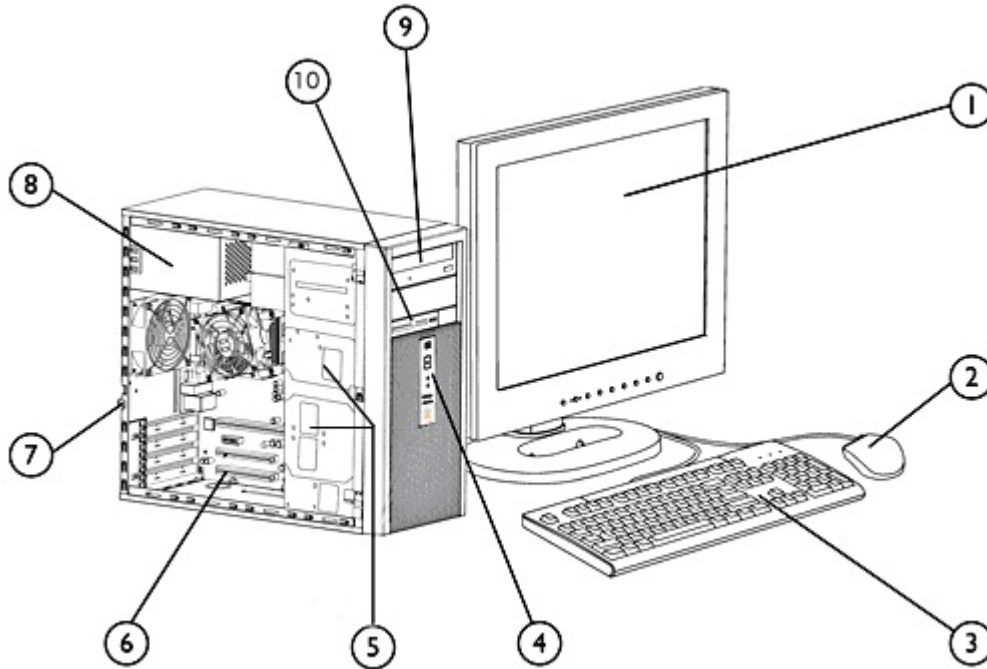


Overview



1. Monitor (sold separately)
2. HP Optical Scroll Mouse (PS2 or USB), or HP USB Laser Mouse
3. HP Standard Keyboard (PS2 or USB)
4. Front I/O - (2) USB 2.0 ports, (1) MIC, (1) Headphone & (1) Bizcover Diagnostic & recovery switch (Optional)
5. (2) 3.5" internal hard disk drive bays
6. (1) full-height PCI slot, (2) full-height PCI-e x1 slots, (1) full-height PCI-e x16 Slot
7. Rear I/O - (6) USB 2.0 ports, (1) serial port, (1) parallel port, (2) PS/2, (1) RJ-45, (1) VGA, (1) line in, (1) line out, (1) MIC
8. 300-watt Standard Non-PFC power supply or 300-watt 85% efficiency power supply (Optional)
9. (2) 5.25" external Optical disk drive bays or Floppy Drive
10. (1) 3.5" external bay for Floppy Drive or HP 22-in-1 Media Card Reader

Overview

At A Glance

- Intel Quad Core, Intel Core 2 Duo , Intel Pentium Dual Core, Intel Celeron-L Series and Intel Celeron Dual Core Processors
- Intel G43/ICH10 Express Chipset
- Integrated Intel Graphics Media Accelerator 4500
- DDR3 SDRAM system memory
- 8 channel High Definition Audio (ALC 888)
- PCI and PCI Express I/O buses
- Serial ATAII controller
- USB 2.0 support
- Realtek RTL8111DL Gigabit Ethernet controller
- Choice of hard drives and optical drives
- 300Watt Non-PFC Power supply or Optional 85% efficiency power supply
- Choice of operating systems:
 - Genuine Windows 7 Professional 32 Bit
 - Genuine Windows 7 Professional 64 Bit
 - Genuine Windows 7 Home Basic 32 Bit
 - Genuine Windows 7 downgrade to XP Professional 32 bit
 - Genuine Windows Vista Business 32 bit
 - Genuine Windows Vista Home Basic 32 bit
 - Genuine Windows Vista downgrade to XP Professional 32 bit
 - Redhat Enterprise Linux (Only Drop in Box)
 - Free DOS
- Value added software (included on select models; not included with Free Dos operating system)
 - Bizcover Diagnostics & Recovery Manager
 - Desktop Management Software
 - HP Support assistant
 - HP Advisor
 - HP Recovery Manager
 - McAfee Anti-Virus with 60 day Live Update Subscription
 - HP Vision Diagnostics software
 - Microsoft Office 2007
 - PDF Complete
 - Corel Win DVD media player
 - Roxio Creator Business
 - HP Power Manager
 - Norton online Backup
 - Mozilla internet explorer
- Protected by HP Services. Terms and conditions applicable for India only.

