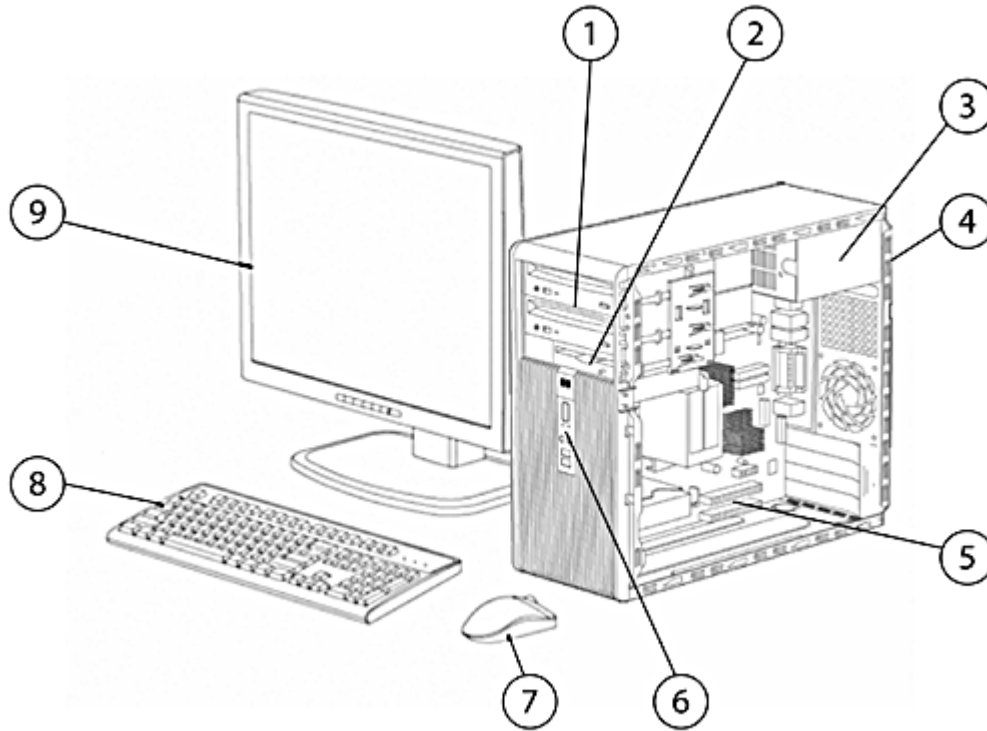


Overview

HP recommends
Windows Vista® Business

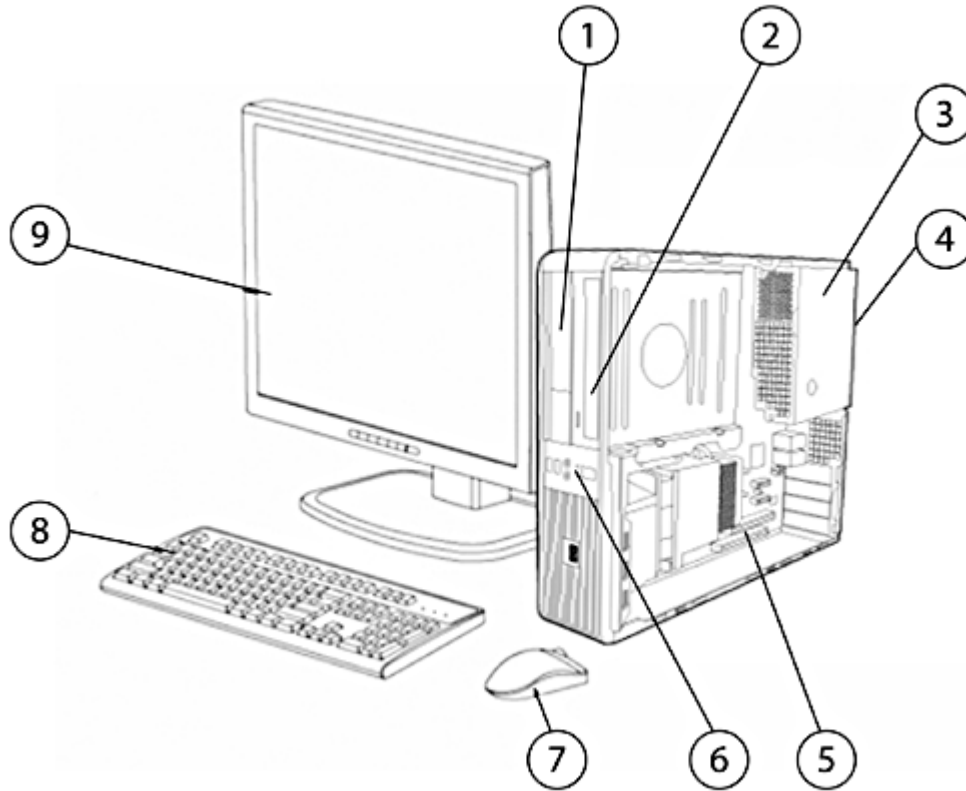
Microtower



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
Optional: 85% efficient energy saving power supply
4. Rear I/O: (6) USB 2.0, (1) standard serial port, (1) optional serial port, (1) optional parallel port, (2) PS/2, (1) RJ-45, (1) VGA, (1) DVI-D, (1) audio in, (1) audio out
5. (1) full-height PCI slot, (2) full-height PCIe x1 slots, (1) full-height PCIe x16 slot
6. Front I/O: (2) USB 2.0, headphone and microphone, Dual Colour Diagnostic LEDs
7. 2-Button Scroll Mouse (PS/2), Optical Scroll Mouse (PS/2 or USB), or USB Laser Mouse
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
Optional: 85% efficient energy saving power supply
4. Rear I/O: (6) USB 2.0, (1) standard serial port, (1) optional serial port, (1) optional parallel port, (2) PS/2, (1) RJ-45, (1) VGA, (1) DVI-D, (1) audio in, (1) audio out
5. (1) low profile PCI slot, (2) low profile PCIe x1 slots,
(1) low profile PCIe x16 slot
6. Front I/O: (2) USB 2.0, headphone and microphone, Dual Colour Diagnostic LEDs
7. 2-Button Scroll Mouse (PS/2), Optical Scroll Mouse (PS/2 or USB), or USB Laser Mouse
8. HP Standard Keyboard (PS/2 or USB) or HP USB Smartcard Keyboard
9. Monitor (sold separately)

