (non-condensing at ambient)
		Non-operating humidity	20% to 80% (non-condensing at ambient)
		Operating shock	40 g, six surfaces
		Non-operating shock	80 g, six surfaces
		Operating vibration	2-g peak acceleration
		Non-operating vibration	4-g peak acceleration
		Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
		Drop (in box)	42 in (107 cm) on concrete, 16-drop sequence
	Approvals	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC	
	Ergonomic compliance	ANSI HFS 100, ISO 9241-4, and TUVGS	
	Kit contents	Keyboard, installation guide, warranty card, safety and comfort guide	

Technical Specifications - Input/Output Devices

PS/2 Standard Keyboard	**Physical characteristics**	**Keys**	104, 105, 106, 107, 109 layout (depending upon country)
		Dimensions (L x W x H)	18.0 x 6.4 x 0.98 in (45.8 x 16.3 x 2.5 cm)
		Weight	2 lb (0.9 kg) minimum
	Electrical	**Operating voltage**	+ 5VDC ± 5%
		Power consumption	50-mA maximum (with three LEDs ON)
		System interface	PS/2 6-pin mini din connector
		ESD	CE level 4, 15-kV air discharge
		EMI – RFI	Conforms to FCC rules for a Class B computing device
		Microsoft PC 99 – 2001	Functionally compliant
	Mechanical	**Languages**	38 available
		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
		Acoustics	43-dBA maximum sound pressure level
	Environmental	**Operating temperature**	50° to 122° F (10° to 50° C)
		Non-operating temperature	-22° to 140° F (-30° to 60° C)
		Operating humidity	10% to 90% (non-condensing at ambient)
		Non-operating humidity	20% to 80% (non-condensing at ambient)
		Operating shock	40 g, six surfaces
		Non-operating shock	80 g, six surfaces
		Operating vibration	2-g peak acceleration
		Non-operating vibration	4-g peak acceleration
		Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
		Drop (in box)	42 in (107 cm) on concrete, 16-drop sequence
	Approvals	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC	
	Ergonomic compliance	ANSI HFS 100, ISO 9241-4, and TUVGS	
	Kit contents	Keyboard, keyboard software media, installation guide, warranty card, safety and comfort guide	

HP USB Smartcard Keyboard	**Physical characteristics**	**Keys**	104, 105, 106, 107, 109 layout (depending upon country)
		Form factor	USB basic Smart Card keyboard
		Colors	Carbonite/Silver
		Dimensions (H x W x D)	18.2 x 6.3 x 1.3 in (46.3 x 16.1 x 3.3 cm)

	Weight	2 lb (0.9 kg) minimum
Electrical	**Operating voltage**	+ 5VDC ± 5%
	Power consumption	100-mA maximum (with four LEDs ON)
	System interface	USB Type A plug connector
	ESD	CE level 4, 15-kV air discharge
	EMI – RFI	Conforms to FCC rules for a Class B computing device
	Microsoft PC 99 – 2001	Functionally compliant
Mechanical	**Languages**	30+ available
	Keycaps	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 membrane
	Key-leveling mechanisms	For all double-wide and greater-length keys
	Cable length	6 ft (1.8 m)
	Microsoft PC 99 - 2001	Mechanically compliant
	Acoustics	43-dBA maximum sound pressure level
Environmental	**Operating temperature**	50° to 122° F (10° to 50° C)
	Non-operating temperature	-22° to 140° F (-30° to 60° C)
	Operating humidity	10% to 90% (non-condensing at ambient)
	Non-operating humidity	20% to 80% (non-condensing at ambient)
	Operating shock	40 g, six surfaces
	Non-operating shock	80 g, six surfaces
	Operating vibration	2-g peak acceleration
	Non-operating vibration	4-g peak acceleration
	Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
	Drop (in box)	42 in (107 cm) on concrete, 16-drop sequence

Technical Specifications - Input/Output Devices

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	250-mA maximum draw (50 mA for the keyboard with three LEDs ON and 200-mA maximum startup current using a high-current, 60-mA smart card)		
	Communication	**From card**	Programmable from 9,600 baud to 115,200 baud	
		From computer	Up to 38,400 baud	
	Landing mechanism	**Contact device**	Friction contact	
		Card insertions rating	Up to 100,000 insertion cycles	
	Interface modes	USB communications through USB port SCM protocol Automatic card insertion/removal detection		
	Reader performance interface	USB connection		
	Electro-magnetic standards	**Europe**	89/336/CEE guideline	
		USA	USAFCC part 15	

