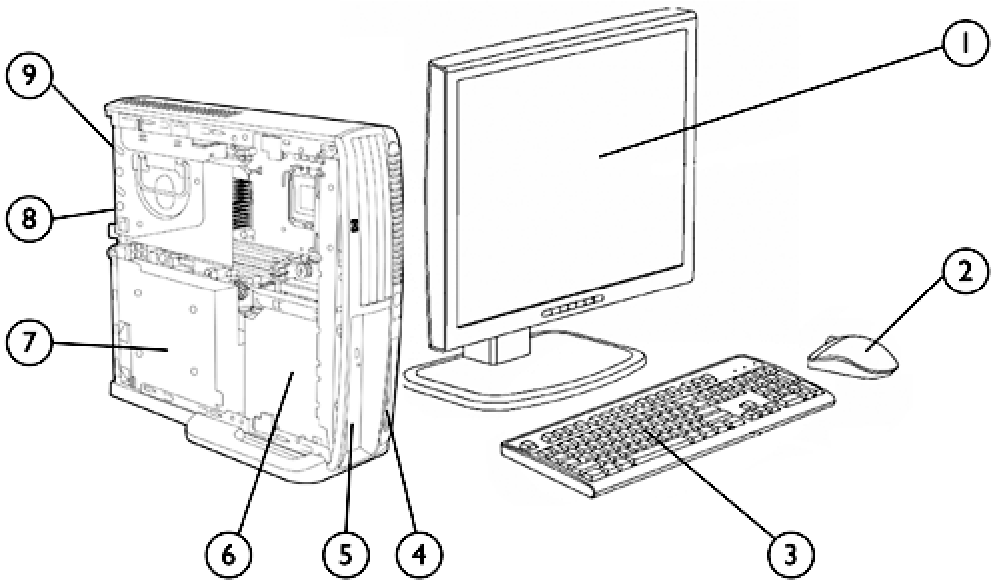
HP recommends
Windows Vista™ Business

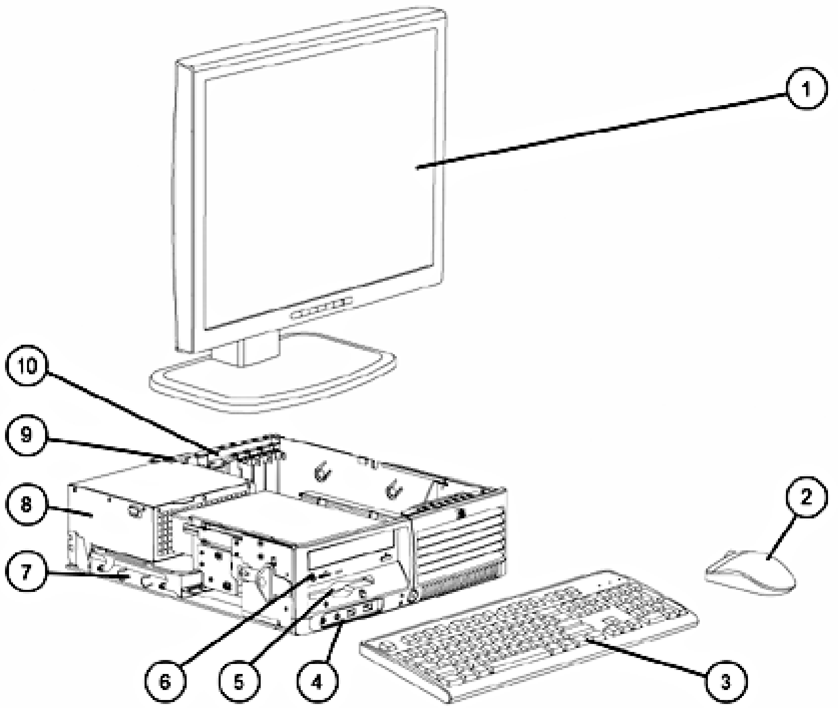
Ultra-slim Desktop



1. Monitor (sold separately)
2. 2-Button Scroll Mouse (PS/2) or Optical Scroll Mouse (PS/2 or USB)
3. HP Standard Keyboard (PS/2 or USB) or HP USB Smartcard Keyboard
4. Front I/O: (2) USB 2.0, headphone and microphone
5. (1) Slimline Drive Bay
6. (1) 3.5" internal bay
7. 200-watt Active Power Factor Correction (PFC) power supply
8. (1) full-height PCI slot (requires optional PCI riser), (1) low profile PCI Express x16 slot (requires optional PCIe x16 riser)*
9. Rear I/O: (6) USB 2.0, (1) optional serial port (available via adapter), (1) optional parallel port (available via adapter), (1) optional DVI graphics port (available via DVI ADD2 adapter), (2) PS/2, (1) RJ-45, (1) VGA, audio in/out

*NOTE: Only one optional PCI riser card (the PCI riser or the PCI Express x16 riser) or one PCI Serial and parallel I/O adapter is allowed.

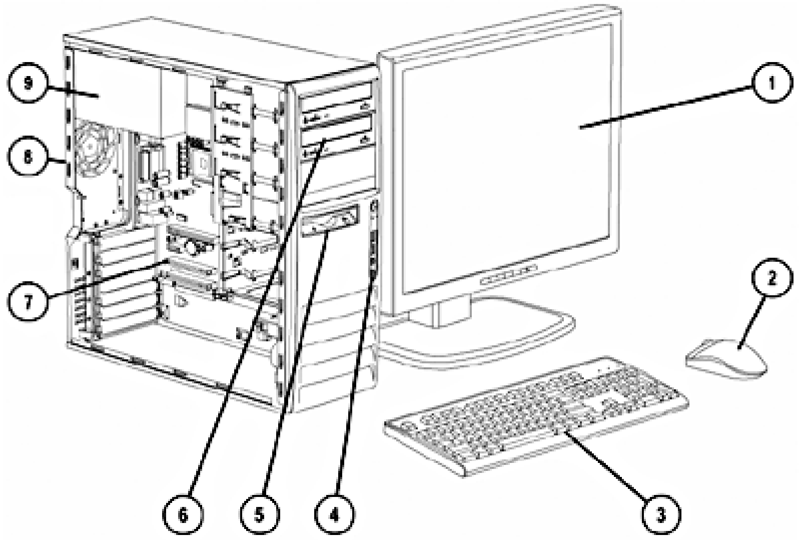
Small Form Factor



1. Monitor (sold separately)
2. 2-Button Scroll Mouse (PS/2) or Optical Scroll Mouse (PS/2 or USB)
3. HP Standard Keyboard (PS/2 or USB) or HP USB Smartcard Keyboard
4. Front I/O: (2) USB 2.0, headphone and microphone
5. (1) 3.5" external bay for optional HP 16-in-1 Media Card Reader, diskette drive, or other 3.5" device
6. (1) 5.25" external bay for optional optical drive, or other 5.25" device (bay tilts up for device removal and insertion)
7. (1) 3.5" internal bay
8. 240-watt Active Power Factor Correction (PFC) power supply
9. 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, (1) optional DVI graphics port (available via DVI ADD2 adapter), audio in/out
10. (2) low profile PCI slots, (1) low profile PCI Express x1 slot, (1) low profile PCI Express x16 slot; (2) full-height PCI slots optional (require PCI riser card)*

*NOTE: With riser card option, PCI Express x1 and x16 slots are inaccessible.

Convertible Minitower



1. Monitor (sold separately)
2. 2-Button Scroll Mouse (PS/2) or Optical Scroll Mouse (PS/2 or USB)
3. HP Standard Keyboard (PS/2 or USB) or HP USB Smartcard Keyboard
4. Front I/O: (2) USB 2.0, headphone and microphone
5. (1) 3.5" external bay for optional HP 16-in-1 Media Card Reader, diskette drive, or other 3.5" device
6. (3) 5.25" external bays and (2) 3.5" internal bays
7. (2) full-height PCI slots, (1) full-height PCI Express x1 slot, (1) full-height PCI Express x16 slot, (2) additional full-height PCI slots optional
8. 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, mic in
9. 365-watt Active Power Factor Correction (PFC) power supply