Overview

At A Glance

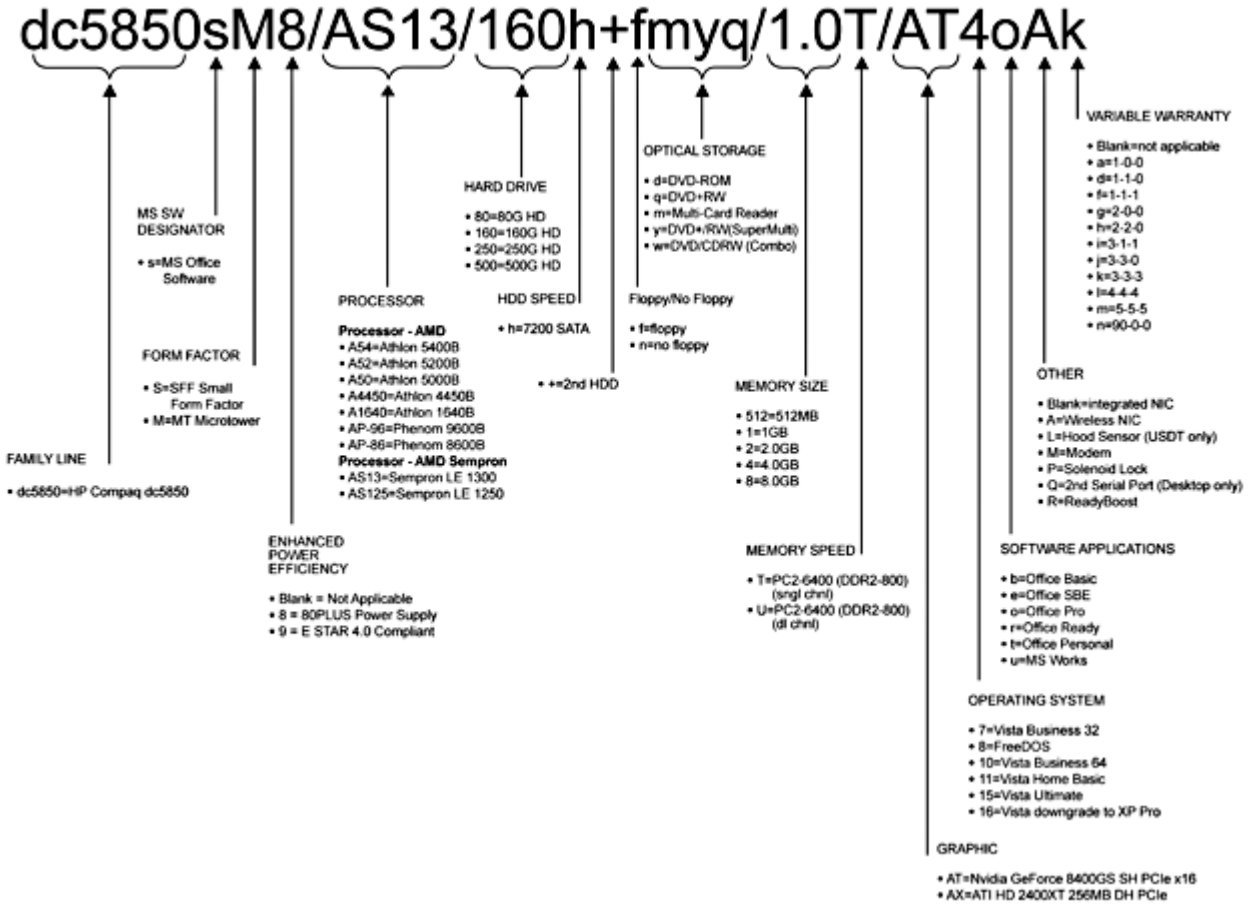
- The HP Compaq dc5850 offers a stable solution with mainstream features and flexibility that exceed basic business requirements
- AMD 780V chipset with integrated ATI Radeon 3100 graphics
- AMD Phenom™ Quad and Triple Core processors, AMD Athlon™ 64 X2 Dual Core processors, AMD Athlon 64 processors, and AMD Sempron™ processors
- Embedded TPM1.2 compliant security module* (Vista Bit-Locker ready)
- Support for up to 500-GB SATA 3.0Gb/s Smart IV hard drives
- RAID 0/1 support
- Value-added software on select models
 - HP Total Care Advisor
 - HP Backup and Recovery Manager
 - HP Software Agent
 - Altiris Deployment Solution Agent
 - HP Insight Diagnostics software
 - Microsoft Office 2007
 - Verdiem Surveyor remote power management agent
 - Computrace for Desktops (select countries)
 - HP Power Manager
- Value-added software available for free download from the Web (<http://www.hp.com/go/easydeploy>)
- HP Client Automation – Starter Edition
- HP Client Manager for Altiris
- Altiris Out-of-Band Management Solution
- HP SoftPaq Download Manager
- HP System Software Manager
- HP Client Catalog for Microsoft SMS
- Verdiem Surveyor remote power management agent
- 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 labour, and 3-years on-site warranty services (terms and conditions vary by country; certain restrictions and exclusions apply)
- 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>)

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

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 Vista Home Basic 32*
Genuine Windows Vista Ultimate 32*
Genuine Windows Vista Business 32 downgrade to
Genuine Windows XP Professional 32
FreeDOS

Certified

Red Hat Enterprise Linux
SUSE Linux Enterprise Desktop 10

* 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>.

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

Altiris Deployment Solution Agent
HP Software Agent
Altiris Out-of-Band Management Solution
HP Insight Diagnostics (available via HP Backup and Recovery Manager)
Computer Setup Utility
HP Backup and Recovery Manager
HP Power Manager
Sonic/Roxio DigitalMedia Plus 7.2 (select models)
or
Easy Media Creator 9 (select models)

HP Total Care Advisor
Microsoft Office 2007 Basic
Microsoft Office 2007 Personal
Microsoft Office 2007 Professional
Microsoft Office 2007 Small Business
Microsoft Works 8.5
Microsoft Internet Explorer with AOL Toolbar
CompuTrace for Desktops (select countries)
Verdiem Surveyor agent
InterVideo WinDVD 5.0 (select models)
Firefox-HP Virtual Browser

Value-added Software (available for free download from the Web <http://www.hp.com/go/easydeploy>)

HP Client Automation – Starter Edition
HP Client Manager for Altiris
HP SoftPaq Download Manager

HP Client Catalog for Microsoft SMS
HP Systems Software Manager
Verdiem Surveyor agent

Value-added Services and Features

HP Stable Platform Program
Business-to-Business Portals
HP Global Series Services

Factory Express Deployment and Lifecycle Services
TPM 1.2 Security chip*

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

Standard Features and Configurable Components

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. For HP Care Pack services see <http://www.hp.com/go/lookuptool>.

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.

	Microtower	Small Form Factor
Chassis Dimensions (H x W x D)	14.85 x 6.95 x 16.85 in (37.72 x 17.65 x 42.80 cm)	3.95 x 13.3 x 14.9 in (10.03 x 33.78 x 37.85 cm)
Optional Tower Stand Dimensions (H x W x D)	N/A	1.05 x 6.95 x 7.83 in (26.75 x 176.46 x 198.87 mm)
System weight*	20.42 lb (9.28 kg)	16.76 lb (7.62 kg)
System volume	1739 cu in	782.77 cu in
Shipping weight*	29.44 lb (13.38 kg)	25.08 lb (11.40 kg)
Maximum supported weight (desktop orientation)	77.1 lb (35 kg)	77.1 lb (35 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 - active PFC
Energy Efficient Power Supply	300W 85% efficient power supply – active PFC	240W 85% efficient power supply – active PFC

Ports

USB 2.0	8 (2 front, 6 rear)
Serial	1 standard with 2nd optional
Parallel	1 optional
PS/2	1 keyboard, 1 mouse
Video	VGA and DVID for integrated graphics
Support for Multi-Monitor	standard
Audio	Integrated High Definition audio with internal speaker Front – mic and headphone Rear – input (supports microphone or line input), line out
NIC (RJ-45)	Integrated Broadcom Gigabit Ethernet

