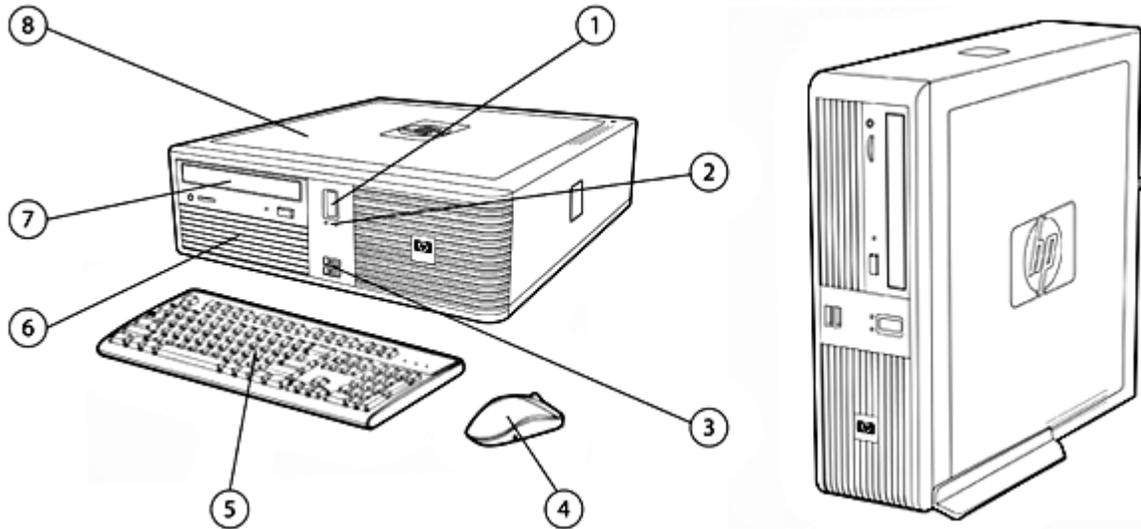
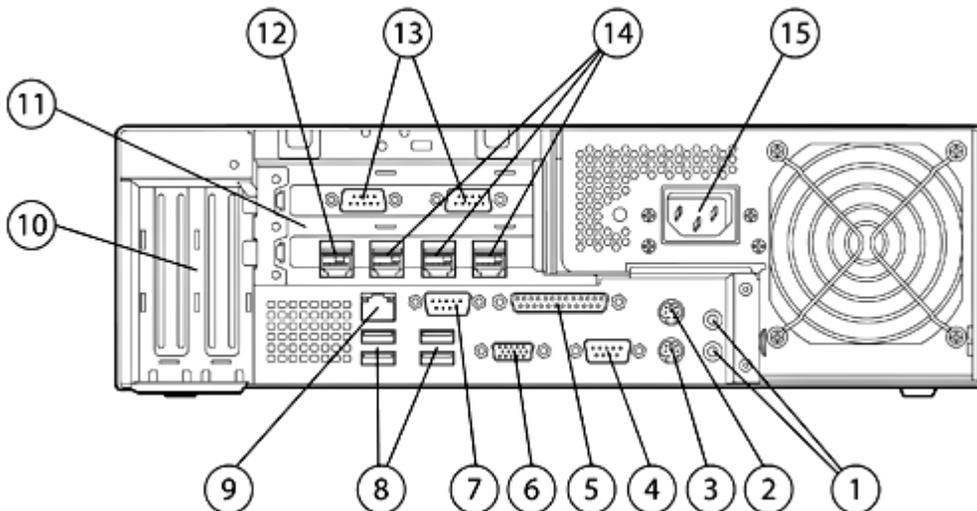


### Overview



- 1. Recessed power button
- 2. Disk access and diagnostic LEDs
- 3. 2 USB 2.0 ports with rubber cover
- 4. HP 2-button scroll mouse
- 5. HP Keyboard
- 6. 3.5" internal hard drive
- 7. 5.25" external optical drive
- 8. 3.5" second internal hard drive



- 1. Line in and line out audio jacks
- 2. PS/2 mouse port
- 3. PS/2 keyboard port
- 4. RS232 serial COM1 port
- 5. Parallel port
- 6. VGA port
- 7. RS232 serial COM2 port
- 8. 4 USB 2.0 ports
- 9. RJ-45 LAN jack
- 10. 2 half-height slots: left ADD2/SDVO slot, right PCIe-x1
- 11. 2 full-height PCI slots
- 12. 1 USB 2.0, USB + PWR port: +24V (some models)
- 13. 2 RS232 serial COM3 and 4 ports (some models)
- 14. 3 USB 2.0, USB + PWR ports: +12V (some models)
- 15. 240W 80 PLUS® – Active PFC power supply