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

Processor and Speed Intel Core 2 Quad Processors

One of the following

Intel Core 2 Quad Q8400 Processor (2.66-GHz, 4-MB L2 cache, 1333-MHz FSB)
Intel Core 2 Quad Q9400 Processor (2.66-GHz, 6-MB L2 cache, 1333-MHz FSB)
Intel Core 2 Quad Q9505 Processor (2.83-GHz, 6-MB L2 cache, 1333-MHz FSB)
Intel Core 2 Quad Q9550 Processor (2.83-GHz, 12-MB L2 cache, 1333-MHz FSB)
Intel Core 2 Quad Q9650 Processor (3-GHz, 12-MB L2 cache, 1333-MHz FSB)

Intel Dual core Processors

Intel Pentium Dual core E5300 Processor (2.60-GHz, 2-MB L2 cache, 800-MHz FSB)
Intel Pentium Dual core E5400 Processor (2.70-GHz, 2-MB L2 cache, 800-MHz FSB)
Intel Pentium Dual core E6300 Processor (2.80-GHz, 2-MB L2 cache, 1066-MHz FSB)
Intel Pentium Dual core E6500 Processor (2.93-GHz, 2-MB L2 cache, 1066-MHz FSB)
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 (3.00-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 (3.3-GHz, 6-MB L2 cache, 1333-MHz FSB)

Intel Celeron Processors

Intel Celeron-Conroe-L 450 (2.2G, 512KB cache, 800MHz FSB)
Intel Celeron-Dual-Core Processor E3200 (2.4GHz, 1MB cache, 800MHz FSB)
Intel Celeron-Dual-Core Processor E3300 (2.5GHz, 1MB cache, 800MHz 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 and Application Software

- Genuine Windows 7 Professional 32 Bit*
- Genuine Windows 7 Professional 64 Bit*
- Genuine Windows 7 Home Basic 32 Bit*
- Windows XP Professional (available through downgrade rights from Genuine Windows 7 Professional)*+
- Genuine Windows Vista Business 32 bit**
- Genuine Windows Vista Home Basic 32 bit**
- Windows XP Professional (available through downgrade rights from Genuine Windows Vista Business)*++
- Redhat Enterprise Linux (Drop in Box only)
- Free DOS

*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.msp> and <http://www.microsoft.com/windowsvista/getready/capable.msp> 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 at least 25 customer systems with the same custom image.

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

++Windows Vista Business 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 at least 25 customer systems with the same custom image.

Value added software (included on select models; not included with Free Dos operating system)

- Bizcover Diagnostics & Recovery Manager
- Desktop Management Software
- HP Support assistant
- HP Advisor
- HP Recovery Manager
- McAfee Anti-Virus with 60 day Live Update Subscription*
- HP Vision Diagnostics software
- Microsoft Office 2007
- PDF Complete
- Corel Win DVD media player
- Roxio Creator Business
- HP Power Manager
- Norton online Backup
- Mozilla internet explorer

* 60 day trial period for McAfee Total Protection for Small Business Software. Internet access required to receive updates. First update included. Subscription required for updates thereafter.

Hard Drives

160-GB Serial ATA 3.0-Gb/s Hard Drive (7200 rpm)
250-GB Serial ATA 3.0-Gb/s Hard Drive (7200 rpm)
320-GB Serial ATA 3.0-Gb/s Hard Drive (7200 rpm)
500-GB Serial ATA 3.0-Gb/s Hard Drive (7200 rpm)

System Memory

1-GB DDR3 Sync DRAM PC3-10600 (1066/1333-Mhz) Non-ECC (1 x 1GB)
2-GB DDR3 Sync DRAM PC3-10600 (1066/1333-Mhz) Non-ECC (1 x 2GB)
2-GB DDR3 Sync DRAM PC3-10600 (1066/1333-Mhz) Non-ECC (2 x 1GB)
3-GB DDR3 Sync DRAM PC3-10600 (1066/1333-Mhz) NON-ECC (3 x1GB)
4-GB DDR3 Sync DRAM PC3-10600 (1066/1333-Mhz) NON-ECC (2 x 2GB)
4-GB DDR3 Sync DRAM PC3-10600 (1066/1333-Mhz) NON-ECC (4 x 1GB)
8-GB DDR3 Sync DRAM PC3-10600 (1066/1333-Mhz) NON-ECC (4 x 2GB)

NOTE: G43 Chipset support maximum Memory speed of 1066MHz. 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.

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

Storage -

One or more of the following (see Storage section below)

Diskette Drive*

1.44MB Diskette Drive

Media Card Reader**

HP 22-in-1 Media Reader

* Either Diskette Drive or Media Card Reader (any one) can be configured.

** Media card reader is available for Windows Microsoft & Freedos OS

Optical Drives (Serial ATA)

SATA DVD-ROM Drive

SATA Super Multi LightScribe DVD Writer Drive

Blu-Ray Writer*

* Supports only Microsoft Vista OS

Input Devices**Keyboard - One of the following***

HP PS/2 Standard Keyboard

HP USB Standard Keyboard

Mouse - One of the following*

PS/2 2-Button Optical Scroll Mouse

USB 2-Button Optical Scroll Mouse

USB 2-Button Laser Mouse

* One year limited warranty for Keyboard & Mouse

Audio

Integrated Realtek ALC888 High Definition audio Codec

Internal PC speaker (Optional)

