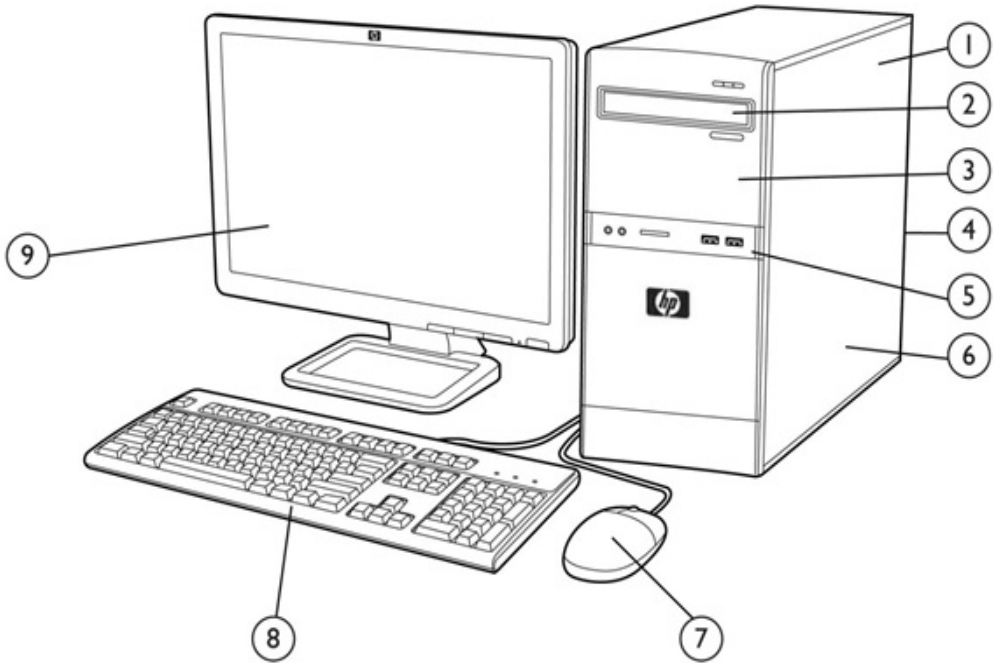
Overview

Microtower



1. 300-watt power supply
2. (1) external 5.25-inch bay for optional optical drive
3. (1) internal 3.5-inch bay for hard disk drive
4. Rear I/O includes (4) USB 2.0 ports, RJ-45 network port, VGA video port, audio in/out jacks, microphone jack
5. Front I/O includes (2) USB 2.0 ports, audio in/out jacks
6. Full height expansion slots include (1) PCI 2.3 slot, (2) PCIe x1 slots, (1) PCIe x16 graphics slot
7. HP USB Optical Scroll Mouse
8. HP USB Standard Keyboard
9. Monitor (sold separately)

Overview

At A Glance

- Intel® Core™ 2 Duo processors, Intel Pentium® processors, or Intel Celeron® processors
- Choice of operating systems:
  - Genuine Windows 7 Professional Edition 32
  - Genuine Windows 7 Professional Edition 64
  - Genuine Windows 7 Home Premium Edition 32
  - Genuine Windows 7 Home Premium Edition 64
  - Genuine Windows 7 Home Basic Edition 32
  - Genuine Windows 7 Home Basic Edition 64
  - Genuine Windows 7 Starter
  - Novell SUSE Linux Enterprise Desktop 11
  - FreeDOS
- Intel G41 Express Chipset
- Intel I/O Controller Hub 7 (ICH7)
- DDR3 SDRAM non-ECC system memory
- Integrated Intel Graphics Media Accelerator X4500 or choice of graphics cards
- PCI and PCI Express I/O buses
- Serial ATA controller
- USB 2.0 support
- Realtek RTL8103EL 10/100 Fast Ethernet controller
- Choice of hard drives and optical drives
- Protected by HP Services. Terms and conditions vary by country. Certain restrictions and exclusions apply.

Standard Features and Configurable Components (availability may vary by country)

Processor and Speed
One of the following

Intel Celeron Dual-Core Processors
Intel Celeron E3300 Processor (2.5 GHz, 1MB L2 cache, 800 MHz FSB)
Intel Celeron E3400 Processor (2.6 GHz, 1MB L2 cache, 800 MHz FSB)

Intel Pentium Dual-Core Processors
Intel Pentium E5500 Processor (2.80 GHz, 2MB L2 cache, 800 MHz FSB)
Intel Pentium E5700 Processor (3.00 GHz, 2MB L2 cache, 800 MHz FSB)
Intel Pentium E6600 Processor (3.06 GHz, 2MB L2 cache, 1066 MHz FSB)
Intel Pentium E6700 Processor (3.20 GHz, 2MB L2 cache, 1066 MHz FSB)
Intel Pentium E6800 Processor (3.33 GHz, 2MB L2 cache, 1066 MHz FSB)

Intel Core 2 Duo Processors
Intel Core 2 Duo E7500 Processor (2.93 GHz, 3 MB L2 cache, 1066 MHz FSB)
Intel Core 2 Duo E7600 Processor (3.06 GHz, 3 MB L2 cache, 1066 MHz FSB)
Intel Core 2 Duo E8400 Processor (3.0-GHz, 6 MB L2 cache, 1333-MHz FSB)
Intel Core 2 Duo E8500 Processor (3.16-GHz, 6 MB L2 cache, 1333-MHz FSB)
Intel Core 2 Duo E8600 Processor (3.33-GHz, 6 MB L2 cache, 1333-MHz FSB)

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

Operating Systems
(availability varies by region)

Preinstalled	Genuine Windows 7 Professional Edition 32* Genuine Windows 7 Professional Edition 64* Genuine Windows 7 Home Premium Edition 32* Genuine Windows 7 Home Premium Edition 64* Genuine Windows 7 Home Basic Edition 32* Genuine Windows 7 Home Basic Edition 64* Genuine Windows 7 Starter* Novell SUSE Linux Enterprise Desktop 11 FreeDOS
Supported	Genuine Windows Vista Business 32**
Certified	Novell SUSE Linux Enterprise Desktop 11

NOTE: Windows XP Mode, available as a separate download for Windows 7 Professional, works with virtualization software such as Windows Virtual PC to run older Windows XP business software on the Windows 7 desktop.