### Overview

#### At A Glance

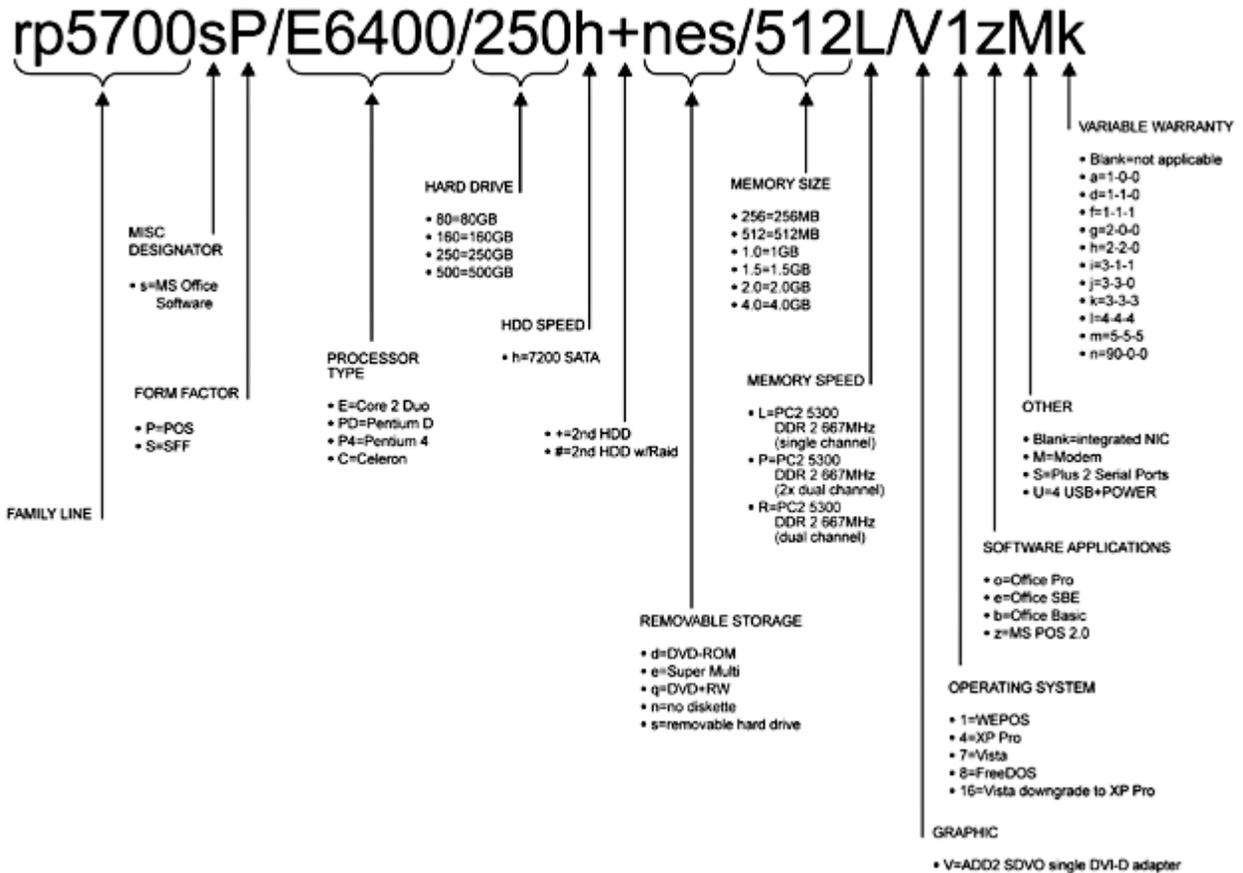
- Intel® Core™2 Duo processor, Intel Pentium® Dual-Core processor, or Intel Celeron® processor
- One of the following operating systems:
  - Genuine Windows 7 Professional 32-bit
  - Genuine Windows 7 Professional 64-bit
  - Genuine Windows Vista Business 32-bit
  - Genuine Microsoft Windows Embedded POSReady 2009
  - Genuine Windows Embedded for Point of Service (WEPOS)
  - FreeDOS
  - Intel Q963 chipset with Intel GMA 3000 and support for dual independent displays
- Dual Channel, DDR2 667 MHz system memory
- Integrated Broadcom 5755 NIC 10/100/1000 with integrated TPM support
- SMART III serial ATA 3.0Gb/s Hard Drives
- RAID level 0, 1 (HP factory ship standard), and 5 (requires three hard drives) support
- Manageability tools
- 5 year long lifecycle Point of Sale System
- 80 PLUS® highly efficient power supply rating standard on all models
- Protected by HP Services, including a 3-3-3, standard warranty. Terms and conditions vary by country. Certain restrictions and exclusions apply.