Standard Features and Configurable Components

		MT	SFF
Chipset	AMD 780V chipset	X	X
Processor	AMD Sempron Dual-Core Processors with HyperTransport™ Technology:		
One of the following	AMD Sempron X2 2200 Processor (2.0-GHz, 512K L2 cache, HT bus 2.0)	X	X
	AMD Sempron Processors with HyperTransport Technology:		
	AMD Sempron LE-1300 Processor (2.3-GHz, 512K L2 cache, HT bus 1.0)	X	X
	AMD Sempron LE-1250 Processor (2.2-GHz, 512K L2 cache, HT bus 1.0)	X	X
	AMD Athlon Single-Core Processors with HyperTransport Technology:		
	AMD Athlon LE-1640B Processor (2.7-GHz, 512K L2 cache, HT bus 2.0)	X	X
	AMD Athlon Dual-Core Processors with HyperTransport Technology:		
	AMD Athlon X2 7750 Processor (2.7-GHz, 1MB L2 cache, 2 MB Shared L3 cache, HT bus 3.0)	X	X
	AMD Athlon X2 6000+ Processor (3.1-GHz, 1MB L2 cache, HT bus 3.0)	X	X
	AMD Athlon X2 5800+ Processor (3.0-GHz, 1MB L2 cache, HT bus 2.0)	X	X
	AMD Athlon X2 5600B Processor (2.9-GHz, 1MB L2 cache, HT bus 2.0)	X	X
	AMD Athlon X2 5400B Processor (2.8-GHz, 1MB L2 cache, HT bus 2.0)	X	X
	AMD Athlon X2 5200B Processor (2.7-GHz, 1MB L2 cache, HT bus 2.0)	X	X
	AMD Athlon X2 5000B Processor (2.6-GHz, 1MB L2 cache, HT bus 2.0)	X	X
	AMD Athlon X2 4850B Processor (2.5-GHz, 1MB L2 cache, HT bus 2.0)	X	X
	AMD Athlon X2 4450B Processor (2.3-GHz, 1MB L2 cache, HT bus 2.0)	X	X
	AMD Phenom Triple-Core Processors with HyperTransport Technology:		
	AMD Phenom II X3 710 Processor, (2.6-GHz, 1.5 MB Dedicated L2 cache, 6 MB Shared L3 cache, HT bus 3.0)	X	
	AMD Phenom X3 8600B Processor (2.3-GHz, 1.5 MB Dedicated L2 cache, 2 MB Shared L3 cache, HT bus 3.0)	X	X
	AMD Phenom X3 8750B Processor (2.4-GHz, 1.5 MB Dedicated L2 cache, 2 MB Shared L3 cache, HT bus 3.0)	X	X
	AMD Phenom Quad-Core Processors with HyperTransport Technology:		
	AMD Phenom II X4 805 Processor, (2.5-GHz, 2 MB Dedicated L2 cache, 4 MB Shared L3 cache, HT bus 3.0)	X	
	AMD Phenom X4 9600B Processor (2.3-GHz, 2 MB Dedicated L2 cache, 2 MB Shared L3 cache, HT bus 3.0)	X	X
	AMD Phenom X4 9750B Processor (2.4-GHz, 2 MB Dedicated L2 cache, 2 MB Shared L3 cache, HT bus 3.0)	X	X
	AMD Phenom X4 9850B processor (2.5 GHz, 2 MB Dedicated L2 cache, 2 MB Shared L3 cache, HT bus 3.0)	X	X

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 AMD 780V chipset supports non-ECC DDR2 PC2-6400 (800-MHz) memory.

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.

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 16-GB of DDR2 SYNCH DRAM. Slot 4 is black and must always be populated. Next populate slots 3, 2, and 1 in that order. Not all memory configurations possible are represented below.

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

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

Standard Features and Configurable Components

		MT	SFF
Memory Configurations One of the following	512-MB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (1 x 512)	X	X
	1-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (1 x 1GB)	X	X
	1-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (2 x 512)	X	X
	2-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (1 x 2GB)	X	X
	2-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (2 x 1GB)	X	X
	2-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (4 x 512)	X	X
	3-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (3 x 1GB)	X	X
	4-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (4 x 1GB)	X	X
	4-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (2 x 2GB)	X	X
	8-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (4 x 2GB)	X	X
16-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (4 x 4GB)	X	X	

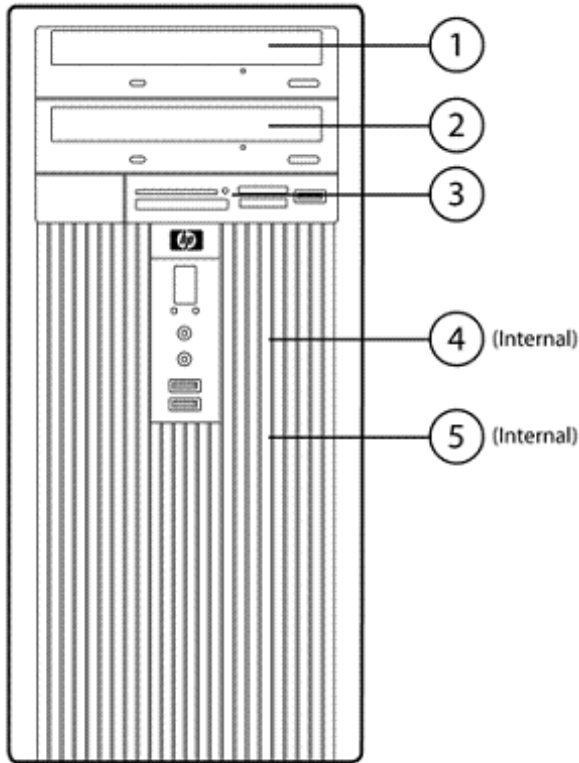
Expandability	Microtower	Small Form Factor
PCI slots	1 full-height	1 low-profile
Max power per slot	35W	35W
PCIe x1 slot	2	2
Max power per slot	10W	10W
PCIe x16 slot	1 full-height	1 low-profile
Max power per slot	60W	25W
External Bays		
3.5"	1	1
5.25"	2	1
IDE		
Internal 3.5" HDD Bays	2	1
Hard Drive Controller (SATA) Supported	SATA	SATA
Hard Drive Interfaces Supported	SATA 3.0Gb/s	SATA 3.0Gb/s

QuickSpecs

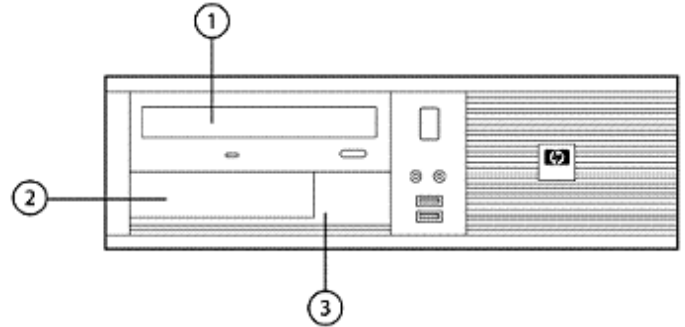
HP Compaq dc5850 Business PC

Standard Features and Configurable Components

Microtower



Small Form Factor



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

Standard Features and Configurable Components

		MT	SFF
Hard Drive One or two of the following	80-GB SATA 3.0-Gb/s Hard Drive (8MB Cache, 7200 RPM, NCQ, Smart IV)	X	X
	160-GB SATA 3.0-Gb/s Hard Drive (8MB Cache, 7200 RPM, NCQ, Smart IV)	X	X
	250-GB SATA 3.0-Gb/s Hard Drive (8MB Cache, 7200 RPM, NCQ, Smart IV)	X	X
	500-GB SATA 3.0-Gb/s Hard Drive (16MB Cache, 7200 RPM, NCQ, Smart IV)	X	X
	80-GB SATA 3.0-Gb/s Hard Drive (16MB Cache, 10,000 RPM, NCQ, Smart III)	X	X
	160-GB SATA 3.0-Gb/s Hard Drive (16MB Cache, 10,000 RPM, NCQ, Smart III)	X	X
	320-GB SATA 3.0-Gb/s Hard Drive (8MB Cache, 7200 RPM, NCQ, Smart IV)	X	X
	3.5" Removable 80-GB SATA 3.0 Gb/s Hard Drive (8MB Cache, 7200 RPM, NCQ, Smart IV)	X	X
	3.5" Removable 160-GB SATA 3.0 Gb/s Hard Drive (8MB Cache, 7200 RPM, NCQ, Smart IV)	X	X
	3.5" Removable 250-GB SATA 3.0 Gb/s Hard Drive (8MB Cache, 7200 RPM, NCQ, Smart IV)	X	X
	RAID 80-GB SATA 3.0-Gb/s Hard Drive (7200 rpm)	X	X
	RAID 160-GB SATA 3.0-Gb/s Hard Drive (7200 rpm)	X	X
	RAID 250-GB SATA 3.0-Gb/s Hard Drive (7200 rpm)	X	X
	2 nd hard drive, 80-GB SATA 3.0-Gb/s Hard Drive (8MB Cache, 7200 RPM, NCQ, Smart IV)	X	X
	2 nd hard drive, 160-GB SATA 3.0-Gb/s Hard Drive (8MB Cache, 7200 RPM, NCQ, Smart IV)	X	X
	2 nd hard drive, 250-GB SATA 3.0-Gb/s Hard Drive (8MB Cache, 7200 RPM, NCQ, Smart IV)	X	X
	2 nd hard drive, 320-GB SATA 3.0-Gb/s Hard Drive (8MB Cache, 7200 RPM, NCQ, Smart IV)	X	X
	2 nd hard drive, 500-GB SATA 3.0-Gb/s Hard Drive (16MB Cache, 7200 RPM, NCQ, Smart IV)	X	
	2 nd hard drive, 80-GB SATA 3.0-Gb/s Hard Drive (16MB Cache, 10,000 RPM, NCQ, Smart III)	X	X
	2 nd hard drive, 160-GB SATA 3.0-Gb/s Hard Drive (16MB Cache, 10,000 RPM, NCQ, Smart III)	X	X