At A Glance

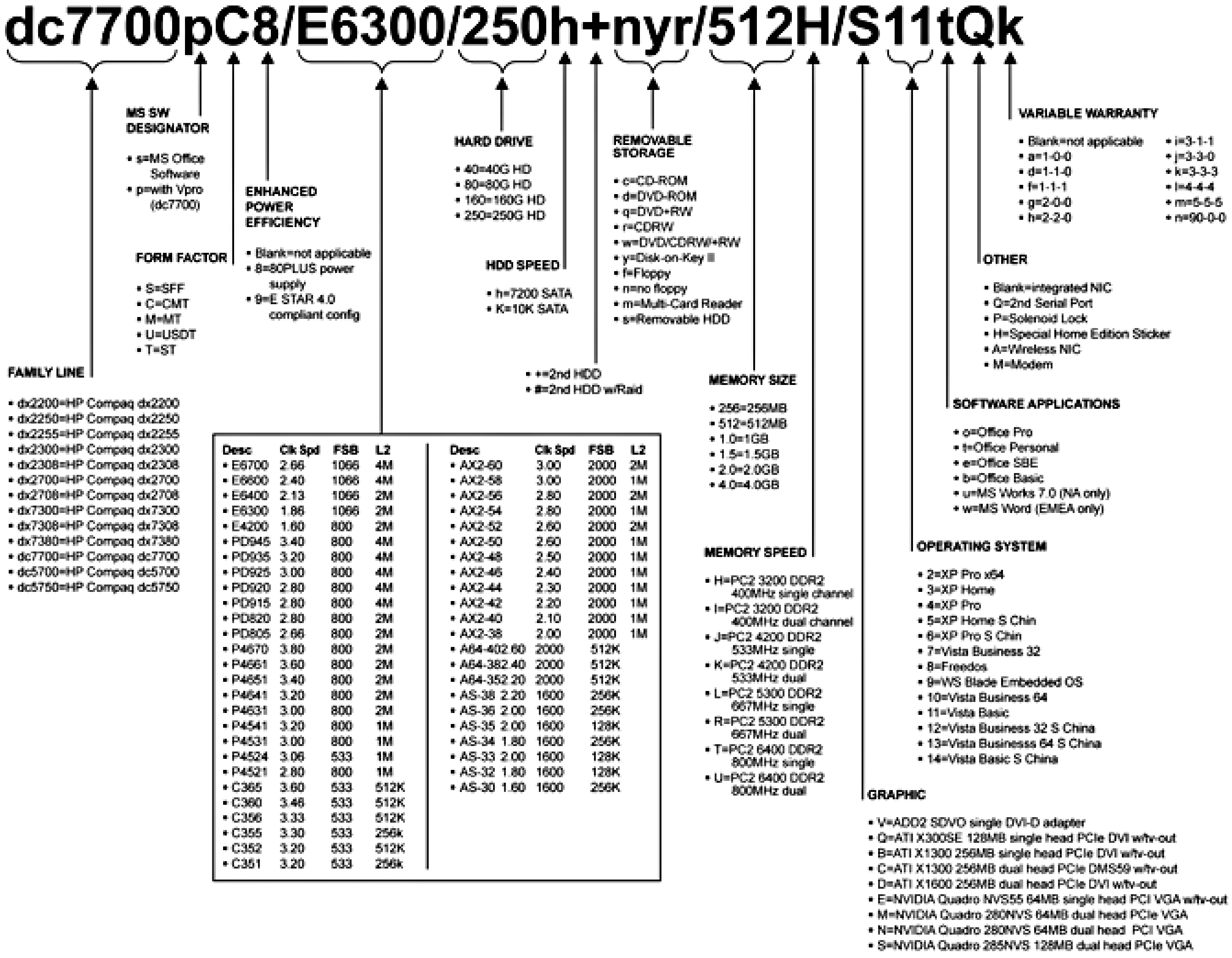
- Designed for long-term, networked deployment within medium and large organizations in commercial business, finance and public sector industries
- Created using industry leading Design for Environment standards. Upgradeable, recyclable and energy efficient.
- Long purchase lifecycles and image stability for demanding enterprise environments
- Support for new Intel technologies introduced in 2006: Intel® Q965 Express chipset, Intel Core™ 2 Duo Processors, and Intel Graphics Media Accelerator 3000 integrated graphics
- Select models with new Intel vPro technology support the latest in manageability and security technology
- Value-added software
    - HP ProtectTools Security Software Suite, including embedded security, now preinstalled standard
    - HP Client Manager (http://h18000.www1.hp.com/im/index.html)
    - HP OpenView Configuration Management Solutions
    - Altiris Deployment Solution Agent
    - Symantec AntiVirus 10.0 with 60 day Live Update Subscription
    - HP Insight Diagnostics software
- Fully compatible software OS image across all three models (Ultra-slim Desktop, Small Form Factor, and Convertible Minitower)
- HP BIOS for better security, manageability and software image stability
- 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)
- Protected by HP Services, including standard warranties up to 5-5-5 (terms and conditions vary by country; certain restrictions and exclusions apply).
- Security
    - Embedded TPM1.2 compliant security module* (requires HP ProtectTools Embedded Security software), providing compatibility with future security features expected in Microsoft Vista
    - Redundant Array of Independent Disks (RAID) 1 configurations to protect data against hardware failures
    - HP Backup and Recovery Manager to protect data against software corruption or incompatibilities due to patching or upgrades
- Tool-less serviceability features for easier upgrades and repairs
- Choice of professional chassis form factors to accommodate the desired mix between expandability and size

* 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.



dc7700pC8/E6300/250h+nyr/512H/S11tQk

FAMILY LINE

- dx2200=HP Compaq dx2200
- dx2250=HP Compaq dx2250
- dx2255=HP Compaq dx2255
- dx2300=HP Compaq dx2300
- dx2308=HP Compaq dx2308
- dx2700=HP Compaq dx2700
- dx2708=HP Compaq dx2708
- dx7300=HP Compaq dx7300
- dx7308=HP Compaq dx7308
- dx7380=HP Compaq dx7380
- dc7700=HP Compaq dc7700
- dc5700=HP Compaq dc5700
- dc5750=HP Compaq dc5750

MS SW DESIGNATOR

- s=MS Office Software
- p=with Vpro (dc7700)

FORM FACTOR

- S=SFF
- C=CMT
- M=MT
- U=USDT
- T=ST

ENHANCED POWER EFFICIENCY

- Blank=not applicable
- 8=80PLUS power supply
- 9=E STAR 4.0 compliant config

Desc	Clk Spd	FSB	L2	Desc	Clk Spd	FSB	L2
• E6700	2.66	1066	4M	• AX2-60	3.00	2000	2M
• E6600	2.40	1066	4M	• AX2-58	3.00	2000	1M
• E6400	2.13	1066	2M	• AX2-56	2.80	2000	2M
• E6300	1.86	1066	2M	• AX2-54	2.80	2000	1M
• E4200	1.60	800	2M	• AX2-52	2.60	2000	2M
• PD945	3.40	800	4M	• AX2-50	2.60	2000	1M
• PD935	3.20	800	4M	• AX2-48	2.50	2000	1M
• PD925	3.00	800	4M	• AX2-46	2.40	2000	1M
• PD920	2.80	800	4M	• AX2-44	2.30	2000	1M
• PD915	2.80	800	4M	• AX2-42	2.20	2000	1M
• PD820	2.80	800	2M	• AX2-40	2.10	2000	1M
• PD805	2.66	800	2M	• AX2-38	2.00	2000	1M
• P4670	3.80	800	2M	• A64-402.60	2000	512K	
• P4661	3.60	800	2M	• A64-382.40	2000	512K	
• P4651	3.40	800	2M	• A64-352.20	2000	512K	
• P4641	3.20	800	2M	• AS-38 2.20	1600	256K	
• P4631	3.00	800	2M	• AS-36 2.00	1600	256K	
• P4541	3.20	800	1M	• AS-35 2.00	1600	128K	
• P4531	3.00	800	1M	• AS-34 1.80	1600	256K	
• P4524	3.06	533	1M	• AS-33 2.00	1600	128K	
• P4521	2.80	800	1M	• AS-32 1.80	1600	128K	
• C365	3.60	533	512K	• AS-30 1.60	1600	256K	
• C360	3.46	533	512K				
• C356	3.33	533	512K				
• C355	3.30	533	256k				
• C352	3.20	533	512K				
• C351	3.20	533	256k				

HARD DRIVE

- 40=40G HD
- 80=80G HD
- 160=160G HD
- 250=250G HD

HDD SPEED

- h=7200 SATA
- K=10K SATA

- +=2nd HDD
- #=2nd HDD w/Raid

REMOVABLE STORAGE

- c=CD-ROM
- d=DVD-ROM
- q=DVD+RW
- r=CDRW
- w=DVD/CDRW/+RW
- y=Disk-on-Key II
- f=Floppy
- n=no floppy
- m=Multi-Card Reader
- s=Removable HDD

MEMORY SIZE

- 256=256MB
- 512=512MB
- 1.0=1GB
- 1.5=1.5GB
- 2.0=2.0GB
- 4.0=4.0GB

MEMORY SPEED

- H=PC2 3200 DDR2 400MHz single channel
- I=PC2 3200 DDR2 400MHz dual channel
- J=PC2 4200 DDR2 533MHz single
- K=PC2 4200 DDR2 533MHz dual
- L=PC2 5300 DDR2 667MHz single
- R=PC2 5300 DDR2 667MHz dual
- T=PC2 6400 DDR2 800MHz single
- U=PC2 6400 DDR2 800MHz dual