* System may require upgraded and/or separately purchased hardware and/or a DVD drive to install the Windows 7 software and take full advantage of Windows 7 functionality.
See: http://www.microsoft.com/windows/windows-7/ for details.

** 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.

+ Windows 7 Professional disk may also be included for future upgrade if desired. To qualify for this downgrade an end user must be a business (including governmental or educational institutions) and is

expected to order annually at least 25 customer systems with the same custom image.

Application Software (availability varies by region)	Microsoft Office 2010 Home & Business Microsoft Office 2010 Starter Microsoft Office 2010 Professional HP Power Assistant HP Virtual Rooms Roxio Creator Business 10 HD++ Corel WinDVD Player++ eBookreader McAfee Total Protection Anti-Virus with 60 day trial Subscription PDF Complete Special Edition HP Total Care Advisor HP ProtectTools Security Suite for SMB (optional) ++ Supporting software available with certain optical drive configurations
Hard Drives	250-GB Serial ATA 3.0-Gb/s NCQ, Smart IV (7200 rpm) 500-GB Serial ATA 3.0-Gb/s NCQ, Smart IV (7200 rpm) 640-GB Serial ATA 3.0-Gb/s NCQ, Smart IV (7200 rpm) 750-GB Serial ATA 3.0-Gb/s NCQ, Smart IV (7200 rpm)
System Memory	DDR3 SDRAM PC3-10600 (1333 MHz) non-ECC system memory 1-GB (1 x 1GB) 2-GB (2 x 1GB) 2-GB (1 x 2GB) 3-GB (1 x 2GB, 1 x 1GB) 4-GB (2 x 2GB) NOTE: Memory maximum speed is maximum system supported speed of 1066 MHz.
Storage – One or more of the following (see Storage section below)	**Optical Drives (Serial ATA)** SATA DVD-ROM Drive SATA SuperMulti DVD Writer Drive
Input Devices	**Keyboard** HP USB Standard Keyboard HP USB Standard Value Keyboard **Mouse** HP USB Optical Scroll Mouse

Standard Features and Configurable Components (availability may vary by country)

Audio	Realtek ALC662 High Definition audio codec 3D audio compliant and HD Audio compatible
Communication	Integrated Realtek RTL8103EL 10/100 Ethernet Controller Intel Gigabit CT Desktop NIC (optional) LSI PCIe x1 Hi-Speed 56K International SoftModem (optional) HP PCIe Wireless 802.11b/g/n
Graphics	Integrated Intel Graphics Media Accelerator X4500 NVIDIA GeForce 310 DP SH x16 NVIDIA Guadro NVS 290 DH PCIe x16
Miscellaneous	HP FireWire / IEEE 1394 PCI Card (full height) HP Serial/Parallel PCI Card (full height) HP USB Thin Powered Speakers (optional)

System Details

Base Unit	• Micro ATX microtower chassis, including power supply and front bezel • Two (2) drive bays and four expansion slots • Microsoft operating system CD - optional • Active type heatsink • 92 x 92 x 25 mm chassis fan • System board with Intel G41 Express chipset, Intel I/O Controller Hub 7 (ICH7), Realtek RTL8103EL 10/100 Ethernet controller, Intel GMA graphics, and Realtek audio, (1) full-height PCI 2.3 slot, (2) PCI Express x1 slots, (1) PCI Express x16 slot, (2) DDR3 DIMM memory slots, (4) Serial ATA data connectors • Product documentation pre-installed • HP system restore CD - optional • Power cord	
Slots	**PCI**	One (1) full-height PCI 2.3 slot Two (2) full-height PCI Express x1 slots One (1) full-height PCI Express x16 slot (for graphic cards)
	Memory Expansion	Two (2) DDR3 SDRAM DIMM slots (4 GB maximum memory support)
	NOTE: For systems configured with more than 3 GB of memory and a 32-bit operating system, all memory may not be available due to system resource requirements.	
Bays	**Internal**	One (1) 3.5"
	External	One (1) 5.25"
USB Support	EHCI high-speed USB 2.0 controller Two (2) front ports; Four (4) rear ports, Two (2) internal ports on system board	
Interfaces (Legacy)	One (1) analog VGA video port One (1) line in; one (1) line out; one (1) mic in One (1) RJ45 network port	
Weight & Dimensions	**Chassis Dimensions** (H x W x D)	15.11 x 6.54 x 16.87 in 384 x 166 x 428 mm
	Packaged Dimensions (L x W x H)	23.03 x 19.61 x 9.65 in 585 x 498 x 245 mm
	System Weight	22.4 lb (10.2 kg)
	Shipping Weight	30.8 lb (14.0 kg)

System Details

Technology and Features	Memory Type	PC3-10600 DDR3 SDRAM (1066/1333MHz) non-ECC Up to 4-GB maximum system memory supported
	NOTE: Memory runs at maximum system supported speed of 1066 MHz. For systems configured with more than 3 GB of memory and a 32-bit operating system, all memory may not be available due to system resource requirements.	
	Hard Drive Interfaces Supported	Serial ATA
Chassis	Front Panel	Power button Power On LED HDD Activity LED
	Cooling Solutions Supported	Power Supply Fan (variable speed) Active heatsink (variable speed) Chassis fan
	Slots Supported	Four (4) full-height expansion slots
	Front I/O	Two (2) USB 2.0 ports
	Rear I/O	Standard Micro ATX I/O connectors, including four (4) USB 2.0 ports
	Drive Bays	One (1) 5-1/4" external One (1) 3-1/2" internal
	Internal Speaker	N/A
	Security	Padlock loop Kensington Lock Support Support for chassis padlocks and cable lock devices
	Power Supply	300-watt ATX Power Supply - PFC/non-PFC with a 115v/230v line switch (varies by country/region)

Unit Environment and Operating Conditions

General Unit Operating Guidelines

- Keep the computer away from excessive moisture, direct moisture and the extremes of heat and cold, to ensure that unit is operated within the specified operating range.
- Leave a 4 in (10.2 cm) 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 (9000 m)

System Details

NOTE: Operating temperature is de-rated 1.0 deg C per 1000 ft (300 m) to 10,000 ft (3000 m) 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.