NOTE: NCQ functionality requires a user set-up BIOS setting.

Standard Features and Configurable Components

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 ¹	X	X
	SATA CD-RW/DVD-ROM Combo Drive ^{1,2}	X	X
	SATA SuperMulti LightScribe DVD Writer Drive ^{1,2,3}	X	X
	HP SATA Blu-ray Writer	X	X
NOTES:			
¹ For playing DVDs, InterVideo WinDVD 5			
² For writing CDs, choice of Sonic/Roxio DigitalMedia Plus 7.2 (Windows XP only) or Easy Media Creator 9			
³ For writing CDs and DVDs, video editing and authoring DVDs, choice of Sonic/Roxio DigitalMedia Plus 7.2 (Windows XP only) or Easy Media Creator 9			
Media Card Reader – One of the following	HP 16-in-1 3.5" Media Card Reader	X	X
	HP 22-in-1 3.5" Media Card Reader	X	X
	HP 22-in-1 3.5" Media Card Reader with 1394	X	X
Security	Integrated 1.2 TPM Embedded Security Chip*	X	X
	HP Desktop Security lock kit (lock and cable)	X	X
	Security cable with Kensington lock	X	X
	Optional HP ProtectTools security software suite	X	X
	Optional USB Port Disable at factory (user configurable via BIOS)	X	X
* TPM module disabled where use is restricted by law; for example, Russia.			
NIC	Integrated Broadcom Gigabit Ethernet (integrated on system board)	X	X
	Broadcom NetXtreme Gigabit Ethernet PCIe NIC Card	X	X
	Broadcom NetXtreme Plus Gigabit Ethernet PCIe NIC Card	X	X
Wireless	Wireless A+G PCI Card (full height bracket)	X	
	Wireless A+G PCI Card (low profile bracket)		X
	HP 802.11 b/g/n Wireless PCIe x1 card (full height bracket)	X	
	HP 802.11 b/g/n Wireless PCIe x1 card (low profile bracket)		X
Modem	2006 Agere PCI 56K International SoftModem (full height)	X	
	2006 Agere PCI 56K International SoftModem (low profile)		X
	LSI PCIe x1 Hi-Speed 56K International SoftModem	X	X

Standard Features and Configurable Components

Graphics	Integrated ATI Radeon 3100 Graphics (with DirectX 10 technology)	X	X
	NVIDIA GeForce 8400 GS 256MB SH PCIe x16 Graphics Card	X	X
	ATI Radeon HD 2400 XT 256MB DH PCIe x16 Graphics Card	X	X
	ATI Radeon HD 3470 256 SH PCIe x16 Graphics Card	X	X
	ATI Radeon HD 3650 (512MB DH) PCIe x16 Graphics Card	X	
	ATI Radeon HD 4550 Dual Head PCIe x16 Graphics Card	X	X
	HP DisplayPort to VGA Adapter	X	X
<hr/>			
Audio	Integrated High Definition audio with ADI1884 codec (all ports are stereo)	X	X
	Microphone and Headphone front ports	X	X
	Line-out and Line-In rear ports*	X	X
	Multistreaming capable*	X	X
	Internal Speaker	X	X
<p>* Rear audio input port is re-taskable as Line-in or Microphone-in. External speakers must be powered externally. Multistreaming can be enabled in the ADI 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.</p>			
<hr/>			
Input Devices	Keyboard – One of the following		
	HP PS/2 Standard Keyboard	X	X
	HP USB Standard Keyboard	X	X
	Mouse – One of the following		
	USB 2-Button Laser Mouse	X	X
	PS/2 2-Button Optical Scroll Mouse	X	X
USB 2-Button Optical Scroll Mouse	X	X	
<hr/>			
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
	1-GB Flash Module for Vista ReadyBoost	X	X

After-Market Options (availability may vary by region)

		MT	SFF	After-Market Options Part Number
Office 2007 Media-less License Kits (MLK's)	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
Communications	Wireless LAN			
	HP 802.11 b/g/n Wireless PCIe x1 card	X	X	FH971AA
	NICs			
	Broadcom NetXtreme Gigabit Ethernet Plus PCIe NIC Card	X	X	FS215AA
	Intel Gigabit CT Desktop NIC	X	X	FH969AA
	Modem			
	LSI PCIe x1 Hi-Speed 56K International SoftModem	X	X	FH970AA
Connectivity				
Bundle Connectivity Starter Kit - Surge Protector/LAN cable/Printer cable	X	X	RT174AA	
Graphics	Single head solutions			
	ATI Radeon 3470 256MB SH PCIe x16	X	X	FH972AA
	Multi head solutions			
	NVIDIA Quadro NVS 290 Dual Head PCIe x16, low profile Graphics Card	X	X	KG748AA
	ATI HD 2400 XT 256MB Dual Head PCIe x16, low profile Graphics Card	X	X	KD060AA
	ATI Radeon HD 3650, 512MB Dual Head PCIe x16, full height Graphics Card	X		KS505AA
	ATI HD 4550 PCIe x16 (256GB/DDR3) Dual Head Graphics Card	X	X	AT042AA
	NVIDIA GeForce 8400 GS 256MB DH PCIe x1 Graphics Card*	X	X	GJ120AA
* 1GB of system memory required. Graphics cards use part of the total system memory to enhance graphics performance.				