GRAPHIC

- V=ADD2 SDVO single DVI-D adapter
- Q=ATI X300SE 128MB single head PCIe DVI w/tv-out
- B=ATI X1300 256MB single head PCIe DVI w/tv-out
- C=ATI X1300 256MB dual head PCIe DMS59 w/tv-out
- D=ATI X1600 256MB dual head PCIe DVI w/tv-out
- E=NVIDIA Quadro NVS55 64MB single head PCI VGA w/tv-out
- M=NVIDIA Quadro 280NVS 64MB dual head PCIe VGA
- N=NVIDIA Quadro 280NVS 64MB dual head PCI VGA
- S=NVIDIA Quadro 285NVS 128MB dual head PCIe VGA

OPERATING SYSTEM

- 2=XP Pro x64
- 3=XP Home
- 4=XP Pro
- 5=XP Home S Chin
- 6=XP Pro S Chin
- 7=Vista Business 32
- 8=Freedos
- 9=WS Blade Embedded OS
- 10=Vista Business 64
- 11=Vista Basic
- 12=Vista Business 32 S China
- 13=Vista Businesss 64 S China
- 14=Vista Basic S China

SOFTWARE APPLICATIONS

- o=Office Pro
- t=Office Personal
- e=Office SBE
- b=Office Basic
- u=MS Works 7.0 (NA only)
- w=MS Word (EMEA only)

OTHER

- Blank=integrated NIC
- Q=2nd Serial Port
- P=Solenoid Lock
- H=Special Home Edition Sticker
- A=Wireless NIC
- M=Modem

VARIABLE WARRANTY

- Blank=not applicable
- a=1-0-0
- d=1-1-0
- f=1-1-1
- g=2-0-0
- h=2-2-0
- i=3-1-1
- j=3-3-0
- k=3-3-3
- l=4-4-4
- m=5-5-5
- n=90-0-0

Configurable Components - Select Models (localized by Regions)

Standard Models

Small Form Factor

RG572AA#ABA	dc7700S/P4-531/80hdn/512R/4k	Regional
RJ818AW#ABA	dc7700S/PD-915/80hdn/512R/4k	WW
RG576AW#ABA	dc7700S/PD-945/80hdn/1R/4k	WW
RG578AW#ABA	dc7700S/E-6300/80hdn/1R/4k	WW
RG992AW#ABA	dc7700S/E-6300/80hwn/1R/4k	WW
RG581AW#ABA	dc7700S/E-6400/160hwn/1R/4k	WW
RG580AW#ABA	dc7700pS/E-6300/80hdn/1R/4k	WW
RJ934AA#ABA	dc7700pS/E-6300/80hwn/1R/4k	WW
RJ937AA#ABA	dc7700pS/E-6300/80h#wn/1R/4k	Regional
RW141AW#ABA	dc7700pS/E-6300/80hdn/2R/4k	Regional

Convertible Minitower

RG571AA#ABA	dc7700C/P4-531/80hdn/512R/4k	Regional
RJ817AW#ABA	dc7700C/PD-915/80hdn/512R/4k	WW
RG575AW#ABA	dc7700C/PD-945/80hdn/1R/4k	WW
RG577AW#ABA	dc7700C/E-6300/80hdn/1R/4k	WW
RG991AW#ABA	dc7700C/E-6300/80hwn/1R/4k	WW
RG582AW#ABA	dc7700C/E-6400/160hwn/1R/4k	WW
RG579AW#ABA	dc7700pC/E-6300/80hdn/1R/4k	WW
RJ933AA#ABA	dc7700pC/E-6300/80hwn/1R/4k	WW
RJ936AA#ABA	dc7700pC/E-6300/80h#wn/1R/4k	Regional
RW139AW#ABA	dc7700pC/E-6300/80hdn/2R/4k	Regional

Ultra-slim Desktop

RG584AA#ABA	dc7700U/P4-531/80hcn/512R/4k	Regional
RJ819AW#ABA	dc7700U/PD-915/80hcn/512R/4k	WW
RG586AW#ABA	dc7700U/PD-945/80hwn/1R/4k	WW
RG587AW#ABA	dc7700U/E-6300/80hwn/1R/4k	WW
RG583AW#ABA	dc7700U/E-6400/160hwn/1R/4k	WW
RG588AW#ABA	dc7700pU/E-6300/80hcn/1R/4k	WW
RJ935AA#ABA	dc7700pU/E-6300/80hwn/1R/4k	Regional

Standard Features and Configurable Components

Operating System – One of the following

Preinstalled	Genuine Windows XP Professional SP2 Genuine Windows XP Home SP2 FreeDOS
Supported	Genuine Windows Vista Business 32* 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. Windows Vista support for all hardware and software features of this product is planned by April 1, 2007.

Value-added Software (not included with FreeDOS)

- HP ProtectTools Security Solutions
- Altiris Deployment Solution Agent
- HP OpenView Configuration Management Solutions Agent (visit http://www.hp.com/go/easydeploy)
- HP Insight Diagnostics (on documentation CD)
- Computer Setup Utility
- HP Backup and Recovery Manager
- Symantec AntiVirus 10.0 with 60 day Live Update Subscription
- Microsoft Office 2003 Basic
- Microsoft Office 2003 Professional
- Microsoft Office 2003 Small Business
- Microsoft Internet Explorer with Google Toolbar
- Adobe Acrobat Reader
- PDF Complete

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*
- 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.

	Ultra-slim Desktop	Small Form Factor	Convertible Minitower

Standard Features and Configurable Components

Dimensions			
Chassis Dimensions (H x W x D)	2.95 x 12.4 x 13.18 in (7.49 x 31.50 x 33.48 cm)	3.95 x 13.3 x 14.9 in (10.03 x 33.78 x 37.85 cm)	17.65 x 6.6 x 17.8 in (44.83 x 16.76 x 45.21 cm)
System weight*	12.08 lb (5.48 kg)	17.18 lb (7.79 kg)	31.18 lb (14.14 kg)
System volume	7.9 liters	12.8 liters	33.8 liters
Shipping weight*	19.20 lb (8.71 kg)	25.10 lb (11.39 kg)	39.5 lb (17.92 kg)
Maximum supported weight (desktop orientation)	77.1 lb (35 kg)	77.1 lb (35 kg)	77.1 lb (35 kg)
Shipping box dimensions (H x W x D)	12.63 x 18.75 x 20 in (32.08 x 47.63 x 50.8 cm)	12.63 x 18.75 x 20 in (32.08 x 47.63 x 50.8 cm)	23.38 x 13.06 x 22.88 in (59.39 x 33.17 x 58.12 cm)
* Configured with 1 hard drive, 1 optical drive, no diskette drive, and no PCI card.			

Power Supply	200W power supply – Active PFC	240W power supply – Active PFC	365W power supply – Active PFC
80Plus Power Supply		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)	8 (2 front, 6 rear)
Serial	1 optional via Serial & parallel I/O adapter	1 standard with 2nd optional	1 standard with 2nd optional
Parallel	1 optional via Serial & parallel I/O adapter	1	1
PS/2	1 keyboard, 1 mouse		
Video	analog for integrated graphics		
DVI output	available via ADD2 card, PCI-E x16 card, or PCI card		
Support for Multi-Monitor	available via ADD2 card, PCI-E x16 card, or PCI card		
Audio	Front – mic and headphone Rear – line in, line out		Front – mic and headphone Rear – line in, line out, mic in
NIC (RJ-45)	Integrated Intel 82566DM Gigabit Network Connection Ethernet		

		USDT	SFF	CMT
Chipset	Intel Q965 Express chipset	X	X	X

Standard Features and Configurable Components

		USDT	SFF	CMT
Processor and Speed* One of the following	Intel Celeron D Processors:			
	Intel Celeron D 352 Processor (3.20-GHz, 512K L2 cache, 533-MHz FSB)	X	X	X
	Intel Celeron D 360 Processor (3.46-GHz, 512K L2 cache, 533-MHz FSB)	X	X	X
	Intel Pentium 4 Processors with Hyper Threading Technology:			
	Intel Pentium 4 524 Processor (3.06-GHz, 1-MB L2 cache, 533 -MHz FSB)	X	X	X
	Intel Pentium 4 531 Processor (3.0-GHz, 1-MB L2 cache, 800-MHz FSB)	X	X	X
	Intel Pentium 4 541 Processor (3.2-GHz, 1-MB L2 cache, 800-MHz FSB)	X	X	X
	Intel Pentium 4 631 Processor (3.0-GHz, 2-MB L2 cache, 800-MHz FSB)	X	X	X
	Intel Pentium 4 641 Processor (3.2-GHz, 2-MB L2 cache, 800-MHz FSB)	X	X	X
	Intel Pentium 4 651 Processor (3.4-GHz, 2-MB L2 cache, 800-MHz FSB)	X	X	X
	Intel Pentium D Processors:			
	Intel Pentium D 820 Processor (2.8-GHz, 2x1MB L2 cache, 800-MHz FSB	X	X	X
	Intel Pentium D 915 Processor (2.8-GHz, 2x2MB L2 cache, 800-MHz FSB	X	X	X
	Intel Pentium D 925 Processor (3.0-GHz, 2x2MB L2 cache, 800-MHz FSB)	X	X	X
	Intel Pentium D 935 Processor (3.2-GHz, 2x2MB L2 cache, 800-MHz FSB)	X	X	X
	Intel Pentium D 945 Processor (3.4-GHz, 2x2MB L2 cache, 800-MHz FSB)	X	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	X
	Intel Core 2 Duo E6300 Processor (1.86-GHz, 2 MB L2 cache, 1066-MHz FSB) – low power**	X	X	X
	Intel Core 2 Duo E6300 Processor (1.86-GHz, 2 MB L2 cache, 1066-MHz FSB)	X	X	X
	Intel Core 2 Duo E6400 Processor (2.13-GHz, 2 MB L2 cache, 1066-MHz FSB) – low power**	X	X	X
	Intel Core 2 Duo E6400 Processor (2.13-GHz, 2 MB L2 cache, 1066-MHz FSB)	X	X	X
	Intel Core 2 Duo E6600 Processor (2.40-GHz, 4 MB L2 cache, 1066-MHz FSB)	X	X	X
	Intel Core 2 Duo E6700 Processor (2.66-GHz, 4 MB L2 cache, 1066-MHz FSB)	X	X	X