System Board	Processor	Socket T; LGA775 industry standard Micro ATX form factor Supports Intel Core 2 Quad and Core 2 Duo processors, Intel Pentium processors, Intel Celeron processors
	PWM	ISL6312 - 3 Phase
	Chipset	Intel G41 Express Intel I/O Controller Hub 7 (ICH7)
	Super I/O	LPC IT8721F
	Front Side Bus Frequency	800/1066/1333 MHz
	Memory	DDR3 SDRAM 2 x DIMM slots
	Clock Generator	IDT505YC264BT
	Integrated Graphics	Intel Graphics Media Accelerator (GMA)
	Audio	Realtek ALC662 HD Audio compatible codec with two channel audio 3D audio
	LOM	Realtek RTL8103EL 10/100 Fast Ethernet controller
	Storage	Four Serial ATA interfaces (hard drive and optical drive)
	Expansion Slots	1 x PCI 2.3 slot 2 x PCI Express x1 slots 1 x PCI Express x16 slot
	BIOS	SPI EEPROM
	Industrial Standard	PCI 2.3 compliant USB 2.0
	Rear Side I/O Ports	4 x USB 2.0 ports 1 x RJ-45 10/100 port 1 x D-sub 15 pin analog VGA port 3 x audio ports
	On Board I/O Interfaces	1 x ATX power connector 1 x +12V power connector 1 x Front panel connector, Switch, LED (ON/Flash/OFF) 2 x Fan headers for CPU, chassis, with voltage/fan speed control 1 x header to support 2 USB 2.0 ports at front side 1 x header to support 2 front (Headphone/Mic) audio ports 1 x header to support USB media reader
	Board Size	Micro-ATX, PCB Size: 9.6 x 9.6 in (24.38 x 24.38 cm) 4-layer PCB with green color
	Additional Features	• Bootable without keyboard, mouse or monitor • Keyboard/mouse/USB wake up • Support S3, S4 and S5 • ACPI status • Hardware monitor capability • CPU fan speed control

Network Interface	Integrated Realtek RTL8103EL 10/100 Fast Ethernet Controller	Hardware Highlights	PCIe x1 interface
		Features	10-Mbps and 100-Mbps operation Crossover detection and auto-correction Wake-on-Lan and remote Wake-up (Wake-on-LAN supported from S3, S4 only. Not supported from S5)
	Intel Gigabit CT Desktop NIC	Hardware Highlights	PCI Express interface
		Features	10-Mbps, 100-Mbps and 1000-Mbps operation (Wake-on-LAN supported from S3, S4 only. Not supported from S5)
Wireless	Wireless 802.11b/g/n PCIe Card (full height bracket)		

Power Supply

- ATX Power Supply - Passive PFC/non-PFC with a 115v/230v line switch
- Passive Power Factor Correction (PFC) - with line switch set to 230V - No PFC in 115V line switch position
- 90 to 140VAC, or 180 to 264VAC operating voltage range
- 100 to 127VAC, or 200 to 240VAC rated voltage range
- 50-60 Hz rated line frequency
- 47-63 Hz operating line frequency range
- 300 watt maximum rated power
- 80-mm power supply fan - variable speed for optimum acoustics

Power Conservation 'Energy Saver'

- APM 1.2 support
- Screen blanking
- Hard drive 'Idle' mode
- System Idle mode
- ~2 watt power consumption in ES mode - suspend to RAM (S3) (instantly available PC)
- Processor/Cache memory power-down (S3)
- Eup Lot 6 - less than 1W with BIOS setup option (Max power savings)

System Details

System Environmental Specs

- Values are subject to change without notification and are for reference only.
- Performance of system, options, and ancillary equipment will vary depending on the system configuration.
- Levels presented do not account for non-HP installed hardware.

Ambient Air Temperature	Operating	50° to 95°F (10° to 35°C) at sea level with an altitude de-rating of 1.0°C per every 1000 ft (300 m) above sea level to a maximum of 8000 ft (2500 m), no direct sustained sunlight. Maximum rate of change is 77°F/Hr (25°C/Hr). The upper limit may be limited by the type and number of options installed.
	Storage	-22° to 140°F (-30° to 60°C) - Maximum rate of change: 410°F/Hr (210°C/Hr).
Humidity	Operating	10% to 90% relative humidity (Rh), 86°F (30°C) maximum wet bulb temperature, non-condensing
	Storage	10% to 95% relative humidity (Rh), 101.66°F (38.7°C) maximum wet bulb temperature, non-condensing
Altitude	Operating	0 to 10,000 feet (0 to 3048 meters) - This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 1,000 ft/min (304.8 m/min).
	Non-Operating	0 to 30,000 feet (0 to 9,144 meters) - Maximum allowable altitude change rate is 1200 ft/min (365.76 m/min).
Shock	Listed are the levels of shock the product can withstand with NO damage being incurred. The values represent peak input acceleration during a 2 to 3 ms half-sine shock pulse, 11 ms trapezoidal shock pulse.	
	Non-Operating	35G's (Half-sine Shock) 35G's (Trapezoidal Shock)
Vibration	Listed are the levels of vibration the product can withstand with NO damage being incurred. The values represent a flat random vibration input acceleration profile across the given frequency range.	
	Operating	Random vibration at 5Hz@0.00025G^2/Hz, 10Hz@0.01G^2/Hz, 100Hz@0.01G^2/Hz, 300Hz@0.00001G^2/Hz 5Hz to 300Hz, (0.25G's nominal).
	Non-Operating	Random vibration at 0.008G^2/Hz, 10Hz to 500Hz, (2 Grms nominal).