Communication

Integrated Realtek RTL8111DL Gigabit Ethernet controller

Intel Gigabit CT PCI-e x1 NIC Card (full height) - optional

LSI 56K PCIe Modem - optional

Graphics

Intel Graphics Media Accelerator 4500 - integrated

ATI Radeon HD4550 256MB DH PCIe x 16 Card - optional

NVIDIA GeForce G210 512MB HDMI FH PCI-e x16 - optional

System Details

Base Unit

- Micro ATX micro tower chassis, including 300W Non-PFC power supply (or 300W 85% efficiency power supply) and front bezel
- Five (5) drive bays and four expansion slots
- Active type heat sink
- Chassis fan
- System board with Intel G43 Express chipset, Intel I/O Controller Hub 10 (ICH10), Realtek RTL8111DL GbE Ethernet controller, Intel GMA 4500 graphics, and Realtek High Definition audio, (1) full-height PCI slot, (2) PCI Express x1 slots, (1) PCI Express x16 slot, (4) DDR3 DIMM memory slots, (4) Serial ATA data connectors
- Power cord

Slots

PCI

One (1) full-height PCI slot on PCA
Two (2) full-height PCI Express x1 slots on PCA
One (1) full-height PCI Express x16 slot on PCA (for graphic cards)

Memory Expansion

Four (4) DDR3 SDRAM DIMM slots (8 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. Addressing memory above 4 GB requires a 64-bit operating system.

Bays

Internal

Two (2) 3.5"

External

Two (2) 5.25"
One (1) 3.5"

USB Support

Two (2) front ports; Six (6) rear ports

Interfaces (Legacy)

One (1) parallel port
One (1) serial port
One (1) PS/2 keyboard port
One (1) PS/2 mouse port
One (1) analog VGA video port
One (1) line in; one (1) line out; one (1) mic in
One (1) RJ-45 network port

Weight & Dimensions

Chassis Dimensions	13.90 x 6.89 x 16.38 in (H x W x D)	353 x 175 x 416 mm
Packaged Dimensions	23.62 x 19.68 x 12.2 in approximate (L x W x H)	600 x 500 x 310 mm
System Weight	21.38 lb (9.7 kg)	
Shipping Weight	29.76 lb (13.5 kg)	

System Details

Technology and Features

Memory Type G43 chipset supports DDR3 SDRAM upto maximum of 8GB system memory and frequency upto 1066MHz

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.

Hard Drive Interfaces Supported Serial ATAII

Chassis

Front Panel	Power button Power On LED HDD Activity LED Bizcover Diagnostic & Recovery Switch (Optional)
Cooling Solutions Supported	Power Supply Fan (variable speed) Active heatsink (variable speed) Chassis fan (variable speed)
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 Six (6) USB 2.0 ports
Drive Bays	Two (2) 5-1/4" external One (1) 3-1/2" external Two (2) 3-1/2" internal
Internal Speaker	1.5Watts (Optional)
Security	Pad Lock Support Kensington Lock Support Hood Sensor (Optional)
Power Supply	300-watt ATX Non-PFC Power Supply or Optional 300W 85% efficiency power supply

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)



System Details

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 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 Support Intel Core 2 Quad or Core 2 Duo (Yorkfield or Wolfdale), Pentium Dual Core, Celeron Dual Core & Celeron L Series processors
	Chipset	Intel G43 - North Bridge Intel I/O Controller Hub 10 (ICH10) - South Bridge
	Super I/O	Winbond 83667HG-B
	Front Side Bus Frequency	800/1066/1333 MHz
	Memory	DDR3 SDRAM, 4 DIMM slots
	Clock Generator	SILEGO SLG8XP51
	Integrated Graphics	Intel Graphics Media Accelerator (GMA) 4500
	Audio	Realtek ALC888S HD Audio compatible codec with eight channel audio
	LOM	Realtek RTL8111DL Gigabit Ethernet controller
	Storage	Four Serial ATA interfaces
	Expansion Slots	1 full-height PCI slot 2 full-height PCI Express x1 slots 1 full-height PCI Express x16 slot
	BIOS	SPI FLASH ROM 8Mbit (AMI Vendor)
	Industrial Standard	PCI 2.3 compliant USB 2.0
	Rear Side I/O Ports	1 x PS/2 Keyboard port 1 x PS/2 mouse port 6 x USB 2.0 ports 1 x RJ-45 10/100/1000 port 1 x serial port 1 x parallel 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 Floppy connector 1 x Front panel connector, Switch, LED (ON/OFF, Flash) 1 x Fan header for CPU cooler Fan with voltage/fan speed control 1 x Fan header for Chassis fan with voltage/fan speed control 3 x Internal USB header 1 x header to support 2 front (Headphone/Mic) audio ports
	Board Size	Micro-ATX, PCB Size: 9.6" x 9.6" in (24.38 x 24.38 cm) 4-layer PCB

System Details

Additional Features

- Bootable without keyboard, mouse or monitor
- Keyboard/mouse wake up
- Support S3, S4 and S5
- ACPI 2.0
- Hardware monitoring
- CPU fan speed control

Network Interface

Intel Gigabit CT PCIe Adapter (Optional)

Hardware Highlights Features

PCI Express interface
10-Mbps, 100-Mbps and 1000-Mbps operation

Power Supply

- ATX Power Supply
- 300 watt Non-PFC or optional 300W 85% Efficiency Power supply
- 80-mm power supply fan - variable speed for optimum acoustics

Power Conservation 'Energy Saver'

- ACPI 2.0 support
- Screen blanking
- Hard drive 'Idle' mode
- System Idle mode

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/Compaq 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 10000 ft (3048 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

5% 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).