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

** Low power version of processor is a requirement for US Energy Star 4.0 compliance.

		USDT	SFF	CMT
Intel vPro Technology*	Uses AMT 2.0 (Active Management Technology) for network alerting and management of systems regardless of power state, as well as operating system-absent environments	X	X	X

*NOTE: Units configured with this feature are referred to as HP Compaq dc7700p Business PCs.

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 Q965 Express chipsets support non-ECC DDR2 PC2-5300 (667-MHz) and 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.

Ultra-slim Desktop

Maximum Memory* Supports up to 3-GB of DDR2 SYNCH DRAM. *Slot 1 is black and must always be populated. Not all memory configurations possible are represented below.*

DIMM Size	Slot		
	Channel A		Channel B
	1 (black)	2 (white)	3 (white)
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
3-GB maximum	1-GB	1-GB	1-GB

*NOTE: The Intel Q965 Express chipset includes a built-in Management Engine (ME), which allocates memory for manageability functions. Management Engine memory is shared with system memory. If the PC contains a single DIMM, 8 MB of memory is pre-allocated for it at system startup. If the PC contains two DIMMs, 16 MB of memory is pre-allocated. This memory is not made available to the operating system, just as pre-allocated video memory is not available.

Small Form Factor and Convertible Minitower

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.

Standard Features and Configurable Components

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

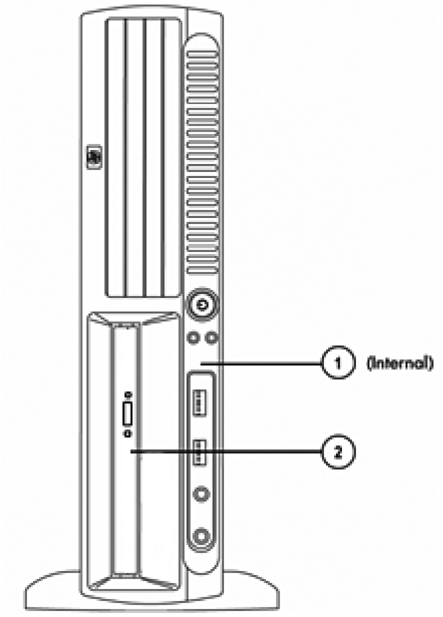
*NOTE: The Intel Q965 Express chipset includes a built-in Management Engine (ME), which allocates memory for manageability functions. Management Engine memory is shared with system memory. If the PC contains a single DIMM, 8 MB of memory is pre-allocated for it at system startup. If the PC contains two DIMMs, 16 MB of memory is pre-allocated. This memory is not made available to the operating system, just as pre-allocated video memory is not available.

Memory Configurations – One of the following		USDT	SFF	CMT
	512-MB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (1 x 512)	X	X	X
	512-MB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (2 x 256)	X	X	X
	1-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (1 x 1GB)	X	X	X
	1-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (2 x 512)	X	X	X
	2-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (2 x 1GB)	X	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	X
	4-GB DDR2 Synch Dram PC2-6400 (800-MHz) Non ECC (4 x 1GB)		X	X
	256-MB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (1 x 256)	X	X	X
	512-MB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (1 x 512)	X	X	X
	512-MB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (2 x 256)	X	X	X
	1-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (1 x 1GB)	X	X	X
	1-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (2 x 512)	X	X	X
	2-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (2 x 1GB)	X	X	X
	2-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (4 x 512)		X	X
	3-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (3 x 1GB)	X	X	X
	4-GB DDR2 Synch Dram PC2-5300 (667-MHz) Non ECC (4 x 1GB)		X	X

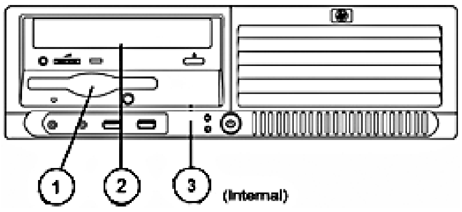
Expandability	USDT	SFF	CMT

PCI slots	Optional, requires PCI riser: 1 full-height (4.2"), length (6.6")	2 low-profile (2.5"), length (6.6") standard; 2 full-height (4.2"), length (6.875") via optional riser card. NOTE: With riser card option, PCIe x1 and PCIe x16 slots are not accessible.	2 full-height (4.2"), length (13.4") standard; (2 additional full-height slots available via optional PCI extender card)
Max power per slot	25W	25W	25W
PCI Express x16 slot	Optional, requires PCIe x16 riser: 1 low-profile (3.987"), length (6.60")	1 low-profile (2.5"), length (6.6")	1 full-height (4.2"), length (10.5")
Max power per slot	25W	25W	75W
PCI Express x1 slot	N/A	1 low profile (2.5"), length (6.6")	1 full-height (4.2"), length (13.4")
Max power per slot	N/A	10W	10W
External Bays	1 Slimline (WxDxH): 128 x 127 x 12.7 mm	2	4
3.5"	N/A	1	1
5.25"	N/A	1 (length 8.189")	3 (2 – length 8.189", 1 – length 5.71")
Internal 3.5" HDD Bays	1	1	2
Hard Drive Controller (PCI) Supported	Serial ATA (support for SATA 1.5-Gb/s and 3.0-Gb/s hard drives)		
Hard Drive Interfaces Supported	1 Serial ATA interface	3 Serial ATA interfaces	4 Serial ATA interfaces

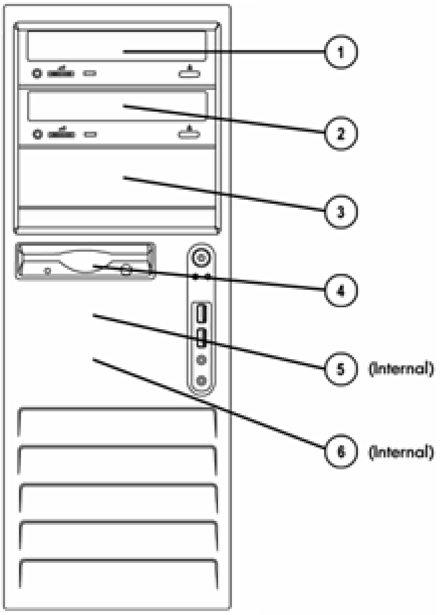
Ultra-slim Desktop



Small Form Factor



Convertible Minitower



Storage – Drive Support

	USDT		SFF			CMT			
	Slimline Drive Bay	3.5" Serial ATA Hard Drive	Diskette Drive or PCI Media Card Reader (optional)	Storage Drive Bay	3.5" Serial ATA Hard Drives	Diskette Drive	PCI Media Card Reader (optional)	Storage Drive Bays for multiple Optical Drives	3.5" Serial ATA Hard Drives
Quantity Supported	1	1	1	1	2	1	1	3	3
Position Supported	②	①	①	②	①, ③	④	④, ①, ②, ③	①, ②, ③	④, ⑤, ⑥
Controller	SATA to IDE Bridge	SATA	Diskette Controller or USB header on PCI card	SATA	SATA	Diskette Controller	USB header on PCI card	SATA	SATA