System Details

Service and Support

On-site Warranty[Note 1]: One-year (1-1-1) limited warranty delivers one year of on-site, next business-day[Note 2] service for parts and labor 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. One-year onsite and labor are not available in all countries.

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

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

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

After-Market Options (availability may vary by country)

Communications	NICs	
	Intel Gigabit CT Desktop NIC	FH969AA
	Wireless LAN	
	HP Wireless 802.11 b/g/n PCIe Card	FH971AA
	Modems	
	LSI PCIe x1 Hi-Speed 56K International SoftModem	FH970AA
	HP RJ11 Modem Adapter Kit	DC131C
Hard Disk Drives	HP 500-GB SATA 3.0-Gb/s Hard Drive	KW347AA
	HP 250-GB SATA 3.0-Gb/s Hard Drive	PY278AA
Input Devices	HP Standard USB Keyboard	DT528A
	HP Optical Scroll USB Mouse	DC172AT
Memory	HP 2-GB PC3-10600 (DDR3-1333 MHz) DIMM	AT024AA
	HP 1-GB PC3-10600 (DDR3-1333 MHz) DIMM	AT023AA
Audio	HP USB Thin Powered Speakers	KK912AA
Graphics	NVIDIA GF310 DP SH x16	TBD
	NVIDIA NVS 290 PCI3 x16	TBD
Optical Drives	HP SATA DVD-ROM Drive	AH047AA
	HP SATA SuperMulti DVD Writer Drive	GF343AA
Security	HP Business PC Security Lock Kit	PV606AA
	HP Security Cable with Kensington Lock	PC766A
Miscellaneous Accessories	HP FireWire / IEEE 1394 PCI Card	PA997A
	Belkin USB To Serial Adapter	EM449AA
	HP Serial/Parallel PCI Card	KD062AA
	HP USB Thin Powered Speakers	KK912AA
Monitors*	Compaq CQ1859s 18.5-inch LCD Monitor	TBD
	HP LE1851w 18.5-inch Widescreen LCD Monitor	TBD

*This is only representative, not an exhaustive list. All HP monitors are supported that accept a graphics output provided by this PC.

Memory

DDR SYNCH DRAM NON-ECC MEMORY

The Intel G41 Express chipset supports non-ECC DDR3 memory up to PC3-10600 (1333 MHz). However, the chipset runs this memory at a maximum clock rate of 1066 MHz. Memory upgrades are accomplished by adding single or dual DIMMs of the same or varied sizes. This chart does not represent all possible memory configurations.

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.

STANDARD MEMORY

1-GB, 2-GB, 3-GB or 4-GB DDR3 SYNCH DRAM

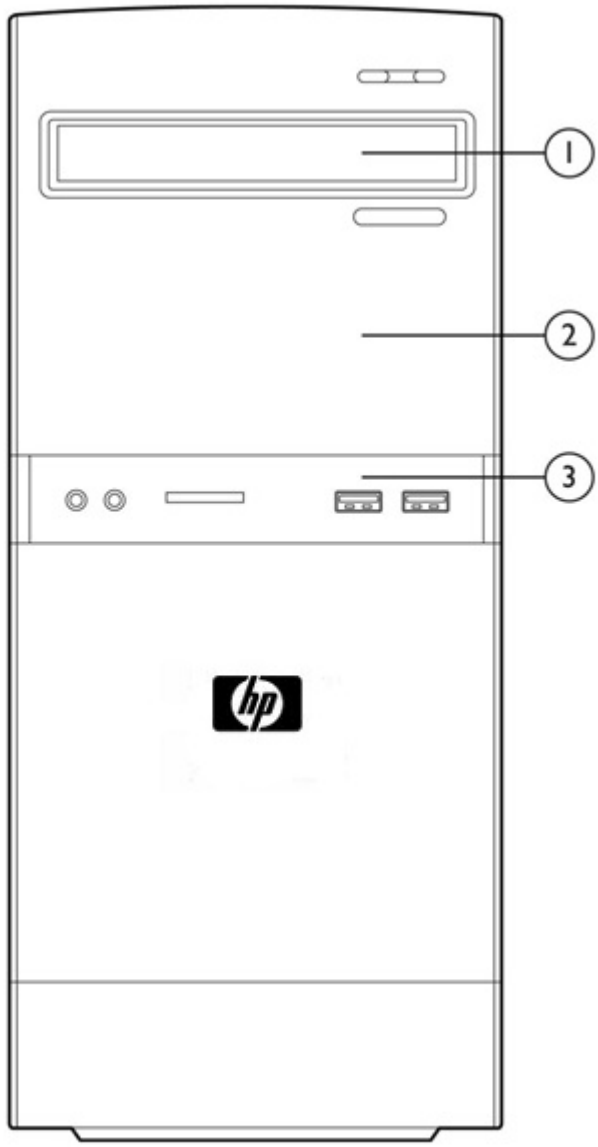
OPTIONAL MEMORY UPGRADES

Supports up to 4 GB of DDR3 SYNCH DRAM. Not all memory configurations possible are represented below.

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

DIMM Size	Slot 1	Slot 2
1-GB	1-GB	
2-GB (dual-channel symmetric)	1-GB	1-GB
3-GB	1-GB	2-GB
3-GB	2-GB	1-GB
4-GB (dual-channel symmetric)	2-GB	2-GB

Storage



HP 500B Microtower Business PC

	Maximum Quantity Supported	Position Supported	Controller
Optical Drive	1	1	SATA
3.5" Serial ATA Hard Drive	1	2	SATA

Technical Specifications - Audio

Integrated Realtek ALC662 Audio	Type	Integrated
	HD Audio compatible codec	Yes 5:1 channel
	Sampling	Supports 48/96 KHz
	Audio Jacks	Mic-In Line-In Line-Out / Headphone Out
	Power Support	Digital: 3.3V Analog: 5V
	Other	Meets performance requirements for audio on PC99/2001 systems High-performance DACs with 97dB SNR(A-Weighting) ADCs with 90dB NR(A-Weighting)