After-Market Options (availability may vary by region)

Hard Drives	Serial ATA Hard Drives			
	HP 80-GB SATA (NCQ/Smart IV) 3.0-Gb/s Hard Drive	X	X	PY276AA
	HP 160-GB SATA (NCQ/Smart IV) 3.0-Gb/s Hard Drive	X	X	PY277AA
	HP 250-GB SATA (NCQ/Smart IV) 3.0-Gb/s Hard Drive	X	X	PY278AA
	HP 320-GB SATA (NCQ/Smart IV) 3.0-Gb/s Hard Drive	X	X	FH963AA
	HP 500-GB SATA 3.0-Gb/s SMART IV Hard Drive	X	X	KW347AA
	HP Removable SATA Hard Drive Enclosure (Frame & Carrier)	X	X	RY102AA
	HP Removable SATA Hard Drive Enclosure (Carrier Only)	X	X	RY103AA

Input/Output Devices				
	HP Business Mouse Pad	X	X	AT485AA
	HP 2.4GHz Wireless Keyboard and Mouse	X	X	NB896AA
	HP PS/2 Standard Keyboard	X	X	DT527A
	HP USB Standard Keyboard	X	X	DT528A
	HP USB Smartcard Keyboard	X	X	ED707AA
	HP USB Mini Keyboard	X	X	AS601AA
	HP USB PS2 Washable Keyboard	X	X	VF097AA#ABA (launching July 27th)
	HP USB 2-Button Laser Mouse	X	X	GW405AA
	HP PS/2 2-Button Optical Scroll Mouse	X	X	EY703AA
	HP USB 2-Button Optical Scroll Mouse	X	X	DC172B

Memory (DIMMs)	PC2-6400 (DDR2, 800 MHz) DIMMs Non-ECC			
	Promo - 2GB (2 x 1GB) PC2-6400 DDR2-800	X	X	NQ604AT
	Promo - 4GB (2 x 2GB) PC2-6400 DDR2-800	X	X	NQ605AT
	HP 4-GB PC2-6400 (DDR2 800 MHz) DIMM	X	X	FH977AA
	HP 2-GB PC2-6400 (DDR2 800 MHz) DIMM	X	X	AH060AA
	HP 1-GB PC2-6400 (DDR2 800 MHz) DIMM	X	X	AH058AA
	1GB Flash Module for Windows Ready Boost	X	X	KG274AA

Monitors	CRTs		3PO Offering
	Value Series Monitors		
	HP LV156w 15-inch Widescreen LCD Monitor		NJ711AA#ABA
	Business LCD Monitors		
	HP L1506 15-inch LCD Monitor		PX848AA#ABA
	HP w17e 17-inch LCD Monitor		GV537AA#ABA
	HP L1710 17-inch LCD Monitor		GS917AA#ABA
	HP L1910 19-inch LCD Monitor		GS918AA#ABA
	HP L1910i 19-inch LCD Monitor with Integrated Work Stand		GS581AA#ABA
	HP L1908w 19-inch Widescreen LCD Monitor		GP536AA#ABA



After-Market Options (availability may vary by region)

HP L1908wm 19-inch Widescreen LCD Monitor with multimedia	KA214AA#ABA
HP L1908wi 19-inch Widescreen LCD Monitor with Integrated Work Stand	GP537AA#ABA
HP L2208w 22-inch Widescreen LCD Monitor	GX007AA#ABA
Advantage Series Monitors	
HP L1745 17-inch LCD Monitor	GE178AA#ABA
HP L1750 17-inch LCD Monitor	GF904AA#ABA
HP L1750 17-inch LCD Monitor - TAA Compliant	GF904A2#ABA
HP L1950g 19-inch LCD Monitor	KR145AA#ABA
HP L1950g TAA 19-inch LCD Monitor - TAA Compliant	KR145A2#ABA
HP L1945w 19-inch Widescreen LCD Monitor	KD286AA#ABA
HP L2045w 20-inch Widescreen LCD Monitor	RD125AA#ABA
HP L2245wg 22-inch Widescreen LCD Monitor	FL472AA#ABA
HP L2445w 24-inch Widescreen LCD Monitor	KT931AA#ABA
Performance Series Monitors	
HP LP1965 19-inch LCD Monitor	RA373AA#ABA
HP LP2065 20-inch LCD Monitor	EF227A4#ABA
HP LP2275 22-inch Widescreen LCD Monitor	KE289A4#ABA
HP LP2275 22-inch Widescreen LCD Monitor Bulk Pack (6 baseless units)	KD289A6#ABA
HP LP2475w 24-inch Widescreen LCD Monitor	KD911A4#ABA
HP LP2480zx 24-inch DreamColor Widescreen LCD Monitor	GV546A4#ABA
HP LP3065 30-inch Widescreen LCD Monitor	EZ320A4#ABA
Digital Signage	
HP LD4200 42-inch LCD Monitor	NH322AA#ABA
Touchscreen Monitor	
HP L5006tm 15-inch Touch Screen LCD Monitor	RB146AA#ABA
Options	
HP USB 2.0MP Business WebCam	NX252AA
HP Flat Panel Speaker Bar	EE418AA
HP Quick Release Kit	EM870AA
HP Integrated Work Stand (stand alone)	GN783AA
HP DreamColor Advanced Profiling Solution (aka Puck)	KZ300AA
HP LCD Hood Kit	KZ301AA
3M 17-in Privacy Screen Filter	KM218AA
3M 19-in Privacy Screen Filter	KZ310AA
Digital Signage Speaker	NK352AA
Digital Signage Stand	NK353AA

Multimedia	Thin USB Powered Speakers	X	X	KK912AA
	Wired Premium Headset (VoIP and Overture Conf)	X	X	AQ704AA

After-Market Options (availability may vary by region)

Optical Drives	DVD-ROM Drive			
	HP SATA DVD-ROM Drive	X	X	AH047AA
	DVD Writer			
	HP SATA SuperMulti LightScribe DVD Writer Drive	X	X	GF343AA
<hr/>				
Removable Storage	Diskette and Digital Drives			
	HP 1.44-MB External USB Diskette Drive	X	X	DC141B
	HP 1.44-MB Internal Diskette Drive	X	X	AH053AA
	Multimedia			
	HP 22-in-1 Media Card Reader with 1394 with PCI Card	X	X	KN518AA
	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
<hr/>				
Security	Kensington lock	X	X	PC766A
	HP Business PC Security Lock	X	X	PV606AA
	HP ProtectTools Version 4.0	X	X	FH974AA
	HP Chassis Security Kit	X	X	AR639AA
	HP 2007 Wall Mount/Security Sleeve		X	GF344AA
	HP USB Smartcard Keyboard	X	X	ED707AA
<hr/>				
Manageability	HP Client Configuration Manager, Premium Edition	X	X	T3488AA (use T3489AA for 1000 licenses)
	HP ProtectTools Client Security Software including: HP ProtectTools Security Manager BIOS Configuration for HP ProtectTools Credential Manager for HP ProtectTools Device Access Manager for HP ProtectTools Drive Encryption for HP ProtectTools Embedded Security for HP ProtectTools Java Card Security for HP ProtectTools	X	X	KN740AA
	Altiris Client Management Suite Level 1 Includes: Altiris Deployment Solution Altiris Inventory Solution Altiris Application Metering Solution Altiris Carbon Copy Solution Altiris Software Delivery Solution Altiris Application Management Solution Altiris Patch Management Solution	X	X	DR605A (use DR606A for 1000+ licenses)

After-Market Options (availability may vary by region)

Brackets/Stand	HP 2007 SFF Tower Stand		X	GJ118AA
Miscellaneous Accessories	HP USB Graphics Adapter	X	X	NL571AA
	DisplayPort TO VGA Adapter	X		AS615AA
	DisplayPort TO DVI-D Dual Link Adapter (WKS offering)	X		NR078AA (launching July 6th)
	HP DMS59 DVI Dual-head Connector Cable	X	X	DL139A
	HP DVI to DVI Cable	X	X	DC198A
	HP DisplayPort To DVI-D Adapter	X		FH973AA
	HP 2nd Serial Port Adapter	X	X	PA716A
	HP Parallel Port Adapter	X	X	KD061AA
	Belken USB to Serial Adapter	X	X	EM449AA
	HP FireWire / IEEE 1394 PCI Card	X	X	PA997A
	5.25" Blank Bezel Kit (Carbonite 50/Bulk Pack)	X	X	DC177B
	Local Area Network (LAN) cable, Ethernet cable	X	X	AH122AA
	Firewire (1394) Cable	X	X	AH123AA
	7-outlet Surge Protector	X	X	AG290AA
	HP 1TB Media Vault Pro MV5140	X	X	GX667AA#ABA
	HP 1.5TB Media Vault Pro MV5150	X	X	GX668AA#ABA