		USDT	SFF	CMT
Hard Drive – One or two of the following	80-GB SATA 3.0-Gb/s Hard Drive (8MB Cache, 7200 rpm)	X	X	X
	160-GB SATA 3.0-Gb/s Hard Drive (8MB Cache, 7200 rpm)	X	X	X
	250-GB SATA 3.0-Gb/s Hard Drive (8MB Cache, 7200 rpm)	X	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
	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
	2nd hard drive, 80-GB SATA 3.0-Gb/s Hard Drive (8MB Cache, 7200 rpm)		X	X
	2nd hard drive, 160-GB SATA 3.0-Gb/s Hard Drive (8MB Cache, 7200 rpm)		X	X
	2nd hard drive, 250-GB SATA 3.0-Gb/s Hard Drive (8MB Cache, 7200 rpm)		X	X
Removable Storage – One or more of the following depending on form factor (see Storage section below)	Diskette Drives			
	1.44-MB Diskette Drive		X	X
	Optical Drives			
	SATA CD-RW/DVD-ROM Combo Drive		X	X
	SATA DVD-ROM Drive		X	X
	SATA DVD+/-RW (DL/DF) LightScribe Drive		X	X
	Slimline Optical Drives			
	PATA CD-ROM Slim Drive	X		
	PATA CD-RW/DVD-ROM Combo Slim Drive	X		
	PATA DVD+/-RW Slim Drive	X		
	PATA DVD-ROM Slim Drive	X		

Media Card Reader – One of the following	HP 16-in-1 3.5" Media Card Reader w/ PCI card		X	
	HP 16-in-1 5.25" Media Card Reader w/ PCI card			X
Security	Integrated 1.2 TPM Embedded Security Chip*	X	X	X
	Drive Lock	X	X	X
	HP ProtectTools Embedded Security Software	X	X	X
	Serial, Parallel, USB Enable/Disable (via BIOS)	X	X	X
	Removable Media Write/Boot Control	X	X	X
	Power-On Password (via BIOS)	X	X	X
	Setup Password (via BIOS)	X	X	X
	Solenoid Hood Lock / Sensor		X	X
	Hood Removal Sensor	X		
	* TPM module disabled where use is restricted by law; for example, Russia.			
NIC	Intel 82566DM Gigabit Network Connection (integrated on system board)	X	X	X
	Intel PRO/1000 PT PCIe Gigabit NIC (full height bracket)			X
	Intel PRO/1000 PT PCIe Gigabit NIC (low profile bracket)		X	
	Broadcom NetXtreme Gigabit PCIe NIC (full height bracket)			X
	Broadcom NetXtreme Gigabit PCIe NIC (low profile bracket)	X*	X	
	NOTE: * Requires optional PCIe riser card.			
Modem	Agere 2006 PCI 56K International SoftModem (full height)	X*	X*	X
	Agere 2006 PCI 56K International SoftModem (low profile)		X	
	NOTE: *Requires optional PCI riser card.			
Graphics	Integrated Intel Graphics Media Accelerator 3000	X	X	X
	DVI ADD2 SDVO single head Graphics Adapter for USDT (PCIe x16)	X		
	DVI ADD2 SDVO single head low profile Graphics Adapter (PCIe x16)		X	
	DVI ADD2 SDVO single head full-height Graphics Adapter (PCIe x16)			X
	ATI Radeon X1300 (256MB SH) low profile PCIe Card, DVI w/TV	X*	X	
	ATI Radeon X1300 (256MB SH) full-height PCIe Card, DVI w/TV			X
	ATI Radeon X1300 Pro (256MB DH) low profile PCIe Graphics Card	X*	X	
	ATI Radeon X1300 Pro (256MB DH) full-height PCIe Graphics Card			X
	ATI Radeon X1600XT (256MB DH) full-height PCIe Card, DVI w/TV-out			X
	NVIDIA Quadro NVS 280 (64MB DH) PCI VGA Card	X**	X***	X***
	NVIDIA Quadro NVS 285 (128MB DH) PCIe x16 VGA Card	X*	X***	X***
	NOTES: * USDT requires optional PCIe riser card. ** USDT requires optional PCI riser card. *** NVIDIA Quadro NVS 285 and NVS 280 graphics cards can be combined to provide support for four monitors.			

Standard Features and Configurable Components

Audio	Integrated High Definition audio with Realtek 4-channel ALC262 codec (all ports are stereo)	X	X	X
	Microphone and Headphone front ports	X	X	X
	Microphone rear port*			X
	Line-out and Line-In rear ports*	X	X	X
	Multistreaming capable*	X	X	X
	Internal Speaker	X	X	X
	NOTE: *Rear audio ports are re-taskable as Line-in, Line-out, or Microphone-in. External speakers must be powered externally. Multistreaming can be enabled in the Realtek control panel to allow independent audio streams to be sent to/from the front and rear jacks. This allows for different audio applications to use separate audio ports on the system. For example, the front jacks could be used with a headset for a communications application while the rear jacks are being used with external speakers and a multimedia application.			
Input Devices	Keyboard – One of the following			
	HP PS/2 Standard Keyboard	X	X	X
	HP USB Standard Keyboard	X	X	X
	HP USB Smartcard Keyboard	X	X	X
	Mouse – One of the following			
	HP PS/2 2-Button Scroll Mouse	X	X	X
	HP PS/2 2-Button Optical Scroll Mouse	X	X	X
	HP USB 2-Button Optical Scroll Mouse	X	X	X
Miscellaneous	HP FireWire / IEEE 1394 PCI Card (full height)	X*	X*	X
	HP FireWire / IEEE 1394 PCI Card (low profile)		X	
	PCI Express riser card – adds 1 low profile PCIe x16 slot	X		
	PCI riser card – adds 1 full-height PCI slot	X		
	PCI riser card – adds 2 full-height PCI slots NOTE: Low profile slots are unusable with riser card installed.		X	
	PCI extender card for CMT (adds 2 PCI slots)			X
	PCI Serial and parallel I/O adapter	X**		
	2nd serial port adapter (full height)			X
	2nd serial port adapter (low profile)		X	
	Tower stand	X	X	
	Configure dc7700 CMT in desktop orientation			X
	*Requires optional PCI riser card. **Occupies same location as PCI riser card, so both cannot be used.			

After-Market Options (availability may vary by region)

		USDT	SFF	CMT	After-Market Options Part Number
Communications	Wireless LAN				
	HP BT450 USB Bluetooth Wireless Printer and PC Adapter	X	X	X	Q6398A#ABA
	HP Wireless A+G PCI Card (North America only)	X	X	X	EA118AA
	NICs				
	Broadcom NetXtreme Gigabit Ethernet PCIe NIC Card	X**	X	X	EA833AA
	Intel/PRO 1000 PT PCIe Gigabit NIC Card	X**	X	X	EH352AA
	Intel Pro 1000 GT Gigabit NIC (FH) Card			X	AG393AA
	Modem				
	Agere 2006 PCI 56K International SoftModem	X*	X	X	EK694AA
	Connectivity				
	Bundle Connectivity Starter Kit – Surge Protector/LAN cable/Printer cable	X	X	X	RT174AA

NOTES:
* USDT requires optional PCI riser card.
** USDT requires optional PCIe riser card.

		USDT	SFF	CMT	After-Market Options Part Number
Graphics	Single head solutions				
	Intel DVI ADD2 Graphics Adapter (PCIe x16)	X**	X	X	DY674A
	ATI Radeon X1300 (256MB SH) PCIe Graphics Card	X**	X	X	AG392AA
	Multi head solutions				
	NVIDIA Quadro NVS 280 PCI Graphics Card (DMS59 DVI Dual-head Connector Cable)	X*	X	X	DY599A
	NVIDIA Quadro NVS285 (128MB DH) PCIe Graphics Card	X**	X	X	RD069AA
	HP DMS59 DVI Dual-head Connector Cable***	X***	X	X	DL139A

NOTE: *Requires optional PCI riser card (PD824A).
** USDT requires optional PCIe riser card (EU054AA).
*** Requires NVIDIA Quadro NVS 280 PCI Graphics or NVIDIA Quadro NVS285 PCIe Graphics Card

		USDT	SFF	CMT	After-Market Options Part Number
Hard Drives	Serial ATA Hard Drives				
	HP 80-GB SATA 3.0-Gb/s Hard Drive	X	X	X	PY276AA
	HP 160-GB SATA 3.0-Gb/s Hard Drive	X	X	X	PY277AA
	HP 250-GB SATA 3.0-Gb/s Hard Drive	X	X	X	PY278AA

After-Market Options (availability may vary by region)

Input/Output Devices	Keyboards				
	HP PS/2 Standard Keyboard	X	X	X	DT527A#ABA
	HP USB Standard Keyboard	X	X	X	DT528A#ABA
	HP USB Smartcard Keyboard	X	X	X	ED707AA#ABA
	Pointing Devices				
	HP PS/2 2-Button Scroll Mouse	X	X	X	DD440B
	HP PS/2 2-Button Optical Scroll Mouse	X	X	X	EY703AA
	HP USB 2-Button Optical Scroll Mouse	X	X	X	DC172B
Memory (DIMMs)	PC2-5300 (DDR2, 667 MHz) DIMMs Non-ECC				
	HP 1 GB PC2-5300 (DDR2-667) DIMM	X	X	X	PX976AA
	HP 512 MB PC2-5300 (DDR2-667) DIMM	X	X	X	PX975AA
	HP 256 MB PC2-5300 (DDR2-667) DIMM	X	X	X	PX974AA
	PC2-6400 (DDR2 800) MHz) DIMMs				
	HP 1-GB PC2-6400 (DDR2 800 MHz) DIMM	X	X	X	AH058AA
	HP 512-MB PC2-6400 (DDR2 800 MHz) DIMM	X	X	X	AH056AA
	HP 256-MB PC2-6400 (DDR2 800 MHz) DIMM	X	X	X	AH054AA
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 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 w19 19" TFT Widescreen Flat Panel Display – Analog/Digital				EM885AA#ABA
	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	X	RD628AA
	Flat Panel Speaker Bar	X	X	X	EE418AA