System Details

	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	40G's (Half-sine Shock) 40G'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)
Acoustic Noise		Listed are the declared A-WEIGHTED SOUND POWER LEVELS (LWAd) and declared average desktop seated operator position A- WEIGHTED SOUND PRESSURE LEVELS (LpAm) when the product is operating in a 73.4°F (23°C) ambient environment. Noise emissions were measured in accordance with ISO 7779 (ECMA 74) and declared in accordance with ISO 9296 (ECMA 109).
	IDLE (Fixed disk drive spinning)	LWAd = 4.3 Bels, Desktop Average LpAm = 32 dBA
	FIXED DISK (Random write)	LWAd = 4.8 Bels, Desktop Average LpAm = 37dBA
	CD-ROM (Sequential Reads)	LWAd = 5.2 Bels, Deskside Average LpAm = 41dBA

Service and Support On-site Warranty: Three-year (3-3-3) limited warranty

After-Market Options

Communications	NICs	
	Intel Gigabit CT Desktop NIC	FH969AA
	LSI PCIe x1 Hi-Speed 56K International SoftModem	FH970AA
Hard Disk Drives	HP 500GB SATA 3.0Gb/s Hard Drive	KW347AA
	HP 320GB SATA 3.0Gb/s Hard Drive	FH963AA
	HP 250GB SATA 3.0Gb/s Hard Drive	PY278AA
	HP 160GB SATA 3.0Gb/s Hard Drive	PY277AA
Removable Storage Devices	Diskette Drive	
	HP CDC 1.44MB 3.5 Internal Floppy	AH053AA
	Card Reader	
	HP 22-in-1 Media Card Reader - JB	AR941AA
Input Devices	Keyboards*	
	HP PS/2 Standard Keyboard JB	DT527A#B13
	HP USB Standard Keyboard JB	DT528A#B13
	USB PS/2 Washable Keyboard INTL	VF097AA#B13
	Mice*	
	HP PS/2 2-Button Optical Scroll Mouse	EY703AA
	HP USB 2-Button Optical Scroll Mouse	DC172B
	HP USB Laser Mouse	GW405AA
	HP Business Mouse Pad	AT485AA
		<i>* One year limited warranty for Keyboard & Mouse</i>
Memory	HP 2GB PC3-10600 (DDR3-1333) DIMM	AT024AA
	HP 1GB PC3-10600 (DDR3-1333) DIMM	AT023AA
	NOTE: G43 chipset supports maximum speed of upto 1066MHz	
Monitor	All HP monitors are supported that accept a graphics output provided by this PC. The LP3065 monitor can be supported by installing a graphics card that supports a dual-link DVI-D output	
Audio	HP USB Powered Speakers	KK912AA
Graphics (Optional)	ATI Radeon HD 4550 (256MB DH) PCIe x16 Graphics Card	AT042AA
	Nvidia GeForce 210 512MB Std Bkt	VN565AA

After-Market Options

Optical Drives	HP 16X SATA Blu-ray Writer BLK	AR482AA
	HP 16X SATA SuperMulti LightScribe DVD Drive BLK	AR630AA
	HP 16X/48X SATA DVD-ROM Drive BLK	AR629AA
<hr/>		
Security	Kensington Compaq Security Lock Ind - All	PC766A
	HP Business PC Security Lock Kit	PV606AA

Memory

DDR SYNCH DRAM NON-ECC MEMORY

The Intel G43 Express chipset supports non-ECC DDR3 SDRAM (Synchronous dynamic random access memory) of up to 8GB Memory and at a frequency of up to 1066MHz.

NOTE: 1066MHz system memory frequency of operation requires at least PC3-8500 (DDR3-1066) memory type for all populated memory modules, and an Intel processor with FSB (front side bus) of at least 1066MHz.

System Memory upgrades are accomplished by adding DDR3 SDRAM module(s) to empty DIMM slots on the system board. The motherboard has four DIMM sockets.

CAUTION: Voltage is supplied to the memory modules whenever the computer is connected 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. The computer must be shut down with the AC power removed (disconnect AC power cord at rear chassis or at AC outlet) prior to adding or removing SDRAM modules.

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

STANDARD MEMORY

1-GB or 2-GB

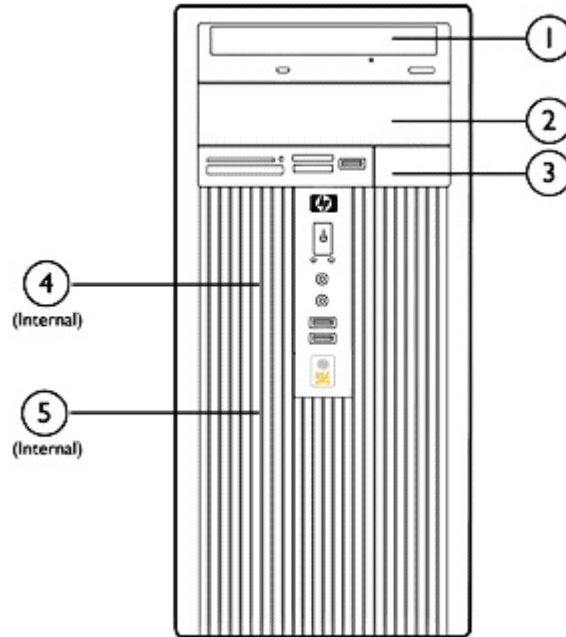
OPTIONAL MEMORY UPGRADES

Supports up to 8-GB of DDR3 SDRAM. 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 to the OS due to system resource requirements. Addressing memory above 4 GB requires a 64-bit operating system.