**NOTE:** All models and features may not be available in all countries.

### Standard and Configurable Components

#### Model Key and Example

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



### Standard and Configurable Components

**Operating System –** Genuine Windows 7 Professional 32-bit\*  
One of the following Genuine Windows 7 Professional 64-bit\*  
Genuine Windows Vista Business 32-bit\*\*  
Genuine Microsoft Windows Embedded POSReady 2009\*\*\*  
Genuine Windows Embedded for Point of Service (WEPOS)  
FreeDOS

\* 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>.

\*\*\* DVD drive required to install Multilingual User Interface software

**Value-added Software** (not HP ProtectTools Security Software Suite\* included with FreeDOS) Not all software included with all models.

HP Client Management Solutions (visit <http://www.hp.com/go/easydeploy>)  
HP Backup and Recovery Manager  
HP Insight Diagnostics  
Computer Setup Utility  
McAfee Total Protection Anti-Virus\*  
Intervideo WinDVD (supplied with DVD drive)

Microsoft Office Starter 2010+  
Microsoft Office 2010++  
Microsoft Office Home & Business 2010\*\*  
Microsoft Office Professional 2010\*\*  
Microsoft Internet Explorer  
HP Client Automation Enterprise  
Altiris Deployment Solution Agent  
Roxio Creator Business (included with DVD R/W drive)

\* 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.

+ Includes Microsoft Word Starter 2010 and Microsoft Excel Starter 2010. This system is preloaded with reduced-functionality versions of Word and Excel that include advertising. It does not include PowerPoint or Outlook. Purchase an Office 2010 Product Key to activate the full-featured Office software on this system.

++ Office 2010 preloaded; purchase product key to activate. License-to-use not included and must be purchased separately.

\*\* Sold separately.

**Value-added Services and Features**

HP Stable Platform Program with Product Change Notification	Business-to-Business Portals	Factory Express Deployment and Lifecycle Services (sold separately)
	* TPM module disabled where use is restricted by law; for example, Russia.	TPM 1.2* Vista Bit-Locker Ready

### Standard and Configurable Components

#### Service and Support

On-site Warranty and Service **NOTE 1** This three-year, limited warranty and service offering delivers three years 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. The rp5700 is available for sale in the Americas and EMEA only

**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.

#### Dimensions and Weight

<b>Chassis Dimensions</b> (HxWxD)	3.94 x 13.4 x 15 in (10 x 34 x 38 cm)
<b>System weight*</b>	19.62 lb (8.9 kg) POS models, 18.64 lb (8.433 kg) PC models
<b>System volume</b>	approximately 13 liters (13.74 quarts)
<b>Shipping weight*</b>	27.3 lb (12.355 kg) POS models, 26.52 lb (11.998 kg) PC models
<b>Shipping box dimensions</b>	23.38 x 19.68 x 9.00 inches (59.38 x 49.99 x 22.85 cm)
<b>Monitor weight supported</b>	77 lb (35 kg) maximum

\* Configured with 2 hard drives, 1 optical drive, no diskette drive, USB and COM cards (POS models), and tower stand.

#### Power Supply

240W 80 PLUS – Active PFC Power Supply. No line switching required.

#### Ports

<b>USB</b>	6 USB 2.0 (2 front, 4 rear) Plus 4 additional USB+POWER; 3 @ 12V, 1 @ 24V
<b>Serial</b>	2 RS232 individually configurable to power 5V & 12 V. COM1 can be configured for 5V, 9V, and 12V Plus 2 additional RS232 on some models via PCI card. Individually configurable to power 5V and 12V
<b>Parallel</b>	1
<b>PS/2</b>	2
<b>Video</b>	1
<b>Audio</b>	2, line in and line out
<b>NIC</b>	RJ-45
<b>Support for Multi-Monitor*</b>	available via HP ADD2 SDVO DVI-D Adapter

\* The rp5700 supports normal (or non-reversed) layout (Advanced Digital Display 2) adapter cards inserted into the SDVO (Serial Digital Video Output) connector on the system board. This connector has the physical appearance of a PCIe- x16 connector; however, conventional PCIe cards are not supported in this connector.