Technical Specifications

Unit Environment and Operating Conditions	Microtower	Small Form Factor
General Unit Operating Guidelines		
<ul style="list-style-type: none"> 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 recirculated 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)	
<p>*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.</p>		

	Microtower		Small Form Factor	
Power Supply	300-watt BTX power supply – Passive PFC 115v/230v line switch	300-watt 85% efficient* BTX power supply – Active PFC	240-watt BTX power supply – Active PFC 115v/230v line switch	240-watt 85% efficient* 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 Compliant		X		X
FEMP Standby Power Compliant (<2W in S5 – Power Off)**	X	X	X	X

Technical Specifications

Power Consumption in ES Mode – Suspend to RAM (S3) (Instantly Available PC)	<4W	<3W	<4W	<3W
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NOTES:

* Energy efficient power supply is a requirement for ENERGY STAR qualification 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 dc5850 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.
- Tracking and tracing capabilities in case of theft available in select countries (subscription sold separately).
- 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

Other Features

ACPI-Ready Hardware

Description

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. 2.6

System Management BIOS, previously known as DMI BIOS, for system management information

Dual-State Power Button

Power button acts as both an on/off button and suspend-to-sleep button



Technical Specifications

Serviceability Features of System		
Dual Colour 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	
<ul style="list-style-type: none"> System/Emergency ROM 	<ul style="list-style-type: none"> Flash ROM 	<ul style="list-style-type: none"> CMOS Battery Holder for easy Replacement
<ul style="list-style-type: none"> Flash Recovery with Video 	<ul style="list-style-type: none"> 5 Aux Power LED on System PCA 	<ul style="list-style-type: none"> Processor ZIF Socket for easy Upgrade
<ul style="list-style-type: none"> Over-Temp Warning on Screen (Requires IM Agents) 	<ul style="list-style-type: none"> Clear Password Jumper 	<ul style="list-style-type: none"> DIMM Connectors for easy Upgrade
<ul style="list-style-type: none"> Restore CD 	<ul style="list-style-type: none"> Clear CMOS Switch 	<ul style="list-style-type: none"> NIC LEDs (integrated) (Green & Amber)

Serviceability Features of Chassis		
<ul style="list-style-type: none"> Dual Color Power and HD LED - To Indicate Normal Operations and Fault Conditions 	<ul style="list-style-type: none"> Color coordinated cables and connectors 	<ul style="list-style-type: none"> Tool-less Hood Removal (thumbscrews for Microtower, spring-latch for Small Form Factor)
<ul style="list-style-type: none"> Front power switch 	<ul style="list-style-type: none"> System memory can be upgraded upgraded on Microtower without removing any internal components 	<ul style="list-style-type: none"> 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)	<ul style="list-style-type: none"> 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 IV Technology* (Self-Monitoring, Analysis and Reporting Technology)	<p>Allows hard drives to monitor their own health and to raise flags if imminent failures were predicted</p> <ul style="list-style-type: none"> 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 	

Technical Specifications - Audio

High Definition Audio	Type	Integrated
	High Definition Stereo Codec	Yes – 4-channel ADI 1884 codec
	Audio Jacks	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)
	Multistreaming Capable	Multistreaming can be enabled in the ADI control panel to allow independent audio streams to be sent to/from the front and rear jacks.
	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**

*Rear Line in audio port is re-taskable as Line-in or Microphone-in.

**Internal Speaker Amplifier is for Internal Speaker only. External Speakers need to be powered externally.

Technical Specifications - Communications

Integrated Broadcom 5754 Gigabit Ethernet	Connector	RJ-45
	Controller	Broadcom 5754 PCI-Express LAN Controller
	Memory	48KB receive and 8KB transmit on chip 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, PXE 2.1, Broadcom mgmt utility
	Alerting	ASF 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	Atheros AR5414X chipset
	system interface	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.)

Technical Specifications - Communications

Output power (approximately)	15 dBm \pm 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 200 ft (60.96 m) – Indoor above router that supports 108 Mbps speed) 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

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)

Technical Specifications - Communications

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

LSI PCIe x1 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	PCI Bus Power Management Interface Specification (PCI-PM) Revision 1.2, Appendix A. D0, D3hot, and D3cold. Wake on Ring state when in D3cold. If the power management event (PME) feature is enabled in D3cold, a modem can wake the system via WAKE# (WAKEN) or beacon. Meets PCI Express 1.1 standard.
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

Technical Specifications - Communications

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 express bus Uses only one PCI express load (i.e., one grant/request pair), one shared IRQ, one electrical load
Chipset	LSI SV92EX – Integrated PCI interface with 3.3-V tolerant buffers and CardBus support
Dimensions (L X H)	Complies with PCI express 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, 3 rd 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, 3 rd 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.
Other	The SV92EX device is packaged in a 32-pin micro leadless chip carrier (MLCC). The SV92EX is fully compliant with the PCI Express revision 1.1 specification. WHQL approved; ASPM compliant.

Technical Specifications - Graphics

Integrated AMD DX10 graphics	Bus Type	PCIe x16
	Memory	Variable and User selectable in BIOS settings
	Controller Clock Speed	400MHz
	Overlay Planes	1
	Maximum Color Depth	32 bpp
	Maximum Vertical Refresh Rate	85Hz
	Multi-display Support	Yes
	Graphics/Video API Support	DX10, OpenGL 2.0
	Integrated DVI-D connector	Compliant with DDWG (Digital Display Working Group) and VESA specifications for a single-link digital DVI (DVI-D) connector.
	Display Devices Supported	HP L1530 HP L1740 HP L1755 HP L1940 HP L1955 HP L2035 HP L2335

Resolutions Supported	Resolution	Maximum Refresh Rate (Hz)	
		Analog Connection	Digital Connection
	640x480	85	60
	800x600	85	60
	1024x768	85	60
	1280x720	85	60
	1280x1024	85	60
	1440x900	75	60
	1600x1200	85	60
	1680x1050	75	60
	1920x1080	85	60-R
	1920x1200	85	60-R
	1920x1440	85	N/A
	2048x1536	75	N/A

NOTE: 60-R denotes reduced blanking timings are used on single-link DVI connections and may be used with other digital connections

Technical Specifications - Graphics

NVIDIA GeForce 8400 GS (256 MB SH) PCIe x16 Graphics Controller	Bus type	PCI Express (x16 lanes)	
	Maximum vertical refresh rate	85 Hz	
	Display support	Integrated 400 MHz RAMDAC	
	Display max resolution	2048 x 1536 (analog), 2560 x 1600 (digital)	
	Input/Output connectors	DVI-I (DVI port supports dual-link and HDCP) TV-out (4 pin S-video)	
	Board display options	DVI-I + TV DVI-I supports analog CRT or flat panel or digital flat panel (using DVI-A, DVI-D or DVI-I connector) DVI-I supports analog CRT or flat panel (with VGA connector and DVI-I to VGA dongle) TV connector is a 4-pin mini-DIN S-video connector	
	Board configuration	Specification	Description
		Graphics Chip	NVIDIA P413-260
		Core clock	460 MHz
		Memory clock	200 MHz
	Frame buffer	256 MB DDR2	
Languages supported	24 languages: English, Arabic, Chinese Simplified, Chinese Traditional, Czechoslovakian, Danish, Dutch, Finnish, French, German, Greek, Hebrew, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish, Thai, Turkish		
System memory	1GB of system memory required		
Core power	25 W (Max board power)		

NVIDIA GeForce 8400 GS (256 MB SH) PCIe x16 Graphics Controller display resolutions and refresh rates

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

Resolution	Maximum Refresh Rate (Hz)	
	Analog Connection	Digital Connection
640x480	85	60
800x600	85	60
1024x768	85	60
1280x720	85	60
1280x1024	85	60
1440x900	75	60
1600x1200	85	60
1680x1050	75	60
1920x1080	85	60-R
1920x1200	85	60-R
1920x1440	85	N/A
2048x1536	75	N/A
2560x1600	N/A	60*