After-Market Options (availability may vary by region)

PATA Slim Optical Drives	DVD-ROM Drive				
	HP PATA DVD-ROM Slim Drive	X			AH041AA
	Combo Drive				
	HP PATA CD-RW/DVD-ROM Combo Slim Drive	X			AH042AA
	DVD+/-RW Drive				
	HP PATA DVD+/-RW (DL/DF) LightScribe Slim Drive	X			AH043AA
SATA Half-Height 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
Removable Storage	Drive Key Options				
	HP 512MB USB 2.0 Drive Key	X	X	X	ED516AA
	Diskette and Digital Drives				
	HP 1.44-MB External USB Diskette Drive	X	X	X	DC141B
	1.44-MB Internal Floppy Drive			X	AG295AA
	1.44-MB Internal Floppy Drive		X		AG296AA
	Multimedia				
	HP 16-in-1 Media Card Reader with PCI Card		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	X	PC766A
	HP Business PC Security Lock	X	X	X	TBD
	HP USB Biometric Fingerprint Reader	X	X	X	EM717AA
	HP (USDT) Wall Mount Security Sleeve*	X			PA719A
	HP (SFF) Wall Mount Security Sleeve**		X		PA717A
	HP USB Smartcard Keyboard	X	X	X	ED707AA#ABA
	Solonoid Lock			X	DE618A
	Solonoid Lock		X		

NOTES:

* Dimensions (W x H x L): 12.7 x 3.5 x 12.0 inches; Weight: 3.8 lb
** Dimensions (W x H x L): 13.5 x 4.4 x 14.4 inches; Weight: 5.9 lb

After-Market Options (availability may vary by region)

Software	HP OpenView Client Configuration Manager	X	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	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	X	EF119AA (use EF120AA for 1000+ licenses)
Brackets/Stands	HP Integrated Work Center Stand	X			DL641B
	Tower Stand		X		PS797A
	5.25" Blank Bezel Kit (Carbonite 50/Bulk Pack)		X	X	DC177B
Miscellaneous Accessories	HP Serial & Parallel IO Adapter	X			PD825A
	HP 2nd Serial Port		X	X	PA716A
	HP (USDT) PCI Riser Board	X			ED247AA
	HP (USDT) PCIe Riser Board	X			EU054AA
	HP (SFF) PCI Riser Board		X		PD824A
	HP PCI Extender			X	DC179B
	HP FireWire / IEEE 1394 PCI Card	X*	X	X	PA997A
	Belkin USB to Serial Adapter	X	X	X	EM449AA
	USB Gold Series A/B Device Cable	X	X	X	AH121AA
	Cat5e Patch Cable	X	X	X	AH122AA
	Firewire (1394) Cable	X	X	X	AH123AA
	DVI to DVI cable	X	X	X	DC198A
	7-outlet Surge Protector	X	X	X	AG290AA#ABA
	550 VA Uninterruptible Power Supply	X	X	X	AH124AA#ABA

Unit Environment and Operating Conditions	Ultra-slim Desktop	Small Form Factor	Convertible Minitower
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.			

Power Supply	Ultra-slim Desktop	Small Form Factor		Convertible Minitower
Power Supply	200 watt custom power supply – Active PFC)	240 watt custom power supply – Active PFC	240 watt 80Plus* custom power supply – Active PFC	365 watt custom power supply – Active PFC)
Operating Voltage Range	90 – 264 VAC	90 – 264 VAC	90 – 264 VAC	90 – 264 VAC
Rated Voltage Range	100 – 240 VAC	100 – 240 VAC	100 – 240 VAC	100 – 240 VAC
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	4A	5A	3.5A	6A
System Heat Dissipation	Typical 340 btu/hr (86 kg-cal/hr) Maximum 1050 btu/hr (265 kg-cal/hr)	Typical 340 btu/hr (86 kg-cal/hr) Maximum 1260 btu/hr (318 kg-cal/hr)	Typical 270 btu/hr (68 kg-cal/hr) Maximum 1025 btu/hr (258 kg-cal/hr)	Typical 375 btu/hr (95 kg-cal/hr) Maximum 1916 btu/hr (483 kg-cal/hr)
Power Supply Fan	70mm variable speed	80mm variable speed	80mm variable speed	92mm variable speed
Energy Star 3.0 Compliant	X	X	X	X
Energy Star 4.0 Compliant	X	X	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)	< 3W	< 3W	< 3W	< 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 dc7700 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. Select models offer Intel vPro technology including AMT (Active Management Technology).
- 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 Configuration for ProtectTools 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.
- 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

- Power-On password – Helps prevent an unauthorized user from powering on the system. After a TPM Basic User password is established in windows, the user or admin can require TPM hardware based authentication during the power-on process.
- Administrator password – Also known as the setup password, this helps prevent unauthorized changes to the system configuration. If the administrator password is not known, the BIOS version cannot be changed and changes cannot be made to BIOS settings using F10 setup or under the OS.
- Advanced Configuration and Power Interface (ACPI) – Represents a significant innovation in power and configuration management, allowing operating systems and applications to manage power based on activity and usage. HP Compaq dc7700 models use ACPI to provide power conservation features under Windows XP.

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 Configuration Record SW	• 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
• HP Backup and Recovery Manager	• 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 without removing the system board or any internal components	• Tool-less Hard Drive, CD & Diskette Removal
• Green Pull Tabs, and Quick Release Latches for easy Identification		• Tool-less System Board Removal
NOTE: Thumb screw release mechanism is used with the Ultra-slim Desktop chassis cover.		

Feature	Description
AMT 2.0 support (Active Management Technology)	Select models offer new Intel vPro Technology utilizing AMT 2.0 for network alerting and management of systems regardless of power state, as well as operating system-absent environments.
ASF 2.0 support (Alert Standard Format)	Industry-standard specification for network alerting in operating system-absent environments

Tower	Product can be oriented as a tower (in addition to desktop orientation)
Drive Lock*	Implementation of the industry standard ATA Security feature set. When enabled, it prevents software access to user data on the drive until one or two user-defined passwords are provided.
Drive 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 • 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 I – Drive Failure Prediction	
SMART II – Off-Line Data Collection	
SMART III – Off-Line Read Scanning with Defect Reallocation	
* NOTE: This feature is inoperable when a RAID (Redundant Array of Independent Disks) configuration is enabled.	

Technical Specifications - Audio

High Definition Audio	Type	Integrated
	High Definition Stereo Codec	Yes – Realtek ALC262, 4-channel
	Audio Jacks	Microphone-In (64-K ohm Input Impedance); front and rear stereo analog microphone ports available except for USDT and SFF, which has front stereo microphone only 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. Rear audio ports are re-taskable as Line-in, Line-out, or Microphone-in.	
	Multistreaming Capable	Multistreaming can be enabled in the Realtek control panel to allow independent audio streams to be sent to/from the front and rear jacks.
	Sampling	8 kHz – 192 kHz
	Wavetable Syntheses (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
	External Speaker Jack (Line-Out)	Yes

Technical Specifications - Communications

Integrated Intel 82566DM Gigabit Network Connection	Connector	RJ-45	
	Controller	Intel Nineveh Gigabit platform LAN Connect Networking Controller	
	Memory	Integrated 96KbB on chip buffer memory	
	Data rates supported	10/100/1000 Mbps	
	Compliance	IEEE 802.1P, 802.1Q, 802.2, 802.3, 802.3 ab and 802.3u compliant,	
	Bus architecture	GLCI, LCI interface. Intel specific MAC to PHY interface	
	Data transfer mode	At gigabit GLCI (802.3 serdes) is for Data, LCI (parallel bus)for MDIO, at 10/100 LCI for both data and MDIO, GLCI is idle.	
	Hardware certifications	FCC, B, CE, TUV- cTUVus Mark Canada and United States, TUV- GS Mark for European Union	
	Power requirement	Require 3.3Vaux,1.8V and 1.0V or just 3.3V with integrated regulators Power consumption 1.16 Watts for 82566, whole LOM 2.53 Watts	
	ACBS	Intel Auto Connect Battery Saving feature	
	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) To 70° C for external regulator
		Operating humidity	85% at 131° F (55° C)
	Operating system driver support	Microsoft 2000, Microsoft XP	
	Management capabilities	WOL, auto MDI crossover, PXE, Muti-port teaming, RSS, Advanced cable diagnostic.	
	Alerting	ASF 2.0 support, AMT 2.0 support on dc7700p models with Intel vPro Technology	

Technical Specifications - Communications

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)	
	Operating system driver support	Microsoft 2000, Microsoft XP	
	Management capabilities	ASF, WOL, PXE, DMI, WFM 2.0.	