#### Chipset

Intel Q963 with ICH8-RAID

### Standard and Configurable Components

**Processor and Speed\*** Intel Core2 Duo Processor E7400 (2.80-GHz, 3-MB L2 cache, 1066-MHz FSB)  
 Intel Pentium Dual-Core Processor E2160 (1.80-GHz, 1-MB L2 cache, 800-MHz FSB)  
 One of the following Intel Celeron Processor 440 (2-GHz, 512-KB L2 cache, 800-MHz FSB)

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

### 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 rp5700 supports non-ECC DDR2 PC2-5300 (667-MHz) and PC2-6400 (800 MHz) memory.\*

#### 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.

- 1-GB DDR2 Synch DRAM 667-MHz or 800-MHz\* Non ECC (1 x 1 GB)
- 2-GB DDR2 Synch DRAM 667-MHz or 800-MHz\* Non ECC (1 x 2 GB)
- 2-GB DDR2 Synch DRAM 667-MHz or 800-MHz\* Non ECC (2 x 1 GB)
- 3-GB DDR2 Synch DRAM 667-MHz or 800-MHz\* Non ECC (3 x 1 GB)
- 4-GB DDR2 Synch DRAM 667-MHz or 800-MHz\* Non ECC (4 x 1 GB)
- 4-GB DDR2 Synch DRAM 667-MHz or 800-MHz\* Non ECC (1 x 4 GB)
- 8-GB DDR2 Synch DRAM 667-MHz or 800-MHz\* Non ECC (4 x 2 GB)

### Maximum Memory

Supports up to 8 GB of DDR2 Synch DRAM.

Slot 1 is black and must always be populated. Not all memory configurations possible are represented below.

\* All supported memory modules run at system maximum of 667 MHz.

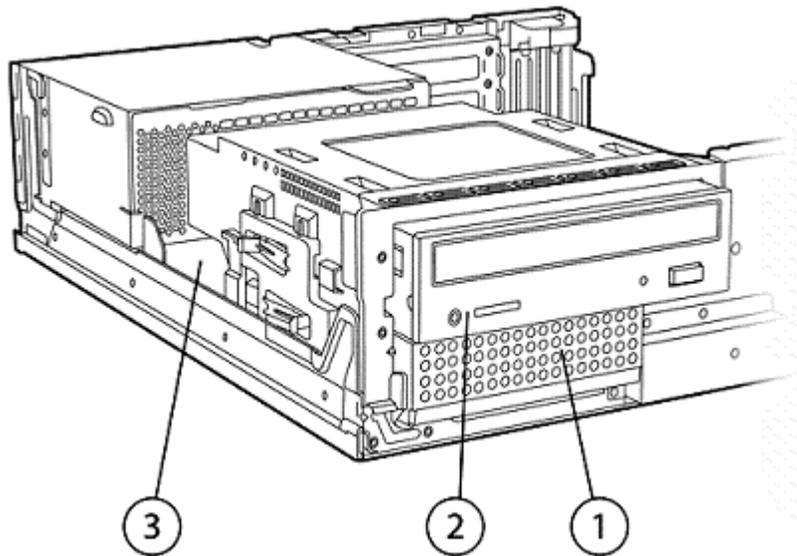
**NOTE:** Above 3-GB, all memory may not be available due to system resource requirements.

DIMM Size	Slot			
	Channel A		Channel B	
	1 (black)	2 (white)	3 (black)	4 (white)
1 GB	1 GB			
2 GB	1 GB		1 GB	
2 GB	2 GB			
3 GB	1 GB		2 GB	
3 GB	2 GB		1 GB	
4 GB	1 GB	1 GB	1 GB	1 GB
4 GB	4 GB			
8 GB	2 GB	2 GB	2 GB	2 GB