HP PS/2 Scroll Mouse	**Dimensions**	1.5 x 2.5 x 4.6 in (3.8 x 6.3 x 11.6 cm)	
	Weight	4.44 oz (126 g)	
	Environmental	**Operating temperature**	50° to 122° F (10° to 50° C)
		Non-operating temperature	22° to 140° F (-30° to 60° C)
		Operating humidity	10% to 90% (non condensing at ambient)
		Non-operating humidity	20% to 80% (non condensing at ambient)
		Operating shock	40 g, 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)	26 in (66 cm) on carpet, 6-drop sequence
		Drop (out of box)	1 m on asphalt tile over concrete, 6-drop sequence

Technical Specifications - Input/Output Devices

	Electrical	**Operating voltage**	5 VDC ± 10%
		Power consumption	15 mA
		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	65 g nominal peak force
		Switch life	1,000,000 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	0.99 in (25.2 mm)
		Maximum rotation speed	30 mm/s
		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
HP USB Scroll Mouse	**Environmental**	**Operating temperature**	50° to 122° F (10° to 50° C)
		Non-operating temperature	-22° to 140° F (-30° to 60° C)
		Operating humidity	10% to 90% (non condensing at ambient)
		Non-operating humidity	20% to 80% (non condensing at ambient)
		Operating shock	40 g, 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)	26 in (66 cm) on carpet, 6-drop sequence 1 m on asphalt tile over concrete, 6-drop sequence

Technical Specifications - Input/Output Devices

	Electrical	**Operating voltage**	5 VDC ± 10%
		Power consumption	15 mA
		System consumption	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 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	65 g nominal peak force
		Switch life	1,000,000 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
		Maximum rotation speed	30 mm/s
		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

HP USB Optical Scroll Mouse	**Dimensions** (H x L x W)	1.5 x 4.5 x 2.5 in (3.8 x 11.6 x 6.3 cm)
	Weight	0.27 lb (0.12 kg)
	Cable length	72.8 in (185 cm)

Technical Specifications - Optical Storage

SATA DVD+/-RW (DL/DF) SuperMulti LightScribe Drive	**Height**	5.25-inch, half-height, tray-load	
	Orientation	Either horizontal or vertical	
	Interface type	SATA/ATAPI	
	Disc capacity	8.5 GB DL or 4.7 GB standard	
	Dimensions (W x H x D)	5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)	
	Weight (max)	2.6 lb (1.2 kg)	
	Write speeds	**DVD-RAM**	Up to 12X
		DVD+R	Up to 16X
		DVD+RW	Up to 8X
		DVD+R DL	Up to 8X
		DVD-R DL	Up to 8X
		DVD-R	Up to 16X
		DVD-RW	Up to 6X
		CD-R	Up to 48X
		CD-RW	Up to 32X
	Read speeds	**DVD-RAM**	Up to 12X
		DVD+RW, DVD-RW, DVD+R DL, DVD-R DL	Up to 8X
		DVD-ROM DL	Up to 8X
		DVD-ROM, DVD+R, DVD-R	Up to 16X
		CD-ROM, CD-R	Up to 48X
		CD-RW	Up to 32X
	Access time (typical reads, including settling)	**Random**	DVD: < 140 ms (typical), CD: < 125 ms (typical)
		Full Stroke	DVD: < 250 ms (seek), CD: < 210 ms (seek)
	Power	**Source**	SATA DC power receptacle
		DC Power Requirement	5 VDC ± 5%-100 mV ripple p-p
			12 VDC ± 5%-200 mV ripple p-p
		DC Current	5 VDC (< 1000 mA typical, 1600 mA maximum)
			12 VDC (< 600 mA typical, 1400 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	86° F (30° C)