Technical Specifications - Communications

Integrated Realtek RTL8103EL 10/100 Fast Ethernet Controller	Controller	8101E	
	Memory	N/A	
	Data rates supported	2.5GHz data rate with X1 link width	
	Compliance	IEEE802.3, IEEE 802.3u, IEEE 802.3ab	
	Bus architecture	PCIexpress 1.1	
	Data transfer mode	Half/Full Duplex Operation	
	Hardware certifications	MS NDIS5, IPv4, Ipv6, TCP, UDP	
	Power requirement	100mbps (heavy traffic) max.	TBD mW
		10mbps (heavy traffic) max.	TBD mW
		S3 with Link	TBD mW
		Link Down @S0	TBD mW
		Link Down @S3/S5	TBD mW
	Boot ROM support	EEPROM, 1Kb, 2Kb	
	Network transfer rate	10/100Mbps over CAT.5	
		10Mbps over CAT.3	
	Dimensions	9mm x 9mm	
	Management capabilities	ACPI rev 2.0, PM rev 1.1, ASPM v1.0a, PXE	

Intel Gigabit CT Desktop NIC	Connector	RJ-45	
	Controller	Intel WG82574L 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 path width	X1, 250 MB/s, Bi-directional interface	
	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	4.75 x 2.25 x 0.8 in (12.1 x 5.7 x 2.0 cm)	

	Management capabilities	WOL, PXE, DMI, WFM 2.0		
HP Wireless 802.11b/g/n PCIe	**Dimensions** (L x H)	3.3 x 4.7 inches (8.5 x 12 cm)		
	Weight	0.08 pounds (40 g)		
	Controller	Ralink RT2790		
	System interface	PCIExpress x1		
	Network standard	802.11 b/g/n		
	Frequency band	2.400 - 2.497 GHz		
	Operating temperature	14° to 149°F, operating (-10° to 65°C, operating)		
	Storage temperature	-40° to 176°F, non-operating (-40° to 80°C, non-operating)		
	Humidity	10-90% operating 5-95% non-operating		
	Operating voltage	3.3V +/- 9% 12V +/- 8%		
	Power consumption	Platform/WLAN Mode	Power Consumption	
		Maximum Power Consumption	10 Watts	
		Transmit Only	4 Watts maximum averaged power over 1 second	
		Transmit Packet or Active Scanning	1000 mA peak current for 100 microseconds or longer	
		Receive Only Mode or Idle without IEEE PSP mode enabled	3 Watts maximum averaged over 1 second	
		Idle, with IEEE PSP mode enabled	1.0 Watts maximum averaged over 1 second	
		Transmit Disabled (turned off in software)	50 mW maximum, averaged over 1 second	
		Platform in S3 or S4 (power removed from Low Profile PCI Express Card)	5 mW maximum, averaged over 1 second	
	Output power (approximately)	**802.11b modes**	**802.11g modes**	**EWC modes**
		+19 dBm +/- 1.0 dB maximum	+17 dBm +/- 1.0 dB maximum	+17 dBm +/- 1.0 dB maximum (total power in all transmit chains)
	Receive sensitivity	**Mode**	**Data rate**	**Sensitivity**
		802.11b	1 Mbps	-94 dBm
		802.11b	11 Mbps	-85 dBm
		802.11g	6 Mbps	-91 dBm
		802.11g	18 Mbps	-85 dBm
		802.11g	48 Mbps	-75 dBm
		802.11g	54 Mbps	-72 dBm
		EWC (2.4 GHz)	6.5 Mbps	-87 dBm

	EWC (2.4 GHz)	54 Mbps	-82 dBm
	EWC (2.4 GHz)	81 Mbps	-78 dBm
	EWC (2.4 GHz)	162 Mbps	-74 dBm
	EWC (2.4 GHz)	270 Mbps	-68 dBm
	EWC (2.4 GHz)	300 Mbps	-64 dBm
Data transfer rate	Data Rate (MCS)	Minimum Throughput	
	1 Mbps (802.11 b)	700 kbps	
	2 Mbps (802.11 b)	1.4 Mbps	
	5.5 Mbps (802.11 b)	3.5 Mbps	
	11 Mbps (802.11 b)	5.9 Mbps	
	12 Mbps (802.11 g)	6 Mbps	
	18 Mbps (802.11 g)	9 Mbps	
	24 Mbps (802.11 g)	12 Mbps	
	36 Mbps (802.11 g)	18 Mbps	
	48 Mbps (802.11 g)	21 Mbps	
	54 Mbps (802.11 g)	22.5 Mbps	
	6.5 Mbps (20 MHz EWC)	4.5 Mbps	
	13 Mbps (20 MHz EWC)	9 Mbps	
	19.5 Mbps (20 MHz EWC)	13.5 Mbps	
	26 Mbps (20 MHz EWC)	18 Mbps	
	39 Mbps (20 MHz EWC)	27 Mbps	
	52 Mbps (20 MHz EWC)	36 Mbps	
	58.5 Mbps (20 MHz EWC)	40 Mbps	
	65 Mbps (20 MHz EWC)	45 Mbps	
	78 Mbps (20 MHz EWC)	54 Mbps	
	104 Mbps (20 MHz EWC)	72 Mbps	
	117 Mbps (20 MHz EWC)	81 Mbps	
	130 Mbps (20 MHz EWC)	91 Mbps	
	13.5 Mbps (40 MHz EWC)	8 Mbps	
	27 Mbps (40 MHz EWC)	16 Mbps	
	40.5 Mbps (40 MHz EWC)	24 Mbps	
	54 Mbps (40 MHz EWC)	32 Mbps	
	81 Mbps (40 MHz EWC)	48 Mbps	
	108 Mbps (40 MHz EWC)	64 Mbps	
	121.5 Mbps (40 MHz EWC)	72 Mbps	
	135 Mbps (40 MHz EWC)	81 Mbps	
Security	• IEEE and WiFi compliant 64 / 128 bit WEP encryption		