DIMM Size	Slot			
	Channel A		Channel B	
	DIMM 1 (White)	DIMM 2 (Black)	DIMM 3 (White)	DIMM 4 (Black)
1-GB	1-GB			
2-GB	2-GB			
2-GB (dual-channel symmetric)	1-GB		1-GB	
3-GB	1-GB	1-GB	1-GB	
4-GB (dual-channel symmetric)	1-GB	1-GB	1-GB	1-GB
4-GB (dual-channel symmetric)	2-GB		2-GB	
8-GB maximum (dual-channel symmetric)	2-GB	2-GB	2-GB	2-GB

Storage



HP Pro 3090 MicroTower Business PC

Drive Support	Maximum Quantity Supported	Position Supported	Controller
Media Reader	1	3	Internal USB 2.0 port
DVD / DVD +/- RW / Blu-ray	2	1, 2	SATAII
3.5" Serial ATA Hard Drives	2	4, 5	SATAII

Technical Specifications

Integrated Realtek ALC888S Audio	Type HD Audio compatible codec Sampling Audio jacks Power support Others	Integrated Yes Supports 48/96KHz Mic-in Line-in Line-out / Headphone out Digital: 3.3V Analog: 5V Meets performance requirements for audio on PC99/2001 systems High-performance DACs with 97dB SNR (A-Weighting) ADCs with 90dB NR (A-Weighting)
<hr/>		
Intel Gigabit CT Desktop NIC	Connector Controller Memory Data rates supported Compliance Bus architecture Data path width Data transfer mode Hardware certifications Power requirement Boot ROM support Network transfer rate Environmental Dimensions Management capabilities	RJ-45 Intel WG82574L Gigabit Ethernet Controller Integrated Dual 48K configurable transmit receive FIFO Buffers 10/100/1000 Mbps IEEE 802.1P, 802.1Q, 802.2, 802.3, 802.3AB and 802.3u compliant, 802.3x flow control PCI-E 1.0a X1, 250 MB/s, Bi-directional interface Bus-master DMA FCC, B, CE, TUV- cTUVus Mark Canada and United States, TUV- GS Mark for European Union Aux 3.3V, 3.0 Watts in 1000base-T and 2.0 Watts in 100Base-T Yes 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) Operating temperature 32° to 131°F (0° to 55° C) Operating humidity 85% at 131° F (55° C) 4.75 x 2.25 x 0.8 in (12.1 x 5.7 x 2.0 cm) WOL, PXE, DMI, WFM 2.0
<hr/>		
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.

Technical Specifications

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
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.

Integrated Intel
Graphics Media
Accelerator (GMA)
4500

3D/2D Controller
VGA Controller
DisplayPort

Microsoft DirectX® 10 based with support for Pixel Shader 3.0
Integrated
Integrated, Multimode capable; supports HDCP



Technical Specifications

4300

Bus Type PCI Express™ x16

RAMDAC Integrated, 350 MHz

Memory Graphics memory is shared with system memory. Graphics memory usage varies depending on the amount of system memory installed, BIOS settings, operating system, and system load. 32 MB is pre-allocated for graphics use at system boot time. Additional memory can be allocated at boot time by the BIOS for PAVP (Protected Audio Video Playback) support for playback of protected video content. For Vista, use of PAVP heavy mode preallocates an additional 96MB.

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.

Windows XP Memory Usage:

Total System Memory	Total Graphics Memory (MB)	Pre-Allocated (MB)	DVMT (MB)
.5GB	128	32	96
1.0GB	512	32	480
1.5GB	768	32	736
2GB & more	1024	32	992

Windows Vista Memory Usage:

The graphics driver will determine DVMT memory. DVMT Memory = Total GFX Memory - Pre-allocated size and fixed memory = Pre-allocated Memory

HW Video Decode Hardware Accelerated decode for MPEG2 encrypted video; support for PAVP Lite (default) and Heavy (or Paranoid) modes

Maximum Color Depth 32 bits/pixel

Maximum Vertical Refresh Rate 85 Hz at up to 1920x1440, 75 Hz at 2048x1536. Varies with mode and configuration. See table below.