Technical Specifications - Optical Storage

SATA DVD+/-RW (DL/DF) LightScribe Drive	**Height**	5.25-inch, half-height, tray-load	
	Orientation	Either horizontal or vertical	
	Interface type	SATA/ATAPI	
	Disc capacity	8.5 GB DL or 4.7 GB standard	
	Dimensions (W x H x D)	5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)	
	Weight (max)	2.6 lb (1.2 kg)	
	Write speeds	**DVD+R**	Up to 16X
		DVD+RW	Up to 8X
		DVD+R DL	Up to 8X
		DVD-R DL	Up to 4X
		DVD-R	Up to 16X
		DVD-RW	Up to 6X
		CD-R	Up to 48X
		CD-RW	Up to 32X
	Read speeds	**DVD-RAM**	Up to 4X
		DVD+RW, DVD-RW, DVD+R DL, DVD-R DL	Up to 8X
		DVD-ROM, DVD+R, DVD-R	Up to 16X
		CD-ROM, CD-R	Up to 48X
		CD-RW	Up to 32X
	Access time (typical reads, including settling)	**Random**	DVD: < 130 ms (typical), CD: < 120 ms (typical)
		Full Stroke	DVD: < 240 ms (seek), CD: < 200 ms (seek)
	Power	**Source**	SATA DC power receptacle
		DC Power Requirement	5 VDC ± 5%-100 mV ripple p-p
			12 VDC ± 5%-200 mV ripple p-p
		DC Current	5 VDC (< 1000 mA typical, 1600 mA maximum)
			12 VDC (< 600 mA typical, 1400 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	86° F (30° C)

Technical Specifications - Optical Storage

SATA CD-RW/DVD-ROM Combo Drive	**Height**	5.25-inch, half-height, tray-load	
	Orientation	Either horizontal or vertical	
	Interface type	SATA/ATAPI	
	Disc capacity	Single layer: Up to 4.7 GB (6 times capacity of CD-ROM) Double layer: Up to 8.5 GB (12 times capacity of CD-ROM)	
	Dimensions (W x H x D)	5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)	
	Weight (max)	2.6 lb (1.2 kg)	
	Write speeds	**CD-R**	Up to 48X
		CD-RW	Up to 32X
	Read speeds	**DVD+R/-R/+RW/ -RW/+R DL /-R DL**	Up to 8X
		DVD-ROM	Up to 16X
		CD-ROM, CD-R	Up to 48X
		CD-RW	Up to 32X
	Access time (typical reads, including settling)	**Random**	DVD: < 140 ms (typical), CD: < 125 ms (typical)
		Full Stroke	DVD: < 250 ms (typical), CD: < 210 ms (typical)
	Power	**Source**	SATA DC power receptacle
		DC Power Requirement	5 VDC ± 5%-100 mV ripple p-p
			12 VDC ± 5%-200 mV ripple p-p
		DC Current	5 VDC (< 1000 mA typical, < 1600 mA maximum)
			12 VDC (< 600 mA typical, < 1400 mA maximum)
	Environmental (all conditions non-condensing)	**Temperature**	41° to 122° F (5° to 50° C)
		Relative Humidity	10% to 90%
		Maximum Wet Bulb Temperature	86° F (30° C)

SATA DVD-ROM Drive	**Height**	5.25-inch, half-height, tray-load	
	Orientation	Either horizontal or vertical	
	Interface type	SATA/ATAPI	
	Disc capacity	Single layer: Up to 4.7 GB (6 times capacity of CD-ROM) Double layer: Up to 8.5 GB (12 times capacity of CD-ROM)	
	Dimensions (W x H x D)	5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)	
	Weight (max)	2.6 lb (1.2 kg)	
	Read speeds	**DVD+R/-R/+RW/ -RW/+R DL /-R DL**	Up to 8X
		DVD-ROM	Up to 16X
		DVD-RAM	Up to 4X
		CD-ROM, CD-R	Up to 48X
		CD-RW	Up to 32X