		• AES: CCM • 802.1x authentication • WPA: 802.1x. WPA-PSK and TKIP • WPA2 certification • IEEE 802.11i • Cisco Certified Extensions, all versions through V5
	Antenna	HP part number 497792-001
	Certifications	Wi-Fi certified
	Certifications for use by country	United States, Canada, Peru, Taiwan

LSI PCIe x1 56K International SoftModem	Data Transmission	Technology speeds: 56,000 Kbps maximum downstream data, controllerless NOTE: 56 Kbps technology refers to download speeds only and requires compatible modems at server sites. Other conditions may limit modem speed. FCC limitations allow a maximum of 53 Kbps during download transmissions.
	Data Speeds	(Upload only) 33,600/31,200/28,800/26,400/21,600/19,200/16,800/14,400/12,000/9,600/7,200/4,800/2,400/1,200/300
	Data Standards	ITU-T V.90, ITU-T, ITU-T V.34, V.44, V.42, V.42bis21, V.32bis, Bell 212A, and Bell 103
	Fax Speeds	14,400/12,000/9,600/7,200/4,800/2,400/1,200/300 b/s
	Fax Mode Capabilities	ITU-T T.31 class 1 FAX, V. 17, V.29, V.27ter, and V.21 Channel 2
	Error Correction and Data Compression	V.44, 42bis, V.42 and MNP2-5
	Power Management	PCI Bus Power Management Interface Specification (PCI-PM) Revision 1.2, Appendix A. D0, D3hot, and D3cold. Wake on Ring state when in D3cold. If the power management event (PME) feature is enabled in D3cold, a modem can wake the system via WAKE# (WAKEN) or beacon. Meets PCI Express 1.1 standard.
	Upgradeability	Driver upgradeable for future enhancements
	Video	ITU-T V.80 video ready interface
	Other	TIA/EIA 602 standard AT command set Integrated DTE interface with speeds of up to 115.2 Kbps, parallel 16550a UART-compatible interface Optional ring wakeup signal
	Operating Temperature	32° to 158° F (0° to 70° C)
	Operating Humidity	20% to 90%, non-condensing
	Power	Requires a 3.3-V auxiliary power rail on PCI express bus Uses only one PCI express load (i.e., one grant/request pair), one shared IRQ, one electrical load
	Chipset	LSI SV92EX - Integrated PCI interface with 3.3-V tolerant buffers and CardBus support
	Dimensions (L X H)	Complies with PCI express low profile specifications-6.7 x 2.3 in (17.0 x 5.8 cm) and supports high- and low-profile brackets
	Connection	Single RJ-11 connector

Technical Specifications - Communications

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.
Other	The SV92EX device is packaged in a 32-pin micro leadless chip carrier (MLCC). The SV92EX is fully compliant with the PCI Express revision 1.1 specification. WHQL approved; ASPM compliant.

Technical Specifications - Graphics

Integrated Intel Graphics Media Accelerator (GMA) 4500	3D/2D Controller	Microsoft DirectX® 10 based with support for Pixel Shader 2.0
	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, 350 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	250 MHz
	Overlay Planes	Single overlay support with 5x3 filtering
	Maximum Color Depth	32 bits/pixel
	Maximum Vertical Refresh Rate	75 Hz at up to 2048 x 1536 analog, 60 Hz at up to 1920 x 1200 for flat panel, 85 Hz at up to 1400 x 1050 for digital CRT/HDTV. Varies with mode and configuration. See table below.
	Multi-display Support	Support for one CRT via the motherboard's VGA connector. Dual independent displays and dual synchronous (Twin or Clone mode) displays are supported.
	Graphics/Video API Support	Microsoft DirectX® 10, DirectXVA®, VMR9, GDI/GDI+; OpenGL® 1.4.

Resolutions Supported[1]

Resolution	Maximum Refresh Rate (Hz)		
	Analog Monitor	Digital Monitor	
		Flat Panel	CRT / HDTV
640 x 480	75	60	85
800 x 600	75	60	85
1024 x 768	75	60	85
1280 x 1024	75	60	85
1400 x 1050	75	60	85
1600 x 1200	75	60	N/A
1920 x 1080	75	60	N/A
1920 x 1200	75	60	N/A
1920 x 1440	75	N/A	N/A
2048 x 1536	75	N/A	N/A

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

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

Technical Specifications - Graphics

NVIDIA Quadro NVS 290 256MB PCIe Dual Head	Form Factor	Low Profile
	Bus Type	PCIe x16
	Memory	256 MB 400MHz DDR2 SDRAM unified frame buffer, Z-buffer and Texture storage
	Connector	DMS-59; includes one DMS-59 to Dual VGA cable. A DMS-59 to Dual DVI-I cable is available as an option.
	Display resolution support	Dual integrated analog display controllers supporting up to two analog displays at 2048x1536 @ 85Hz on both displays or dual digital displays at 1920x1200 (single-link). NVIEW advanced multi-display desktop and application management seamlessly integrated into Microsoft Windows
	RAMDAC	Integrated dual 400MHz
	Color planes	32-bit color buffer
	Overlay planes	Hardware supported
	nView architecture	Advanced multi-display desktop & application management seamlessly integrated into Microsoft Windows.
	Multi-Monitor support	Dual monitor support
	DVI support	DMS-59 (to dual DVI-SL)
	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 5-tap horizontal by 3-tap vertical filtering 8:1 up/down scaling
	Supported graphics APIs	OGL 2.1 & DX10 Support; Shader Model 4.0

NVIDIA GeForce 310 DP PCIe x16 Graphics Card	Bus type	PCI Express (x16 lanes)
	Maximum vertical refresh rate	85 Hz
	Display support	Integrated 400 MHz RAMDAC
	Display max resolution	2560x1600 digital, 2048 x 1536 analog

NVIDIA GeForce 310 DP PCIe x16 Graphics Card display resolutions and refresh rates

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

Technical Specifications - Graphics

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

* Only supported when using a dual-link DVI or DP connection.
NOTE: 60-R denotes reduced blanking timings are used on single-link DVI connections and may be used with other digital connections.