Agere 2006 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

Technical Specifications - Communications

Operating Temperature	32° to 158° F (0° to 70° C)
Operating Humidity	20% to 90%, non-condensing
Operating System Support	Microsoft Windows 2000 and Microsoft Windows XP
OS Driver Support	Microsoft Windows 2000 and Microsoft Windows XP
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

Technical Specifications - Graphics

Integrated Graphics Media Accelerator 3000	3D/2D Controller	Microsoft DirectX® 9 based with support for Pixel Shader 2.0, 4:1 anisotropic filtering, Gaussian texture filtering, shadow maps, volumetric textures, double-sided stencil buffers, and 4 pixel pipes.
	VGA Controller	Integrated
	Bus Type	PCI Express™ x16 (If an external graphics card is installed in a PCI slot, the internal graphics can be enabled or disabled using the system's BIOS setup utility. If an external graphics card is installed in the PCI Express™ slot, the internal graphics cannot be enabled).
	RAMDAC	Integrated, 400 MHz
	Memory	Graphics memory is shared with system memory. Graphics memory usage varies depending on the amount of system memory installed and system load. 8 MB is pre-allocated for graphics use at system boot time. Additional memory is allocated for graphics as needed using Intel's Dynamic Video Memory Technology (DVMT), to provide an optimal balance between graphics and system memory use. System memory equal or greater than 512 MB 8 MB pre-allocated + 248 MB DVMT = max frame buffer of 256 MB
	Controller Clock Speed	400 MHz
	Overlay Planes	Single overlay support with 5x3 filtering
	Maximum Color Depth	32 bits/pixel
	Maximum Vertical Refresh Rate	85 Hz at up to 1920x1440, 85 Hz at 2048x1536. Varies with mode and configuration. See table below.
	Multi-display Support	Support for one CRT via the motherboard's VGA connector. Support for an additional DVI-D display via the optional DVI ADD2 card. Dual independent displays and dual synchronous (Twin or Clone mode) displays are supported.
	Operating Systems	Microsoft Windows XP and Windows 2000
	Graphics/Video API Support	Microsoft DirectX®9, DirectXVA®, VMR9, GDI/GDI+; OpenGL® 1.4.

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
1920 x 1200	85	60
1920 x 1440	85	60
2048 x 1536	85	60

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.).

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

Technical Specifications - Graphics

DVI ADD2 Graphics	Models	DY674A Intel DVI ADD2 adapter
	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	All modes support 8-bpp, 16-bpp, and 24-bpp color depths (up to 16.7 million colors)
Host Interface Connector	Mechanically compliant with PCI-E standard Complies with the Intel ADD2 and Intel Serial Digital Video Output (SDVO) specifications
Dot Clock	165 MHz maximum
Display Modes	Supports display modes that require up to 165-MHz bandwidth on the link, as shown in the following table.

Resolution		60-Hz LCD	60-Hz	75-Hz	85-Hz
Blanking		5% reduced	GTF	GTF	GTF
640 x 480	VGA	Yes	Yes	Yes	Yes
800 x 600	SVGA	Yes	Yes	Yes	Yes
1024 x 768	XGA	Yes	Yes	Yes	Yes
1280 x 1024	SXGA	Yes	Yes	No	No
1600 x 1200	UXGA	Yes	Yes	No	No

ATI Radeon X1300 (256MB SH) PCIe Graphics Card	Bus Type	PCI Express (x16 lanes)
	Maximum Vertical Refresh Rate	85 Hz
	Display Support	Integrated 400 MHz RAMDAC
	Display Max Resolution	2048 x 1536
	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
128 MB Frame Buffer

Specification	Description
Graphics Chip	RV515
Core clock	450 MHz
Memory clock	250 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
	Operating Systems Support	Windows 2000, Windows XP
	Core Power	25 W (Max board power)
	Option kit contents	• ATI RADEON X1300 PCIe graphics card with full height bracket attached • Low profile bracket • DVI-to-VGA Adapter • Software CD with graphics drivers • Warranty documentation
	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 EMC Immunity: CISPR 24:1997/EN 55024:1998 – Information Technology Equipment - Immunity Characteristics – Limits and Methods of Measurement. Safety: UL 60950 (USA) & EN 60950 (EU): Safety of Information Technology Equipment, Including Electrical Business Equipment. All boards meet UL PCB flammability requirements.

ATI RADEON X1600XT (256 MB DH) FH 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	2 DVI-I ports (one port supports dual link DVI). DVI-I supports an analog CRT or flat panel with a VGA connector via the provided DVI-I to VGA adapter	
		4-pin mini-DIN S-video connector for TV output	
	Board Configuration	Specification	Description
		Graphics chip	RV530
		Core clock	590 MHz
		Memory clock	690 MHz
		Frame buffer	256 MB GDDR3, 128 bit wide
	Operating Systems Support	Windows 2000, Windows XP	

	Core Power	56 W (Max board power)

NVIDIA Quadro NVS 280 64MB PCI Dual Head	Form Factor	Low profile (both ATX and low profile brackets included)
	Graphic Controller	Integrated Quadro 280 2-D 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-bits/pixel max
	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 and Microsoft Windows XP (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.

Analog Resolution	Maximum Colors Supported	Maximum Refresh Rate
640 x 480	16.7 M	240 Hz
800 x 600	16.7 M	240 Hz
1024 x 768	16.7 M	200 Hz
1600 x 1200	16.7 M	170 Hz
1600 x 1200	16.7 M	150 Hz
1600 x 1200	16.7 M	100 Hz
1920 x 1200	16.7 M	85 Hz
1920 x 1200	16.7 M	85 Hz
1920 x 1440	16.7 M	75 Hz
2048 x 1536	16.7 M	60 Hz

Digital Resolution	Maximum Colors Supported	Maximum Refresh Rate
640 x 480	16.7 M	75 Hz
800 x 600	16.7 M	75 Hz
1024 x 768	16.7 M	75 Hz
1152 x 864	16.7 M	60 Hz
1280 x 1024	16.7 M	60 Hz
1600 x 1200	16.7 M	60 Hz (primary only)

Technical Specifications - Hard Drives

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)	

Technical Specifications - Input/Output Devices

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
	Operating system support	Windows 2000 and Windows XP	
	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
	Operating system support	Microsoft Windows 2000 and Windows XP	
	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

Technical Specifications - Input/Output Devices

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
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	3.8 x 6.3 x 11.6 cm (1.5 x 2.5 x 4.6 in)	
	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
	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
	Compatibility	Operating system support	Windows 2000 and Windows XP

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	5 VDC ± 10%
		Power consumption	100mA
		System consumption	PS/2 mini-din connector
		ESD	CE level 4, 15 kV air discharge
		EMI-RFI	Conforms to FCC rules for a Class B computing device
		Microsoft PC99 – 2001	Functionally compliant

Technical Specifications - Input/Output Devices

	Mechanical	Resolution	400 ± 20% DPI
		Tracking speed	10 in/s (25.4 cm/s) maximum
		Acceleration	100 in/s/s (2.54 m/s/s)
		Switch actuation	61 g nominal peak force
		Switch life	3,000,000 operations (using Hasco modified tester)
		Switch type	Low force micro-switches
		Tracking mechanism life	155 mi (250 km) at average speed of 10 in/s
		Cable length	6 ft (1.8 m)
		Microsoft PC99 – 2001	Mechanically compliant
	Scroll wheel	Width	8 mm
		Diameter	1.01 in (25.6 mm)
		Maximum rotation speed	48 rats/sec
		Switch type	Light force micro-switch
		Switch life	1 million operations
		Mechanical life	Minimum 200,000 revolutions
	Regulatory approvals	Compliant	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC
	Compatibility	Operating system support	Windows 2000 and Windows XP

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)
	System requirements	Microsoft Windows 95, 98, 2000, Me, and XP Available USB port

Technical Specifications - Optical Storage

SATA DVD+/-RW 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)
	Operating systems support	Microsoft Windows 2000, Windows XP Professional, Windows XP Home	

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)

Technical Specifications - Optical Storage

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)	
Operating systems support	Microsoft Windows 2000, Windows XP Professional, Windows XP Home		

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)
	Operating systems support	Microsoft Windows 2000, Windows XP Professional, Windows XP Home	