**Slots** PCI SDVO/ADD2 2 full-height, half-length PCI, 1 half-height PCIe-1x  
1

### Standard and Configurable Components

<b>Storage</b>	<b>Internal bays</b>	2 3.5-inch ATA hard drive
	<b>External bay</b>	1 5.25-inch optical drive
	<b>Hard Drive Interfaces Supported</b>	2 Serial ATA interfaces with RAID controller option. Supports RAID 0, 1, and 10.
	<b>Hard Drive Controller Supported</b>	SATA 3.0 Gb/s and 1.5 Gb/s
	<b>Serial-ATA connectors</b>	3
	<b>Hard Drive – One of the following</b>	160-GB, 250-GB, 500-GB, 1TB SATA 3.0 Gb/s, 7200 rpm 160-GB, 250-GB, 500-GB, 1TB SATA 3.0 Gb/s, 7200 rpm with RAID 1 80GB Solid State Drive 80GB Solid State Drive with RAID
	<b>Removable Storage – One of the following</b>	16X/48X SATA DVD-ROM 16X SATA SuperMulti LightScribe Drive



Front View	Quantity Supported	Position	Controller
Diskette Drives	0	0	N/A
3.5-inch Serial ATA Hard Drive	3	1, 2*, 3	SATA
Optical Drive Bay or Carrier for Hard Drive	1	2	SATA

\* Requires optional Hard Drive Carrier

### Standard and Configurable Components

<b>Security</b>	TPM 1.2 Embedded Security Chip integrated with Broadcom NIC HP ProtectTools Security Software Suite with BIOS Configuration (serial, parallel, USB enable/disable), Credential Manager, Smart Card Manager (sold separately) HP Desktop Security Lock Kit (lock and cable) (sold separately) Security cable with Kensington lock (sold separately) Wall Mount/Security Sleeve (sold separately) <b>Security loop hole diameter</b> 0.212 inch (0.538 cm)	
<b>NIC</b>	Broadcom 5755 10/100/1000 NIC with TPM 1.2 support	
<b>Communications</b>	Wireless 801.11 b/g/n PCIe x1 Card (optional) 2006 LSI PCIe x1 56K International SoftModem (optional) 2006 Agere PCI 56K International SoftModem (optional)	
<b>Graphics</b>	Integrated Intel Graphics Media Accelerator 3000. Support for dual display via optional HP ADD2 SDVO DVI-D Adapter NVIDIA Quadr4 290 Graphics card (256MB DH) PCIe x1 - 1st	
<b>Audio</b>	Intel integrated high-definition audio with 2-channel Realtek ALC 262 codec and internal amplified chassis speaker	
<b>Input/Output Devices</b>	<b>Keyboard –</b> One of the following	PS/2 keyboard USB keyboard No keyboard optional
	<b>Mouse –</b> One of the following	PS/2 scroll mouse USB scroll mouse Optical scroll mouse No mouse optional
<b>Miscellaneous</b>	Tower stand standard	

### After-Market Options

<b>Office 2007 Media-less License Kits (MLKs)</b>	MS Office Basic Edition 2007 – Media-less License Kit	RZ361A#ABA
	MS Office Small Business Edition 2007 – Media-less License Kit	RZ365A#ABA
	MS Office Professional Edition 2007 – Media-less License Kit	RZ363A#ABA
<hr/>		
<b>Communications</b>	HP Wireless 802.11 b/g/n PCIe x1	FH971AA
	LSI PCIe x1 Hi-Speed 56K International SoftModem	FH970AA
	Broadcom NetXtreme Gigabit Ethernet PCIe NIC Card	EA833AA
	HP Surge Protector, LAN & Printer Cable	RT174AA
	Broadcom NetXtreme Gigabit Ethernet Plus NIC	FS215AA
<hr/>		
<b>Graphics</b>	HP ADD2 SDVO DVI-D Adapter	DY674AA
	NVIDIA NVS 300 (512mb) PCIe x1 Card (includes DMS-59 to Dual-VGA cable, Low-Profile bracket)	BV457AA
	Single-DVI to Single-DVI Cable	DC198A
	DMS-59 to Dual-DVI cable	DL139A
	DMS-59 to Dual DisplayPort Cable Kit	XP612AA
<hr/>		
<b>Hard Drives</b>	HP 160-GB SATA 3.0 Gb/s	PY277AA
	HP 250-GB SATA 3.0 Gb/s	PY278AA
	320GB SATA 3.0Gb/s SMART IV Hard Drive	FH963AA
	500GB SATA 3.0Gb/s SMART IV Hard Drive	KW347AA
	HP Removable SATA Hard Drive Enclosure (Frame & Carrier)	RY102AA
<hr/>		
<b>Solid State Drive</b>	HP 64GB 2.5" Solid State Drive	VG679AA
	HP 80GB 2.5" Solid State Drive	BM848AA
<hr/>		
<b>Optical Drives</b>	16X SATA SuperMulti LightScribe Drive (Carbonite color)	GF343AA
	16X/48X SATA DVD-ROM (Carbonite color)	AH047AA
<hr/>		
<b>Removable Storage</b>	HP 1.44-MB External USB Diskette Drive	DC141B
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### After-Market Options