Graphics/Video API Support Microsoft DirectX® 10, OpenGL® 1.5 (OpenGL® 2.0 available in a driver update)

Resolutions Supported

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

Technical Specifications

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

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

ATI Radeon HD 4550 (256MB) Dual Head 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	1900 x 1200 digital, 2048 x 1536 analog	
	Board display options	Supports two displays via included DMS-59 to dual VGA cable or 2 DVI monitors via optional DMS-59 to dual DVI cable kit part number: DL139A. 4-pin mini-DIN S-video connector for TV output	
Board configuration	Specification	Description	
	Graphics Chip	RV710	
	Core clock	600MHz	
	Memory clock	800 MHz	
	Frame buffer	256 MB DDR2, 64 bit wide	
Languages supported	24 languages: English, Arabic, Chinese Simplified, Chinese Traditional, Czechoslovakian, Danish, Dutch, Finnish, French, German, Greek, Hebrew, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish, Thai, Turkish		
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 (KCC)		



Technical Specifications

EMC Immunity:

CISPR 24:1997/EN 55024:1998 - Information Technology Equipment
- Immunity Characteristics - Limits and Methods of Measurement.

ATI Radeon HD 4550 DH PCIe x16 Graphics Card display resolutions and refresh rates

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

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

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

3.5" 7200 RPM Serial ATA Hard Drives

500 GB	Capacity	500,107,862,016 bytes	
	Height	1 in (2.54 cm)	
	Width	Media diameter: 3.5 in (8.89 cm) Physical size: 4 in (10.2 cm)	
	Interface	Serial ATA (3.0 Gb/s)	
	Synchronous Transfer Rate (Maximum)	Up to 3 Gb/s	
	Buffer	16 MB	
	Seek Time (typical reads, includes controller overhead, including settling)	Single Track	2.0 ms
		Average	11 ms
		Full-Stroke	21 ms
	Rotational Speed	7,200 rpm	
	Logical Blocks	976,773,168	
	Operating Temperature	41° to 131° F (5° to 55° C)	
320 GB	Capacity	320,072,933,376 bytes	
	Height	1 in (2.54 cm)	
	Width	Media diameter: 3.5 in (8.89 cm) Physical size: 4 in (10.2 cm)	
	Interface	Serial ATA (3.0 Gb/s)	



Technical Specifications

	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	625,142,448	
	Operating Temperature	41° to 131° F (5° to 55° C)	
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	160,041,885,696 bytes	
	Height	1 in (2.54 cm)	
	Width	Media diameter: 3.5 in (8.89 cm)	
		Physical size: 4 in (10.2 cm)	
	Interface	Serial ATA (3.0 Gb/s)	
	Synchronous Transfer Rate (Maximum)	Up to 3 Gb/s	
	Buffer	8 MB	
	Seek Time (typical reads, includes controller overhead, including settling)	Single Track	0.9 ms
		Average	9.3 ms
		Full-Stroke	18 ms
	Rotational Speed	7,200 rpm	
	Logical Blocks	312,581,808	
	Operating Temperature	41° to 131° F (5° to 55° C)	

Technical Specifications

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
	Environmental	Acoustics	43-dBA maximum sound pressure level
		Operating temperature	50° to 122° F (10° to 50° C)
		Non-operating temperature	-22° to 140° F (-30° to 60° C)
		Operating humidity	10% to 90% (non-condensing at ambient)
		Non-operating humidity	20% to 80% (non-condensing at ambient)
		Operating shock	40 g, six surfaces
		Non-operating shock	80 g, six surfaces
		Operating vibration	2-g peak acceleration
		Non-operating vibration	4-g peak acceleration
		Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
		Drop (in box)	42 in (107 cm) on concrete, 16-drop sequence
	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

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
	Mechanical	Microsoft PC 99 - 2001	Functionally compliant
		Languages	38 available
		Keycaps	Low-profile design
		Switch actuation	55-g nominal peak force with tactile feedback
		Switch life	20 million keystrokes (using Hasco modified tester)
		Switch type	Contamination-resistant switch membrane
		Key-leveling mechanisms	For all double-wide and greater-length keys
		Cable length	6 ft (1.8 m)
	Environmental	Microsoft PC 99 - 2001	Mechanically compliant
		Acoustics	43-dBA maximum sound pressure level
		Operating temperature	50° to 122° F (10° to 50° C)
		Non-operating temperature	-22° to 140° F (-30° to 60° C)
		Operating humidity	10% to 90% (non-condensing at ambient)
		Non-operating humidity	20% to 80% (non-condensing at ambient)
		Operating shock	40 g, six surfaces
		Non-operating shock	80 g, six surfaces
		Operating vibration	2-g peak acceleration
		Non-operating vibration	4-g peak acceleration
		Drop (out of box)	26 in (66 cm) on carpet, six-drop sequence
		Drop (in box)	42 in (107 cm) on concrete, 16-drop sequence
	Approvals		UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC
	Ergonomic compliance		ANSI HFS 100, ISO 9241-4, and TUVGS