Technical Specifications - Optical Storage

PATA DVD+/-RW LightScribe Slim Drive	Height	5.25-inch, half-height, tray-load	
	Orientation	Either horizontal or vertical	
	Interface type	ATAPI/EIDE	
	Disc recording capacity	Up to 8.5 GB DL or 4.7 GB standard	
	Dimensions (W x H x D)	5.0 x 0.5 x 5.0 in (128 x 13.6 x 129 mm)	
	Weight (max)	0.42 lb (190 g)	
	Write speeds	DVD+R	Up to 8X
		DVD+RW	Up to 8X
		DVD+R DL	Up to 4X
		DVD-R	Up to 8X
		DVD-RW	Up to 6X
		CD-R	Up to 24X
		CD-RW	Up to 16X
	Read speeds	DVD+RW, DVD-RW, DVD-ROM, DVD+R, DVD-R	Up to 8X
		DVD-R DL	Up to 4X
		CD-ROM, CD-R	Up to 24X
		CD-RW	Up to 24X
	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)
		Stop Time	< 4 seconds
		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	Four-pin, 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)
		Total Drive Power (standby mode)	< 2.5 Watt
	Audio output	Line-Out	0.7 VRMS
		Signal-to-Noise Ratio	74 dB
		Channel Separation	65 dB
	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)
	Operating systems support	Microsoft Windows 2000, Windows XP Professional, Windows XP Home	

PATA CD-RW/DVD-ROM Combo Slim Drive	Height	12.7mm height slim CD-RW	
	Orientation	Either horizontal or vertical	
	Interface type	PATA/ATAPI	
	Disc capacity	Single layer: Up to 4.7 GB (6 times capacity of CD-ROM)	
	Dimensions (W x H x D)	5.0 x 0.5 x 5.0 in (128 x 13.6 x 129 mm)	
	Weight (max)	0.42 lb (190 g)	
	Write speeds	CD-R	Up to 24X
		CD-RW	Up to 24X
	Read speeds	DVD+R/-R/+RW/ -RW/+R DL /-R DL	Up to 4X
		DVD-ROM	Up to 8X
		CD-ROM, CD-R	Up to 24X
		CD-RW	Up to 24X
	Access time (typical reads, including settling)	Random DVD	DVD: < 140 ms (typical), CD: < 125 ms (typical)
		Random CD	DVD: < 250 ms (typical), CD: < 210 ms (typical)
		Cache Buffer	2 MB (minimum)
		Data Transfer Modes	ATA PIO mode 4); ATA Multi-word DMA mode 2; ATA UltraDMA mode 0; ATA UltraDMA mode 1, mode 2; ATA UltraDMA Mode 3 (default)
	Power	Source	Four-pin, DC power receptacle
		DC Power Requirement	5 VDC ± 5%-100 mV ripple p-p
		DC Current	5 VDC (< 1000 mA typical, < 1600 mA maximum)
		Total Drive Power (standby mode)	< 2.5 Watt
	Audio output level	0.7 Vrms (typical)	
	Environmental (all conditions non-condensing)	Temperature	41° to 122° F (5° to 50° C)
		Relative Humidity	5% to 85%
		Maximum Wet Bulb Temperature (operating)	86° F (30° C)
	Operating systems support	Microsoft Windows 2000, Windows XP Professional, Windows XP Home	

Technical Specifications - Optical Storage

PATA DVD-ROM Slim Drive	Height	12.7mm	
	Orientation	Either horizontal or vertical	
	Interface type	PATA/ATAPI	
	Dimensions (W x H x D)	5.0 x 0.5 x 5.0 in (128 x 13.6 x 129 mm)	
	Weight (max)	0.42 lb (190 g)	
	Read speeds	DVD+R/-R/+RW/ -RW/+R DL /-R DL	Up to 4X
		DVD-ROM	Up to 8X
		CD-ROM, CD-R	Up to 24X
		CD-RW	Up to 24X
	Access time (typical reads, including settling)	Random DVD	DVD: < 140 ms (typical), CD: < 125 ms (typical)
		Random CD	DVD: < 250 ms (seek), CD: < 210 ms (seek)
		Data Transfer Modes	ATA PIO mode 4 (16.7 MB/s); ATA Multi-word DMA mode 2 (16.7 MB/s)
	Power	Source	Four-pin, DC power receptacle
		DC Power Requirement	5 VDC ± 5%-100 mV ripple p-p
		DC Current	5 VDC - <1000 mA typical, < 1600 mA maximum
		Total Drive Power (standby mode)	< 2.5 Watt
	Audio output	Line-Out	0.7 VRMS
		Signal-to-Noise Ratio	74 dB
		Channel Separation	65 dB
	Environmental (all conditions non-condensing)	Temperature	41° to 122° F (5° to 50° C)
		Relative Humidity	5% to 85%
		Maximum Wet Bulb Temperature (operating)	86° F (30° C)
	Operating systems support	Microsoft Windows 2000, Windows XP Professional, Windows XP Home	

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
	Operating system support	Microsoft Windows 2000 (Service Pack 3 or greater), Windows XP Home, Windows XP Professional	
	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 – SILVER
- Korea Eco-label
- EPEAT
- Japan PC Green label**

* Compliant with Energy Star 3.0; select configurations available for Energy Star 4.0 compliance.
** This product conforms to the examination standards (2003 version) under JEITA's 'PC Green Label System.'

Ultra-slim Desktop

System Configuration

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Ultra-slim Desktop model is based on a typically configured product.

Energy Consumption	115 VAC	230 VAC	100 VAC
Normal Operation	105.3 W	103.0 W	106.8 W
Sleep (Energy Star low power mode)	2.74 W	3.00 W	2.76 W
Off	1.58 W	1.85 W	1.57 W
Heat Dissipation*	**115 VAC**	**230 VAC**	**100 VAC**
Normal Operation	359.3 BTU/hr	351.4 BTU/hr	364.4 BTU/hr
Sleep	9.3 BTU/hr	10.2 BTU/hr	9.4 BTU/hr
Off	5.4 BTU/hr	6.3 BTU/hr	5.4 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)	3.9	30
Optical Drive (sequential reads)	4.9	40

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
- 1 empty PCI full-height slot (w/ optional PCI riser card), or
  1 empty PCIe low-profile x16 slot (w/optional PCIe riser card)
- 1 internal drive slot
- 1 Slimline optical drive slot
- 3 memory slots
- 1 Serial/Parallel adapter (optional)

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	1100 g
	EPE Foam	200 g
	LDPE Bag	23 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.

Small Form Factor

Technical Specifications - Environmental Data

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	99.0 W	94.0 W	99.5 W
Sleep (Energy Star low power mode)	2.64 W	2.87 W	2.62 W
Off	1.68 W	1.87 W	1.67 W
Heat Dissipation*	115 VAC	230 VAC	100 VAC
Normal Operation	337.8 BTU/hr	320.7 BTU/hr	339.5 BTU/hr
Sleep	9.0 BTU/hr	9.8 BTU/hr	8.9 BTU/hr
Off	5.7 BTU/hr	6.4 BTU/hr	5.7 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	4.0	29
Fixed Disk (random writes)	4.0	29
Optical Drive (sequential reads)	5.1	41

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 PCI slots (2 low profile or 2 full-height with optional riser)
- 1 empty PCIe x1 slot
- 1 empty PCIe x16 slot
- 1 internal drive bay
- 1 SATA optical drive bay
- 1 3.5-inch external drive bay
- 4 memory slots
- 1 second Serial port (optional)

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 91% recyclable when properly disposed of at end of life.

Packaging Materials	Corrugated Paper	1600 g
	EPE Foam	20 g
	LDPE Bag	52 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.

Convertible Minitower

System Configuration	Processor	Intel Pentium D 945 Processor (3.4-GHz, 2x2MB L2 cache, 800-MHz FSB)
	Memory	1-GB DDR2 Synch Dram PC2-5300 (667-MHz)
	Hard Drive	80-GB SATA 3.0-Gb/s (7200 rpm)
	Optical Drive	SATA DVD-ROM Drive
	Communications	Integrated Intel 82566DM Gigabit Network Connection, Agere 2006 PCI 56K International SoftModem

Technical Specifications - Environmental Data

Energy Consumption	115 VAC	230 VAC	100 VAC
Normal Operation	92.2 W	87.2 W	91.7 W
Sleep (Energy Star low power mode)	2.38 W	2.88 W	2.34 W
Off	1.01 W	1.45 W	0.98 W
Heat Dissipation*	115 VAC	230 VAC	100 VAC
Normal Operation	337.8 BTU/hr	320.7 BTU/hr	339.5 BTU/hr
Sleep	9.0 BTU/hr	9.8 BTU/hr	8.9 BTU/hr
Off	5.7 BTU/hr	6.4 BTU/hr	5.7 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	4.0	23
Fixed Disk (random writes)	4.1	24
Optical Drive (sequential reads)	4.9	32

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
- 4 empty full-height PCI slots (2 standard, 2 optional)
- 1 empty full-height PCIe x1 slot
- 1 empty full-height PCIe x16 slot
- 2 internal 3.5-inch drive bays
- 3 external 5.25-inch SATA drive bays
- 1 external 3.5-inch drive bay
- 4 memory slots
- 1 second Serial port (optional)

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 97% recyclable when properly disposed of at end of life.

Packaging Materials	Corrugated Paper	1642 g
	EPE Foam	399 g
	LDPE Bag	63 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.

Ultra-slim Desktop, Small Form Factor, Convertible 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. 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

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