<b>Input/Output Devices</b>	HP PS/2 Keyboard	DT527A
	HP USB Keyboard	DT528A
	HP Business Mouse Pad	AT485AA
	USB Mini Keyboard	AS601AA#ABA
	HP 2.4 GHz Wireless Keyboard and Mouse	NB896AA#ABA
	HP PS/2 2-Button Optical Scroll Mouse	EY703AA
	HP USB 2-Button Optical Scroll Mouse (Carbonite/Silver)	DC172B

<b>POS Model Options</b>	HP Cash Drawer	FK182AA
	HP USB Barcode Scanner	EY022AA
	HP POS Pole Display	FK225AA
	HP USB Mini MSR with Brackets	FK186AA
	HP POS Keyboard	FK221AA
	HP POS MSR Keyboard	FK218AA
	HP USB Single Station Thermal Receipt Printer	FK224AA
	HP USB Multifunction Thermal Receipt Printer with MICR	FK184AA
HP Serial USB Thermal Receipt Printer	BM476AA	

<b>Monitors</b>	<b>CRTs</b>	3PO Offering
	<b>Business LCD Monitors</b>	
	HP L1506 15-inch LCD Monitor	PX848AA#ABA
	HP w15v 15-inch Widescreen LCD Monitor	FM745AA#ABA
	HP w17e 17-inch LCD Monitor	GV537AA#ABA
	HP L1710 17-inch LCD Monitor	GS917AA#ABA
	HP L1910 19-inch LCD Monitor	GS918AA#ABA
	HP L1910i 19-inch LCD Monitor with Integrated Work Stand	GS581AA#ABA
	HP L1908w 19-inch Widescreen LCD Monitor	GP536AA#ABA
	HP L1908wm 19-inch Widescreen LCD Monitor with multimedia	KA214AA#ABA
	HP L1908wi 19-inch Widescreen LCD Monitor with Integrated Work Stand	GP537AA#ABA
	HP L2208w 22-inch Widescreen LCD Monitor	GX007AA#ABA
	<b>Advantage Series Monitors</b>	
	HP L1745 17-inch LCD Monitor	GE178AA#ABA
	HP L1750 17-inch LCD Monitor	GF904AA#ABA
	HP L1750 17-inch LCD Monitor - TAA Compliant	GF904A2#ABA
	HP L1950g 19-inch LCD Monitor	KR145AA#ABA
	HP L1950g TAA 19-inch LCD Monitor - TAA Compliant	KR145A2#ABA
	HP L1945w 19-inch Widescreen LCD Monitor	KD286AA#ABA
	HP L2045w 20-inch Widescreen LCD Monitor	RD125AA#ABA
	HP L2245wg 22-inch Widescreen LCD Monitor	FL472AA#ABA
	HP L2445w 24-inch Widescreen LCD Monitor	KT931AA#ABA

### After-Market Options

#### Performance Series Monitors

HP LP1965 19-inch LCD Monitor	RA373AA#ABA
HP LP2065 20-inch LCD Monitor	EF227A4#ABA
HP LP2275 22-inch Widescreen LCD Monitor	KE289A4#ABA
HP LP2275 22-inch Widescreen LCD Monitor Bulk Pack (6 baseless units)	KD289A6#ABA
HP LP2475w 24-inch Widescreen LCD Monitor	KD911A4#ABA
HP LP2480zx 24-inch DreamColor Widescreen LCD Monitor	GV546A4#ABA
HP LP3065 30-inch Widescreen LCD Monitor	EZ320A4#ABA

#### Digital Signage

HP LD4200 42-inch LCD Monitor	NH322AA#ABA (launching March 9th)
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#### Touchscreen Monitor

HP L5006tm 15-inch Touch Screen LCD Monitor	RB146AA#ABA
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#### Options