Technical Specifications - Graphics

* Only supported when using a dual-link DVI or DP connection

NOTE: 60-R denotes reduced blanking timings are used on single-link DVI connections and may be used with other digital connections

ATI Radeon HD 2400XT (256MB DH) PCIe Graphics Card	Bus type	PCI Express (x16 lanes)		
	Maximum vertical refresh rate	85 Hz		
	Display support	Integrated 400 MHz RAMDAC		
	Display max resolution	2560 x 1600 digital, 2048 x 1536 analog		
	Board display options	Supports two displays via included DMS-59 to dual VGA cable or 2 DVI monitors via optional DMS-59 to dual DVI cable kit part number: DL139A. 4-pin mini-DIN S-video connector for TV output		
	Board configuration	Specification	Description	
		Graphics Chip	RV610	
		Core clock	650 MHz	
		Memory clock	500 MHz	
		Frame buffer	256 MB DDR2, 128 bit wide	
Languages supported	24 languages: English, Arabic, Chinese Simplified, Chinese Traditional, Czechoslovakian, Danish, Dutch, Finnish, French, German, Greek, Hebrew, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish, Thai, Turkish			
System memory	1GB of system memory required			
Core power	21 W			
Compliance standards	EMC Emissions: a) FCC Part 15, Subpart B - Unintentional Radiators, Class B Computing Devices for Home & Office Use b) CISPR22: 1997/EN 55022:1998 – Class B – Limits and methods of measurement of radio disturbance characteristics of Information Technology Equipment c) Canadian Standard ICES-003 is equivalent to CISPR22 d) Taiwanese Standard BSMI e) Japanese VCCI f) Australian C-Tick g) Korean (MIC) EMC Immunity: CISPR 24:1997/EN 55024:1998 – Information Technology Equipment - Immunity Characteristics – Limits and Methods of Measurement.			

ATI Radeon HD 2400XT (256MB DH) PCIe Graphics Card display resolutions and refresh rates

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

Technical Specifications - Graphics

Resolution	Maximum Refresh Rate (Hz)	
	Analog Connection	Digital Connection
640x480	85	60
800x600	85	60
1024x768	85	60
1280x720	85	60
1280x1024	85	60
1440x900	75	60
1600x1200	85	60
1680x1050	75	60
1920x1080	85	60-R
1920x1200	85	60-R
1920x1440	85	N/A
2048x1536	75	N/A
2560x1600	N/A	N/A

Technical Specifications - Hard Drives

7200 RPM Serial ATA Hard Drives	500-GB	Capacity	500,107,862,016 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	16 MB	
	Seek Time (typical reads, includes controller overhead, including settling)	Single Track	2.0 ms	
		Average	11 ms	
		Full-Stroke	21 ms	
	Rotational Speed	7,200 rpm		
	Logical Blocks	976,773,168		
	Operating Temperature	41° to 131° F (5° to 55° C)		
	320-GB	320-GB	Capacity	320,072,933,376 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			16 MB	
Seek Time (typical reads, includes controller overhead, including settling)		Single Track	2.0 ms	
		Average	11 ms	
		Full-Stroke	21 ms	
Rotational Speed		7,200 rpm		
Logical Blocks		625,142,448		
Operating Temperature		41° to 131° F (5° to 55° C)		
250-GB		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	2.0 ms	
		Average	11 ms	
		Full-Stroke	21 ms	
	Rotational Speed	7,200 rpm		

Technical Specifications - Hard Drives

160-GB	Logical Blocks	488,397,168	
	Operating Temperature	41° to 131° F (5° to 55° C)	
	Capacity	160,041,885,696 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	11 ms
		Full-Stroke	21 ms
80-GB	Rotational Speed	7,200 rpm	
	Logical Blocks	312,581,808	
	Operating Temperature	41° to 131° F (5° to 55° C)	
	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	11 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)	

Technical Specifications - Hard Drives

10,000 RPM Serial ATA Hard Drives	160-GB	Capacity	160,041,885,696 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 (1.5 Gb/s), Native Command Queuing enabled	
		Synchronous Transfer Rate (Maximum)	Up to 1.5 Gb/s	
		Cache	16 Mbytes	
	Seek Time (typical reads, includes controller overhead, including settling)	Single Track	0.3 ms	
		Average	4.6 ms	
		Full-Stroke	10.2 ms	
	Rotational Speed	10,000 RPM		
	Logical Blocks	312,581,808		
	Operating Temperature	41° to 131° F (5° to 55° C)		
	80-GB	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 (1.5 Gb/s), Native Command Queuing enabled	
Synchronous Transfer Rate (Maximum)			Up to 1.5 Gb/s	
Cache			16 Mbytes	
Seek Time (typical reads, includes controller overhead, including settling)		Single Track	0.3 ms	
		Average	4.6 ms	
		Full-Stroke	10.2 ms	
Rotational Speed		10,000 RPM		
Logical Blocks		156,301,488		
Operating Temperature		41° to 131° F (5° to 55° C)		

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 \pm 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	
	Mechanical	EMI – RFI		Conforms to FCC rules for a Class B computing device
			Microsoft PC 99 – 2001	Functionally compliant
		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)		
Environmental		Microsoft PC 99 – 2001	Mechanically compliant	
	Acoustics	43-dBA maximum sound pressure level		
	Operating temperature	50° to 122° F (10° to 50° C)		
	Non-operating temperature	-22° to 140° F (-30° to 60° C)		
	Operating humidity	10% to 90% (non-condensing at ambient)		
	Non-operating humidity	20% to 80% (non-condensing at ambient)		
	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		
Approvals	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		
Ergonomic compliance		UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC		
		ANSI HFS 100, ISO 9241-4, and TUVGS		

Technical Specifications - Input/Output Devices

HP USB 2-Button Laser Mouse	Scroll Wheel	24
	Maximum Rotation Speed	48 rats/sec
	Switch Type	wheel
	Switch Life	Button – 3,000,000 Wheel – 1,000,000 times Tilt switch – 500,000 times
	Environmental	Operating Temperature 32° to 104° F (0° to 40° C) Non-operating Temperature -4° to 140° F (-20° to 60° C) Operating Humidity 10% to 90% (non-condensing at ambient) Non-operating Humidity 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
	Electrical	Operating Voltage + 5VDC ± 5% Power Consumption MTBF > 150,000 hrs ESD IEC-61000-4-2 criteria B, Contact discharge: +/- 4kV, Air discharge: +/- 8kV EMI-RFI FCC Class B
	Mechanical	PC98 PC 99 Compliant Resolution 800dpi Tracking Speed 25 cm/sec Acceleration 0.5mm Switch Actuation 0.6N (60gf) Switch Life Button – 3,000,000 Wheel – 1,000,000 times Tilt switch – 500,000 times
	Regulatory Approvals	Cable Length 1850mm PC98-99 PC99 compliant UL60950-1, UL 94, UL 746 (A-E), UL 796 TUV/GS: EN 60950-1, EN 60825-1 FCC Class B, UL 1950, cUL, TUV GS, CE, C-tick, VCCI, BSMI, RRL