Technical Specifications

HP PS/2 Optical Scroll Mouse	Dimensions (H x L x W)	3.95 x 6.21 x 11.7 cm (1.56 x 2.44 x 4.61 in)	
	Weight	4.44 oz (126 g)	
	Environmental	Operating temperature	-32° to 104°F (0° to 40° C)
		Non-operating temperature	-4° to 140°F (-20° to 60° C)
		Operating humidity	10% to 90% (non condensing at ambient)
		Non-operating humidity	10% to 90% non condensing
		Operating shock	40 g, 6 surfaces
		Non-operating shock	80 g, 6 surfaces
		Operating vibration	2 g peak acceleration
		Non-operating vibration	4 g peak acceleration
		Drop (out of box)	80 cm height onto asphalt tile over concrete or equivalent, 5-drop in 5 direction except the cable face
		Electrical	Operating voltage
	Power consumption		100mA
	System consumption		PS/2 mini-din connector
	ESD		CE level 4, 15 kV air discharge
EMI-RFI	Conforms to FCC rules for a Class B computing device		
Mechanical	Microsoft PC99 - 2001	Functionally compliant	
	Resolution	400 ± 20% DPI	
	Tracking speed	10 in/s (25.4 cm/s) maximum	
	Acceleration	100 in/s/s (2.54 m/s/s)	
	Switch actuation	61 g nominal peak force	
	Switch life	3,000,000 operations (using Hasco modified tester)	
	Switch type	Low force micro-switches	
	Tracking mechanism life	155 mi (250 km) at average speed of 10 in/s	
	Cable length	6 ft (1.8 m)	
	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	
Regulatory approvals	Mechanical life	Minimum 200,000 revolutions	
	Compliant	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC	

Technical Specifications

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, XP and Vista Available USB port		
<hr/>				
HP USB 2-Button Laser Mouse	Scroll Wheel	24		
	Maximum Rotation Speed	48 rats/sec		
	Switch Type	wheel		
	Switch Life	Button - 3,000,000 Wheel - 1,000,000 times Tilt switch - 500,000 times		
	Environmental	Operating Temperature	32° to 104° F (0° to 40° C)	
		Non-operating Temperature	-4° to 140° F (-20° to 60° C)	
		Operating Humidity	10% to 90% (non-condensing at ambient)	
		Non-operating Humidity	20% to 80% (non-condensing at ambient)	
		Operating Shock	40 g, six surfaces	
		Non-operating Shock	80 g, six surfaces	
		Operating Vibration	2-g peak acceleration	
		Non-operating Vibration	4-g peak acceleration	
		Electrical	Operating Voltage	+ 5VDC ± 5%
			Power Consumption	
	MTBF		> 150,000 hrs	
	ESD		IEC-61000-4-2 criteria B, Contact discharge: +/- 4kV, Air discharge: +/- 8kV	
	EMI-RFI		FCC Class B	
	PC98		PC 99 Compliant	
	Mechanical		Resolution	800dpi
		Tracking Speed	25 cm/sec	
		Acceleration	0.5mm	
		Switch Actuation	0.6N (60gf)	
		Switch Life	Button - 3,000,000 Wheel - 1,000,000 times Tilt switch - 500,000 times	
		Cable Length	1850mm	
PC98-99		PC99 compliant		
Regulatory Approvals		UL60950-1, UL 94, UL 746 (A-E), UL 796		
		TUV/GS: EN 60950-1, EN 60825-1		
		FCC Class B, UL 1950, cUL, TUV GS, CE, C-tick, VCCI, BSMI, RRL		

Technical Specifications - Storage Devices

HP SATA Blu-ray Writer	Height	5.25-inch, half-height, tray-load		
	Orientation	Either horizontal or vertical		
	Interface type	SATA/ATAPI		
	Disc capacity	50 GB DL or 25 GB standard		
	Dimensions (W x H x D)	5.9 x 1.7 x 7.5 in (15.0 x 4.4 x 19.0 cm)		
	Weight (max)	2.0 lb (907g)		
		Single-layer	Double-layer	
Write speed	BD-R	2x, 4x CLV, 6x CAV	2x, 4x CLV	
	BD-RE	2.3x	2x CLV	
	DVD-R	2x, 4x CLV, 8x ZCLV, 8x, 12x PCAV, 16x CAV	2x, 4x CLV	
	DVD-RW	1x, 2x, 4x, 6x CLV	Not supported	
	DVD+R	2.4x, 4x CLV, 8x ZCLV, 8x, 12x PCAV, 16x CAV	2.4x, 4x CLV	
	DVD+RW	2.4x, 4x, 6x CLV, 8x ZCLV	Not supported	
	DVD-RAM	2x, 3x CLV, 3-5x PCAV		
	CD-R	8x, 16x CLV, 24x, 32x PCAV, 40x CAV		
	CD-RW	4x, 10x, 16x CLV, 24x ZCLV		
			Single-layer	Double-layer
	Read speeds	BD-ROM	6x CAV	4.8x CAV
		BD-R	6x CAV	4.8x CAV
		BD-RE (SL/DL)	4.8x CAV	4.8x CAV
DVD-ROM		16x CAV	8x CAV	
DVD-R		12x CAV	8x CAV	
DVD-RW		10x CAV	Not support	
DVD+R		12x CAV	8x CAV	
DVD+RW		10x CAV	Not support	
BDMV (AACs Compliant Disc)		4.8x CAV		
DVD-RAM		2x, 3x CLV, 3x-5x PCAV		
DVD-Video (CSS Compliant Disc)		8x CAV		
CD-R/RW/ROM		40x / 40x / 40x CAV		
CD-DA (DAE)		32x CAV		
80 mm CD	16x CAV			
Sustained Transfer rate	BD-ROM	26.97 MB/s (6x) max.		
	DVD-ROM	16.62 MB/s (16x) max.		
	CD-ROM	6,000 KB/s (40x) max.		
Burst Transfer rate		1.5Gbps bits/s (10b side)		
		1.2Gbps bits/s (8b side)		