HP Quick Release Kit	EM870AA
HP Integrated Work Stand (stand alone)	GN783AA
HP DreamColor Advanced Profiling Solution (aka Puck)	KZ300AA
HP LCD Hood Kit	KZ301AA
3M 1 7-in Privacy Screen Filter	KM218AA
3M 19-in Privacy Screen Filter	KZ310AA
Digital Signage Speakers (LD4200 and LD4700)	NK352AA
Digital Signage Stand (supports LD4200 Monitor)	NK353AA
Digital Signage Stand (supports LD4700 Monitor)	EM896AA

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<b>Audio</b>	Thin USB Powered Speakers	KK912AA
	LCD Speaker Bar (Black)	NQ576AA

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<b>Memory (DIMMs)</b>	HP 2-GB PC2-6400 (DDR2 800 MHz) DIMM	BZ723AA***
	HP 1-GB PC2-6400 (DDR2 800 MHz) DIMM	BZ722AA**

\* All supported memory modules run at system maximum of 667 MHz.

\*\* Desktop PC memory AH058AA also compatible

\*\*\* Desktop PC memory AH060AA also compatible

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<b>Security</b>	Kensington Security Lock Kit	PC766A
	HP Business PC Security Lock Kit	PV606AA
	HP (SFF) Wall Mount security sleeve	GF344AA
	HP ProtectTools Version 4.0	FH974AA

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### After-Market Options

<b>Miscellaneous</b>	HP USB Graphics Adapter	NL571AA
<b>Accessories</b>	HP ADD2 SDVO DVI-D Adapter	DY674A
	ADD2 SDVO PCIe VGA Adapter	KH540AA
	Belkin USB to Serial Adapter	EM449AA
	Cat5e Patch Cable	AH122AA
	Firewire (1394) Cable	AH123AA
	7-outlet Surge Protector	AG290AA#ABA
	HP FireWire / IEEE 1394 PCI Card	PA997A
	HP DVI to DVI Cable	DC198A
	DMS-59 to Dual VGA Cable Kit	GS567AA
	5.25" Blank Bezel Kit (50 u bulk pack)	DC177B

### Technical Specifications

<b>Unit Environment and Operating Conditions</b>	
General Unit Operating Guidelines	
<ul style="list-style-type: none"> <li>• 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.</li> <li>• Leave a 10.2-cm (4-in) clearance on front side and power supply side of the computer to permit the required airflow.</li> <li>• If within an enclosure, the front side should be 100% open. The clearance between the system and the cabinet must be at least 10 mm (0.4 inch) on the sides and top and at least 50-mm (2-inch) clearance in the rear with power supply venting area 100% open per the above bullet.</li> <li>• Never restrict airflow into the computer by blocking any vents or air intakes.</li> <li>• Do not stack computers on top of each other or place computers so near each other that they are subject to each other's recirculated or preheated air.</li> <li>• 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.</li> </ul>	
<b>Temperature Range</b>	Operating: 50° to 104 F (10° to 40° C)* Non-operating: -22° to 140° F(-30° to 60° C)
<b>Relative Humidity</b>	Operating: 20% to 85% (non-condensing at ambient) Non-operating: 5% to 90% (non-condensing at ambient)
<b>Maximum Altitude</b> (unpressurized)	Operating: 10,000 ft (3048 m) Non-operating: 30,000 ft (9144 m)
<p><b>*NOTE:</b> Operating temperature is de-rated 1.0 deg C per 300 m (1000 ft) to 3000 m (10,000 ft) above sea level, no direct sustained sunlight. Maximum rate of change is 10 deg C/Hr. The upper limit may be limited by the type and number of options installed.</p>	

<b>Power Supply</b>	240-watt – 80 PLUS power supply – Active PFC
Operating Voltage Range	90 to 264 VAC
Rated Voltage Range	100 to 240VAC
Rated Line Frequency	50/60 Hz
Operating Line Frequency Range	47 – 63 Hz
Rated Input Current	5 A @ 90 VAC (3.5 A @ 90 VAC with 80% efficient power supply*)
Heat Dissipation	Standard power supply: Typical 340 btu/hr (86 kg-cal/hr) Maximum 1260 btu/hr (397 kg-cal/hr) 80% efficient power supply: Typical 273 btu/hr (69 kg-cal/hr) Maximum 1024 btu/hr (258 kg-cal/hr)
Power Supply Fan	80 mm variable speed fan
ENERGY STAR Compliant	Yes
FEMP Standby Power Compliant (<2W in S5 – Power Off)**	Yes
Power Consumption in ES Mode – Suspend to RAM (S3) (Instantly Available PC)	< 3 W
Processor/Cache Memory Power - Down (S3)	< 3 W
Optical Drive Spins Down When Not In Use	Yes