Technical Specifications - Input/Output Devices

HP PS/2 Optical Scroll Mouse	Dimensions (H x L x W)	3.95 x 6.21 x 11.7 cm (1.56 x 2.44 x 4.61 in)	
	Weight	4.44 oz (126 g)	
	Environmental	Operating temperature	32° to 104°F (0° to 40° C)
		Non-operating temperature	-4° to 140°F (-20° to 60° C)
		Operating humidity	10% to 90% (non condensing at ambient)
		Non-operating humidity	10% to 90% non condensing
		Operating shock	40 g, 6 surfaces
		Non-operating shock	80 g, 6 surfaces
		Operating vibration	2 g peak acceleration
		Non-operating vibration	4 g peak acceleration
		Drop (out of box)	80 cm height onto asphalt tile over concrete or equivalent, 5-drop in 5 direction except the cable face
		Electrical	Operating voltage
	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		
Mechanical	Microsoft PC99 – 2001	Functionally compliant	
	Resolution	400 ± 20% DPI	
	Tracking speed	10 in/s (25.4 cm/s) maximum	
	Acceleration	100 in/s/s (2.54 m/s/s)	
	Switch actuation	61 g nominal peak force	
	Switch life	3,000,000 operations (using Hasco modified tester)	
	Switch type	Low force micro-switches	
	Tracking mechanism life	155 mi (250 km) at average speed of 10 in/s	
	Cable length	6 ft (1.8 m)	
	Scroll wheel	Microsoft PC99 – 2001	Mechanically compliant
Width		8 mm	
Diameter		1.01 in (25.6 mm)	
Maximum rotation speed		48 rats/sec	
Switch type		Light force micro-switch	
Switch life		1 million operations	
Mechanical life		Minimum 200,000 revolutions	
Regulatory approvals		Compliant	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC

Technical Specifications - Input/Output Devices

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

HP SATA SuperMulti LightScribe DVD Writer 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 \pm 5%-100 mV ripple p-p 12 VDC \pm 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	
		DVD+R/-R/+RW/ -RW/+R DL /-R DL	Up to 8X	
	Read speeds	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 \pm 5%-100 mV ripple p-p	
			12 VDC \pm 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	

Technical Specifications - Optical Storage

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 \pm 5%-100 mV ripple p-p 12 VDC \pm 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)	

Technical Specifications - Removable Storage

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
		<ul style="list-style-type: none">• 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	<ul style="list-style-type: none">• MicroSD (T-Flash)• Memory Stick Micro
	Mechanical	
	Environmental	Operational Environmental Extremes Test Parameters/Conditions – Power applied, unit operating on system $\pm 5\%$ 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

Technical Specifications - Environmental Data

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 – GOLD
- Korea Eco-label
- Japan PC Green label*

* 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

	AC Input Voltage at 115 VAC +/- 5 VAC, 60 Hz +/- 3 Hz	AC Input Voltage at 230 VAC +/- 5 VAC, 50 Hz +/- 3 Hz	AC Input Voltage at 100 VAC +/- 5 VAC, 50 Hz +/- 3 Hz
Normal Operation On-Idle (ENERGY STAR Idle (S0))	58.845 W	57.922 W	59.386 W
ENERGY STAR "Sleep" (S3) (Wake On LAN (WOL) Enabled)	3.5388 W	3.796 W	3.5329 W
ENERGY STAR "Sleep" (S3) (Wake On LAN (WOL) Disabled)	3.5041 W	3.7921 W	3.5187 W
ENERGY STAR "Standby" (Off) (S5) (Wake On LAN (WOL) Enabled)	1.9653 W	2.2104 W	1.916 W
ENERGY STAR "Standby" (Off) (S5) (Wake On LAN (WOL) Disabled)	1.0306 W	1.2865 W	1.0084 W

Heat Dissipation*

	AC Input Voltage at 115 VAC +/- 5 VAC, 60 Hz +/- 3 Hz	AC Input Voltage at 230 VAC +/- 5 VAC, 50 Hz +/- 3 Hz	AC Input Voltage at 100 VAC +/- 5 VAC, 50 Hz +/- 3 Hz
Normal Operation On-Idle (ENERGY STAR Idle (S0))	200.779 BTU/hr	197.629 BTU/hr	202.625 BTU/hr
ENERGY STAR "Sleep" (S3) (Wake On LAN (WOL) Enabled)	12.074 BTU/hr	12.951 BTU/hr	12.054 BTU/hr
ENERGY STAR "Sleep" (S3) (Wake On LAN (WOL) Disabled)	11.955 BTU/hr	12.938 BTU/hr	12.005 BTU/hr

Technical Specifications - Environmental Data

ENERGY STAR "Standby" (Off) (S5) (Wake On LAN (WOL) Enabled)	6.705 BTU/hr	7.541 BTU/hr	6.537 BTU/hr
ENERGY STAR "Standby" (Off) (S5) (Wake On LAN (WOL) Disabled)	3.516 BTU/hr	4.389 BTU/hr	3.44 BTU/hr

* 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)

	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
System Fan Off		
Idle	3.9	29
Fixed Disk (random writes)	3.9	29

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 2000ppm 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 GOLD level, see: 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 93% recyclable when properly disposed of at end of life.

Packaging Materials	Corrugated Paper	1915 g
	EPE Foam	135 g
	LDPE Bag	25 g

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

Technical Specifications - Environmental Data

Minitower

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

Energy Consumption	AC Input Voltage at 115 VAC +/- 5 VAC, 60 Hz +/- 3 Hz	AC Input Voltage at 230 VAC +/- 5 VAC, 50 Hz +/- 3 Hz	AC Input Voltage at 100 VAC +/- 5 VAC, 50 Hz +/- 3 Hz
Normal Operation On-Idle (ENERGY STAR Idle (S0))	61.772 W	58.107 W	59.222 W
ENERGY STAR "Sleep" (S3) (Wake On LAN (WOL) Enabled)	2.6393 W	3.0205 W	2.678 W
ENERGY STAR "Sleep" (S3) (Wake On LAN (WOL) Disabled)	2.6475 W	3.0336 W	2.7218 W
ENERGY STAR "Standby" (Off) (S5) (Wake On LAN (WOL) Enabled)	1.2281 W	1.5847 W	1.3381 W
ENERGY STAR "Standby" (Off) (S5) (Wake On LAN (WOL) Disabled)	0.7837 W	1.1556 W	0.8801 W
Heat Dissipation*	AC Input Voltage at 115 VAC +/- 5 VAC, 60 Hz +/- 3 Hz	AC Input Voltage at 230 VAC +/- 5 VAC, 50 Hz +/- 3 Hz	AC Input Voltage at 100 VAC +/- 5 VAC, 50 Hz +/- 3 Hz
Normal Operation On-Idle (ENERGY STAR Idle (S0))	210.766 BTU/hr	198.261 BTU/hr	202.065 BTU/hr
ENERGY STAR "Sleep" (S3) (Wake On LAN (WOL) Enabled)	9.005 BTU/hr	10.305 BTU/hr	9.137 BTU/hr
ENERGY STAR "Sleep" (S3) (Wake On LAN (WOL) Disabled)	9.033 BTU/hr	10.35 BTU/hr	9.286 BTU/hr
ENERGY STAR "Standby" (Off) (S5) (Wake On LAN (WOL) Enabled)	4.19 BTU/hr	5.406 BTU/hr	4.565 BTU/hr
ENERGY STAR "Standby" (Off) (S5) (Wake On LAN (WOL) Disabled)	2.673 BTU/hr	3.942 BTU/hr	3.002 BTU/hr

* 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)

	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Idle	3.8	28
Fixed Disk (random writes)	4.2	30



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 2000ppm 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 HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.
- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
- This product is in compliance with the IEEE 1680 (EPEAT) standard at the GOLD level, see: www.epeat.net
- Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.
- This product contains 0% recycled materials (by wt.)
- This product is 93% recyclable when properly disposed of at end of life.

Packaging Materials	Corrugated Paper	1700 g
	EPE Foam	138 g
	LDPE Bag	50 g

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

Small Form Factor, Minitower

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. By July 1, 2006, RoHS substances were 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).

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

Technical Specifications - Environmental Data

- 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.

Hewlett-Packard Corporate Environmental Information

For more information about HP's commitment to the environment:

Global Citizenship Report

<http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html>

Eco-label certifications

<http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html>

ISO 14001 certificates:

<http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html>

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