Technical Specifications - Storage Devices

Multimedia MPC-3 compliant		Yes
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 (operating)	41° to 122° F (5° to 50° C)
	Relative Humidity (operating)	10% to 90%
	Maximum Wet Bulb Temperature (operating)	86° F (30° C)

HP SATA SuperMulti LightScribe DVD Writer Drive	Height	5.25-inch, half-height, tray-load	
	Orientation	Either horizontal or vertical	
	Interface type	SATA/ATAPI	
	Disc capacity	8.5 GB DL or 4.7 GB standard	
	Dimensions (W x H x D)	5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)	
	Weight (max)	2.6 lb (1.2 kg)	
	Write speeds	DVD-RAM	Up to 12X
		DVD+R	Up to 16X
		DVD+RW	Up to 8X
		DVD+R DL	Up to 8X
		DVD-R DL	Up to 8X
		DVD-R	Up to 16X
		DVD-RW	Up to 6X
		CD-R	Up to 48X
		CD-RW	Up to 32X
		Read speeds	DVD-RAM
	DVD+RW, DVD-RW, DVD+R DL, DVD-R DL		Up to 8X
DVD-ROM DL	Up to 8X		
DVD-ROM, DVD+R, DVD-R	Up to 16X		
CD-ROM, CD-R	Up to 48X		
CD-RW	Up to 32X		
Access time (typical reads, including settling)	Random		DVD: < 140 ms (typical), CD: < 125 ms (typical)
	Full Stroke	DVD: < 250 ms (seek), CD: < 210 ms (seek)	

Technical Specifications - Storage Devices

Power	Source	SATA DC power receptacle
	DC Power Requirement	5 VDC \pm 5%-100 mV ripple p-p 12 VDC \pm 5%-200 mV ripple p-p
	DC Current	5 VDC (< 1000 mA typical, 1600 mA maximum) 12 VDC (< 600 mA typical, 1400 mA maximum)
	Environmental conditions (operating - non-condensing)	Temperature 41° to 122° F (5° to 50° C) Relative Humidity 10% to 90% Maximum Wet Bulb Temperature 86° F (30° C)

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	
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)		

Technical Specifications - Storage Devices

Power	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)
	Source	SATA DC power receptacle
	DC Power Requirement	5 VDC \pm 5%-100 mV ripple p-p 12 VDC \pm 5%-200 mV ripple p-p
	DC Current	5 VDC - <1000 mA typical, < 1600 mA maximum 12 VDC -< 600 mA typical, < 1400 mA maximum
Environmental (all conditions non-condensing)	Temperature	41° to 122° F (5° to 50° C)
	Relative Humidity	10% to 90%
	Maximum Wet Bulb Temperature	86° F (30° C)

HP 22-in-1 (with 1394) Media Card Reader	USB Interface	USB 2.0 High-speed device via PCI card or pass-through via internal USB port of system board
	Advance protocol support	<ul style="list-style-type: none"> • 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 50Mhz SD 4-bit card (version 1.1) • Supports high-speed 52Mhz MMC 8-bit card (version 4.X)
	Supported media type	<ul style="list-style-type: none"> • Supports Compact Flash Card Type I (CF I), Compact Flash Card Type II (CF II), Micro Drive (MD) • Supports 3.3V Smart Media Card (SM), Smart Media ROM (SM ROM),xD-Picture Card (xD) • Supports Secure Digital Card (SD), Secure Digital ROM Card (SDROM), mini SD, Multi Media Card (MMC), Secure Multi Media Card(Secure MMC), ROM Type Multi Media Card (MMC ROM), Reduced Size Multi Media Card (RS MMC), Multi Media Card 4.0 (MMC Plus),Reduced Size Multi Media Card 4.0 (MMC Mobile) • Support Memory Stick (MS), Memory Stick ROM (MS ROM),MagicGate Memory Stick (MG), Memory Stick Select, Memory StickDuo (MS Duo), Memory Stick PRO (MS-PRO), Memory Stick PRO Duo(MS PRO Duo)
Mechanical	Length (3.5")	124.7 cm
	Width (3.5")	101.6 cm
	Height (3.5")	25.4 cm
	Length (5.25")	171.6 cm
	Width (5.25")	148.9 cm
	Height (5.25")	42.7 cm
Environmental	Operational Environmental Extremes	Test Parameters/Conditions - Power applied, unit operating on system \pm 5% nominal supply voltage. 10°C 10% R.H. \geq 24 hours 10°C 90% R.H. \geq 24 hours



Technical Specifications - Storage Devices

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 Test Parameters/Conditions

Extremes

140°F (60°C) @ 80% R.H. for 96 hours
-22°F (-30°C) @ 20% R.H. for 48 hours
No power applied
Delta °C < 1.0°C/min
Delta % R.H. < 1.5% R.H./min

Approvals

USB-IF, WHQL, Compliant with USB Mass Storage Class Bulk only
Transport Specification Rev. 1.0, Compliant Intel Front Panel I/O
Connectivity Design Guide V. 1.3
FCC, CE, BSMI, C-Tick, VCCI, MIC, cJUL, TUV-T

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