Board display options	Supports two displays via the DisplayPort and DVI connectors	
Board configuration	**Specification**	**Description**
	Graphics Chip	RV620
	Core clock	750 MHz
	Memory clock	500 MHz
	Frame buffer	512 MB DDR3, 64 bit wide
Audio Support (through HDMI only)	Integrated HD Audio codec supports linear PCM and Dolby® Digital (7.1) audio formats for HDMI output	
Operating systems support	Windows 7 Home Basic*, Windows 7 Home Premium*, Windows 7 Professional Edition 32*, Windows 7 Professional Edition 64*, Windows 7 Ultimate Edition 32*, Windows 7 Ultimate Edition 64*, Windows Vista Business 32†, Windows Vista Business 64†, Windows Vista Home Basic 32†, Windows Vista Home Basic 64†, Windows XP Professional or Windows XP Home 32†.	

*This system may require upgraded and/or separately purchased hardware and/or a DVD drive to install the Windows 7 software and take full advantage of Windows 7 functionality. See http://www.microsoft.com/windows/windows-7/ for details.

Windows 7 Business disk may be included for future upgrade if desired. To qualify for this downgrade an end user must be a business (including governmental or educational institutions) and is expected to order at least 25 customer systems with the same custom image

† Certain Windows Vista product features require advanced or additional hardware. 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. For Windows Vista system requirements, visit: http://www.windowsvista.com/systemrequirements.

	Linux x86 and x86_64 distributions using XFree86 or X.Org‡. ‡Linux drivers are available from ATI's website and may be available in a Linux distribution. Refer to the Open Source and Linux from HP website: http://www.hp.com/wwsolutions/linux/products/clients/ for support information.
Core power	22 W (max)
Dimensions (H x D)	2.71 in x 6.60 in (68.90 mm x 167.65 mm)
Weight	0.30 lb (134.3 g)
Option kit contents	• NVIDIA GeForce 310 DP PCIe x16 Graphics Cardwith full height bracket attached • DVI to VGA adapter • Software CD with graphics drivers • Low profile bracket to convert the card for using in a low profile chassis • 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 g) Korean (MIC) EMC Immunity: CISPR 24:1997/EN 55024:1998 - Information Technology Equipment - Immunity Characteristics - Limits and Methods of Measurement.

Technical Specifications - Input Devices

HP USB Standard Keyboard	Physical characteristics	Keys	104, 105, 106, 107, 109 layout (depending upon country)
		Dimensions (L x W x H)	18.14 x 1.07 x 6.02 in (46.1 x 2.74 x15.3 cm)
		Weight	1.3lb(0.6 kg) minimum
	Electrical	Operating voltage	+ 5VDC ± 5%
		Power consumption	50-mA maximum (with three LEDs ON)
		ESD	CE level 4, 12.5-kV air discharge
		EMI - RFI	Conforms to FCC rules for a Class B computing device
		Microsoft PC 99 - 2001	Functionally compliant
	Mechanical	Languages	40 available
		Keycaps	Silm design
		Switch actuation	60-g nominal peak force with tactile feedback
		Switch life	10 million keystrokes (using Hasco modified tester)
		Switch type	Contamination-resistant switch membrane
		Key-leveling mechanisms	N/A
		Cable length	1.5 m
		Microsoft PC 99 - 2001	Mechanically compliant
		Acoustics	50-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	40g, six surfaces
		Non-operating shock	80g, six surfaces
		Operating vibration	2-g peak acceleration
		Non-operating vibration	4-g peak acceleration
		Drop (out of box)	30 in (76 cm) on carpet, 5-drop sequence
		Drop (in box)	30 in (76 cm) on rigid surface, 10-drop sequence
	Approvals	ULcUL, FCC, CE, TUV/Bauart, VCCI, BSMI, C-Tick, KCC	
	Ergonomic compliance	N/A	

Technical Specifications - Input Devices

HP USB Standard Value Keyboard	Physical characteristics	Keys	104, 105, 106, 107, 109 layout (depending upon country)
		Dimensions (L x W x H)	18.14 x 1.07 x 6.02 in (46.1 x 2.74 x15.3 cm)
		Weight	1.3lb(0.6 kg) minimum
	Electrical	Operating voltage	+ 5VDC ± 5%
		Power consumption	50-mA maximum (with three LEDs ON)
		ESD	CE level 4, 12.5-kV air discharge
		EMI - RFI	Conforms to FCC rules for a Class B computing device
		Microsoft PC 99 - 2001	Functionally compliant
	Mechanical	Languages	40 available
		Keycaps	Silm design
		Switch actuation	60-g nominal peak force with tactile feedback
		Switch life	10 million keystrokes (using Hasco modified tester)
		Switch type	Contamination-resistant switch membrane
		Key-leveling mechanisms	N/A
		Cable length	1.5 m
		Microsoft PC 99 - 2001	Mechanically compliant
		Acoustics	50-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	40g, six surfaces
		Non-operating shock	80g, six surfaces
		Operating vibration	2-g peak acceleration
		Non-operating vibration	4-g peak acceleration
		Drop (out of box)	30 in (76 cm) on carpet, 5-drop sequence
		Drop (in box)	30 in (76 cm) on rigid surface, 10-drop sequence
	Approvals	ULcUL, FCC, CE, TUV/Bauart, VCCI, BSMI, C-Tick, KCC	
	Ergonomic compliance	N/A	