Removable Storage – Media Compatibility – DVD-ROM	**Media**	**Read**	**Write**
	CD-ROM	Yes	No
	CD-R	Yes	No
	CD-RW	Yes	No
	DVD-ROM	Yes	No
	DVD-ROM DL	Yes	No
	DVD-RAM	Yes	No
	DVD+R	Yes	No
	DVD+R DL	Yes	No
	DVD+RW	Yes	No
	DVD-R	Yes	No
	DVD-RW	Yes	No
	DVD-R DL	Yes	No
Access times (typical reads, including setting)	**Random**	DVD: < 140 ms (typical), CD: < 125 ms (typical)	
	Full Stroke	DVD: < 250 ms (seek), CD: < 210 ms (seek)	
	Cache Buffer	2 MB (minimum)	
	Data Transfer Modes	ATA PIO mode 4 (16.7 MB/s); ATA Multi-word DMA mode 2 (16.7 MB/s); ATA UltraDMA Mode 3 (44.4 MB/s -default)	
Power	**Source**	SATA DC power receptacle	
	DC Power Requirement	5 VDC ± 5%-100 mV ripple p-p 12 VDC ± 5%-200 mV ripple p-p	
	DC Current	5 VDC – <1000 mA typical, < 1600 mA maximum 12 VDC –< 600 mA typical, < 1400 mA maximum	
Environmental (all conditions non-condensing)	**Temperature**	41° to 122° F (5° to 50° C)	
	Relative Humidity	10% to 90%	
	Maximum Wet Bulb Temperature	86° F (30° C)	

HP 16-in-1 Media Card Reader	**USB Interface**	USB 2.0 High-speed device	
	Advance protocol support	Supports hardware ECC (Error Correction Code) function • Supports hardware CRC (Cyclic Redundancy Check) function • Supports MS 4-bit parallel transfer mode • Supports MS-PRO 4-bit parallel transfer mode • Supports SD 4-bit parallel transfer mode • Supports high-speed 50-MHz SD 4-bit card (version 1.1) • Support high-speed 52-MHz MMC 8-bit card	
	Supported media type with card adapter	• MicroSD (T-Flash) • Memory Stick Micro	
	Mechanical		
	Environmental	**Operational Environmental Extremes**	Test Parameters/Conditions – Power applied, unit operating on system ±5% nominal supply voltage. 10°C 10% R.H. = 24 hours 10°C 90% R.H. = 24 hours 20°C 90% R.H. = 24 hours 30°C 90% R.H. = 24 hours 40°C 90% R.H. = 24 hours 50°C 90% R.H. = 24 hours 50°C 10% R.H. = 24 hours
		Storage Environmental Extremes	Test Parameters/Conditions 60°C @ 80% R.H. for 96 hours -30°C @ 20% R.H. for 48 hours No power applied Delta °C < 1.0°C/min Delta % R.H. < 1.5% R.H./min
	Approvals	USB-IF, WHQL, Compliant with USB Mass Storage Class Bulk only Transport Specification Rev. 1.0, Compliant Intel Front Panel I/O Connectivity Design Guide V. 1.2 FCC, CE, BSMI, C-Tick, VCCI, MIC, cUL, TUV-T	

Eco-Label Certifications and 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:

- US Energy Star
- US Federal Energy Management Program (FEMP)
- Taiwan Green Mark
- China Energy Conservation Program
- IT ECO declaration
- EPEAT Rated – SILVER
- Korea Eco-label
- Japan PC Green label*

*__NOTE:__ This product conforms to the examination standards (2003 version) under JEITA's 'PC Green Label System.'

Small Form Factor

System Configuration The configuration used for the Energy Consumption and Declared Noise Emissions data for the Small Form Factor Desktop model is based on a typically configured product

Energy Consumption

	115 VAC	230 VAC	100 VAC
Normal Operation	86.3 W	83.6 W	85.6 W
Sleep (Energy Star low power mode)	1.91 W	1.80 W	1.81 W
Off	1.87 W	1.80 W	1.84 W
Heat Dissipation*	**115 VAC**	**230 VAC**	**100 VAC**
Normal Operation	294.5 BTU/hr	285.2 BTU/hr	292.1 BTU/hr
Sleep	6.5 BTU/hr	6.4 BTU/hr	6.2 BTU/hr
Off	6.4 BTU/hr	6.1 BTU/hr	6.3 BTU/hr

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

This product is in compliance with US executive order 13221, WOL (wake on LAN) disabled.

Declared Noise Emissions
(in accordance with ISO 7779 and ISO 9296)

System Fan Off	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Idle	3.9	29
Fixed Disk (random writes)	4.0	30
Optical Drive (sequential reads)	5.1	42

Technical Specifications - Environmental Data

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:

- Intel LGA775 processor socket
- 8 USB ports
- 2 empty low profile PCI slots
- 1 empty low profile PCIe x1 slot
- 1 3.5-inch internal drive bay
- 1 3.5-inch external drive bay
- 1 5.25-inch external drive bay
- 4 memory slots
- 1 second Serial port (optional)
- 1 empty SDVO/ADD2 slot

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

Batteries

This product complies with ISO standards:

- EU Directive 91/ 157/ EEC
- EU Directive 93/ 86/ EEC
- EU Directive 98/ 101/ EEC

Batteries used in the product do not contain:

- Mercury greater the 5ppm by weight
- Cadmium greater than 10ppm by weight
- Lead greater than 4000ppm by weight.

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

Additional Information

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive – 2002/95/EC.
- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
- 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 the IEEE 1680 (EPEAT) standard at the Silver level (see http://www.epeat.net)
- Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.
- This product contains 0% recycled materials (by wt.)
- This product is 92% recyclable when properly disposed of at end of life.

Packaging Materials

Corrugated Paper	1400 g
EPE Foam	240 g
LDPE Bag	10 g

- The EPE foam packaging material is made from 30 to 60% recycled content.
- The corrugated paper packaging materials contains at least 80% recycled content.

Microtower

Technical Specifications - Environmental Data

System Configuration The configuration used for the Energy Consumption and Declared Noise Emissions data for the Microtower Desktop model is based on a typically configured product

Energy Consumption

	115 VAC	230 VAC	100 VAC
Normal Operation	76.4 W	72.5 W	75.2 W
Sleep (Energy Star low power mode)	2.70 W	2.90 W	2.60 W
Off	2.50 W	2.30 W	2.20 W
Heat Dissipation*	**115 VAC**	**230 VAC**	**100 VAC**
Normal Operation	260.7 BTU/hr	247.4 BTU/hr	256.6 BTU/hr
Sleep	9.4 BTU/hr	9.9 BTU/hr	8.9 BTU/hr
Off	8.5 BTU/hr	7.8 BTU/hr	7.5 BTU/hr

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

This product is in compliance with US executive order 13221, WOL (wake on LAN) disabled.

Declared Noise Emissions
(in accordance with ISO 7779 and ISO 9296)

System Fan Off	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Idle	3.9	29
Fixed Disk (random writes)	4.0	30
Optical Drive (sequential reads)	5.1	42

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:

- Intel LGA775 processor socket
- 8 USB ports
- 2 empty full-height PCI slots
- 1 empty full-height PCIe x1 slot
- 2 internal 3.5-inch drive bays
- 1 external 3.5-inch drive bay
- 2 internal 5.25-inch drive bays
- 4 memory slots
- 1 second Serial port (optional)
- 1 empty SDVO/ADD2 slot

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

Technical Specifications - Environmental Data

Batteries

This product complies with ISO standards:

- EU Directive 91/ 157/ EEC
- EU Directive 93/ 86/ EEC
- EU Directive 98/ 101/ EEC

Batteries used in the product do not contain:

- Mercury greater the 5ppm by weight
- Cadmium greater than 10ppm by weight
- Lead greater than 4000ppm by weight.

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

Additional Information

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive – 2002/95/EC.
- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
- 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 the IEEE 1680 (EPEAT) standard at the Silver level (see http://www.epeat.net)
- Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.
- This product contains 0% recycled materials (by wt.)
- This product is 92% recyclable when properly disposed of at end of life.

Packaging Materials

Corrugated Paper	1460 g
EPE Foam	240 g
LDPE Bag	10 g

- The EPE foam packaging material is made from 30 to 60% recycled content.
- The corrugated paper packaging materials contains at least 80% recycled content.

Microtower and Small Form Factor

RoHS Compliance

Hewlett-Packard is committed to compliance with all applicable environmental laws and regulations, including the European Union Restriction of Hazardous Substances (RoHS) Directive. HP's goal is to exceed compliance obligations by meeting the requirements of the RoHS Directive on a worldwide basis. From July 1, 2006, RoHS substances will be virtually eliminated (virtually = to levels below legal limits) for all HP electronic products subject to the RoHS Directive, except where it is widely recognized that there is no technically feasible alternative (as indicated by an exemption under the EU RoHS Directive).

Technical Specifications - Environmental Data

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/supplychain/gen_specifications.html):

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

Packaging

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/recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/recyclers. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

Technical Specifications - Environmental Data

Hewlett-Packard Corporate Environmental Information	For more information about HP's commitment to the environment: [link to new HP white paper now in progress] Global Citizenship Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html Eco-label certifications http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html ISO 14001 certificates: http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html