Technical Specifications - Input Devices

HP USB 2-Button Optical Scroll Mouse	Scroll Wheel	24	
	Maximum Rotation Speed	48 rats/sec	
	Switch Type	wheel	
	Switch Life	Button - 1,000,000 Wheel - 200,000 times	
	Environmental	Operating Temperature	32° to 104° F (0° to 40° C)
		Non-operating Temperature	-4° to 140° F (-20° to 60° C)
		Operating Humidity	10% to 90% (non-condensing at ambient)
		Non-operating Humidity	20% to 80% (non-condensing at ambient)
		Operating Shock	40 g, six surfaces
		Non-operating Shock	80 g, six surfaces
		Operating Vibration	2-g peak acceleration
		Non-operating Vibration	4-g peak acceleration
	Electrical	Operating Voltage	4.35V-5.25V DC
		Power Consumption	<100mA
		MTBF	> 150,000 hrs
		ESD	IEC-61000-4-2 criteria B, Contact discharge: +/- 4kV, Air discharge: +/- 8kV
		EMI-RFI	FCC Class B
		PC98	PC 99 Compliant
	Mechanical	Resolution	500±10% DPI
		Tracking Speed	25 cm/sec
		Acceleration	0.5mm
		Switch Actuation	0.6N (60gf)
		Switch Life	Button - 1,000,000 Wheel - 200,000 times
		Cable Length	1.8m
		PC98-99	PC99 compliant
	Regulatory Approvals	ULcUL, FCC, CE, TUV/GS, VCCI, BSMI, C-Tick, MIC	

Technical Specifications - Hard Drives

Serial ATA Hard Drives (7200 rpm)	**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)	3.0 Gb/s	
		Buffer	8 MB	
		Seek Time (typical reads, includes controller overhead, including settling)	**Single Track**	2.0 ms
			Average	11 ms
			Full-Stroke	21 ms
		Rotational Speed	7,200 rpm	
		Logical Blocks	488,397,168	
		Operating Temperature	41° to 131° F (5° to 55° C)	
	500 GB	**Capacity**	500,107,862,016 bytes	
		Height	1 in (2.54 cm)	
		Width	Media diameter: 3.5 in (8.89 cm) Physical size: 4 in (10.2 cm)	
		Interface	Serial ATA (3.0 Gb/s)	
		Synchronous Transfer Rate (Maximum)	3.0 Gb/s	
		Buffer	8 MB	
		Seek Time (typical reads, includes controller overhead, including settling)	**Single Track**	2.0 ms
			Average	11 ms
			Full-Stroke	21 ms
		Rotational Speed	7,200 rpm	
		Logical Blocks	976,773,168	
		Operating Temperature	41° to 131° F (5° to 55° C)	

Technical Specifications - Hard Drives

640 GB	Capacity	640,138,063,380 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)	3.0 Gb/s	
	Buffer	8 MB	
	Seek Time (typical reads, includes controller overhead, including settling)	Single Track	2.0 ms
		Average	11 ms
		Full-Stroke	21 ms
	Rotational Speed	7,200 rpm	
	Logical Blocks	625,142,448	
	Operating Temperature	32° to 140° F (0° to 60° C)	
750 GB	Capacity	720,176,893,706 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)	3.0 Gb/s	
	Buffer	8 MB	
	Seek Time (typical reads, includes controller overhead, including settling)	Single Track	2.0 ms
		Average	11 ms
		Full-Stroke	21 ms
	Rotational Speed	7,200 rpm	
	Logical Blocks	976,773,168	
	Operating Temperature	41° to 131° F (5° to 55° C)	

Technical Specifications - Optical Storage

SATA DVD-ROM Drive	Height	5.25-inch, half-height, tray-load		
	Orientation	Either horizontal or vertical		
	Interface type	SATA/ATAPI		
	Disc capacity	Single layer: Up to 4.7 GB (6 times capacity of CD-ROM) Double layer: Up to 8.5 GB (12 times capacity of CD-ROM)		
	Dimensions (W x H x D)	5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)		
	Weight (max)	2.6 lb (1.2 kg)		
	Read speeds	DVD+R/-R/+RW/ -RW/+R DL /-R DL	Up to 8X	
		DVD-ROM	Up to 16X	
		DVD-RAM	Up to 4X	
		CD-ROM, CD-R	Up to 48X	
		CD-RW	Up to 32X	
	Removable Storage - Media Compatibility - DVD-ROM	Media	Read	Write
		CD-ROM	Yes	No
		CD-R	Yes	No
		CD-RW	Yes	No
		DVD-ROM	Yes	No
		DVD-ROM DL	Yes	No
		DVD-RAM	Yes	No
		DVD+R	Yes	No
		DVD+R DL	Yes	No
		DVD+RW	Yes	No
		DVD-R	Yes	No
		DVD-RW	Yes	No
		DVD-R DL	Yes	No
	Access times (typical reads, including setting)	Random	DVD: < 140 ms (typical), CD: < 125 ms (typical)	
		Full Stroke	DVD: < 250 ms (seek), CD: < 210 ms (seek)	
		Cache Buffer	2 MB (minimum)	
		Data Transfer Modes	ATA PIO mode 4 (16.7 MB/s); ATA Multi-word DMA mode 2 (16.7 MB/s); ATA UltraDMA Mode 3 (44.4 MB/s -default)	
	Power	Source	SATA DC power receptacle	
		DC Power Requirement	5 VDC ± 5%-100 mV ripple p-p 12 VDC ± 5%-200 mV ripple p-p	
		DC Current	5 VDC - <1000 mA typical, < 1600 mA maximum 12 VDC -< 600 mA typical, < 1400 mA maximum	

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

Technical Specifications - Miscellaneous

HP FireWire/IEEE 1394a PCI Card	Data Transfer Rate	Burst Data Rate up to 400 Mb/s
	Device Interface Protocol	IEEE-1394a
	Devices Supported	IEEE-1394 compliant devices
	Bus Type	PCI card with brackets for low profile and full height PCI slots.
	Certification Level	FCC Part 15B, cULus 60950, CE Mark EN55022B(1995)/EN55024-1998 STD, Taiwan BSMI CNS13438, Korea MIC
	Ports	Two IEEE 1394 6-Pin Connector (Rear)
	Internal Connectors	One 10-Pin (9 Contacts) Custom Connector
	Temperature - Operating	50° to 131° F (10° to 55° C)
	Temperature - Storage	-22° to 140° F (-30° to 60° C)
	Relative Humidity - Operating	20% to 80%