### Technical Specifications

**NOTES:**

\*\* 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 rp5700 include:

- Deployment and manageability – HP BIOS provides several technologies that help integrate the HP POS system into the enterprise, such as PXE, remote configuration, remote control, and F10 Setup support for 12 languages.
- Stability – HP BIOS supports the HP stable product roadmap by releasing only critical BIOS changes to the factory and advanced change notification.
- Security – HP BIOS offers a robust and flexible set of security features to help the system administrator secure their systems from removal of sensitive data, and help prevent access by unauthorized users, subversion of OS security policies, removal of hardware, flash of rogue BIOS images, and attacks on BIOS settings.
- Thermal and power management – The HP BIOS provides and enables thermal and power management technologies to assist in operating the HP POS system in any enterprise environment.
- Serviceability – HP BIOS provides diagnostic and detailed service information.
- Upgrades and recovery – HP BIOS provides numerous ways to upgrade HP POS system, 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 POS system BIOS Utilities tool enables replicated BIOS setup throughout the Enterprise; it is available from within the BIOS software and from the support website.

Additional HP BIOS Features

- Administrator password – Also known as the setup password, this helps prevent unauthorized changes to the system configuration. If the administrator password is not known, the BIOS version cannot be changed and changes cannot be made to BIOS settings using F10 setup or under the OS.
- Advanced Configuration and Power Interface (ACPI) – Represents a significant innovation in power and configuration management, allowing operating systems and applications to manage power based on activity and usage. Provides power conservation features under Windows XP.
- Ability to disable the internal speaker

Other Features	Description
ACPI-Ready Hardware	Advanced Configuration and Power Management Interface (ACPI). <ul style="list-style-type: none"> <li>• Allows the system to wake from a low power mode.</li> <li>• 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.</li> </ul>
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

### Technical Specifications

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	
<ul style="list-style-type: none"> <li>System/Emergency ROM</li> </ul>	<ul style="list-style-type: none"> <li>Flash ROM</li> </ul>	<ul style="list-style-type: none"> <li>CMOS Battery Holder for easy Replacement</li> </ul>
<ul style="list-style-type: none"> <li>Flash Recovery with Video</li> </ul>	<ul style="list-style-type: none"> <li>3.3V Aux Power LED on System PCA</li> </ul>	<ul style="list-style-type: none"> <li>Processor ZIF Socket for easy Upgrade</li> </ul>
<ul style="list-style-type: none"> <li>Over-Temp Warning on Screen (Requires IM Agents)</li> </ul>	<ul style="list-style-type: none"> <li>Clear Password Jumper</li> </ul>	<ul style="list-style-type: none"> <li>DIMM Connectors for easy Upgrade</li> </ul>
<ul style="list-style-type: none"> <li>Restore CD</li> </ul>	<ul style="list-style-type: none"> <li>Clear CMOS Jumper</li> </ul>	<ul style="list-style-type: none"> <li>NIC LEDs (integrated) (Green &amp; Amber)</li> </ul>

Serviceability Features of Chassis		
<ul style="list-style-type: none"> <li>Dual Color Power LED – To indicate normal operations and fault conditions</li> </ul>	<ul style="list-style-type: none"> <li>Color coordinated cables and connectors</li> </ul>	<ul style="list-style-type: none"> <li>Tool-less removal of hood power supply, slot cover, hard drive and optical drive</li> </ul>
<ul style="list-style-type: none"> <li>Front power switch</li> </ul>	<ul style="list-style-type: none"> <li>System memory can be upgraded without removing any internal components</li> </ul>	

Feature	Description
ASF 2.0 support (Alert Standard Format)	Industry-standard specification for network alerting and remote control in operating system-absent environments
Towerable	Product can be oriented as a tower (in addition to desktop orientation)
Drive Self Tests (DPS)	<ul style="list-style-type: none"> <li>Drive Protection System</li> <li>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.</li> <li>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.</li> <li>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.</li> </ul>
DPS Access through F10 Setup during Boot	
SMART Technology (Self-Monitoring, Analysis and Reporting Technology)	Allows hard drives to monitor their own health and to raise flags if imminent failures were predicted
SMART I – Drive Failure Prediction	<ul style="list-style-type: none"> <li>Predicts failures before they occur. Tracks fault prediction and failure indication parameters such as re-allocated sector count, spin retry count, calibration retry count</li> </ul>
SMART II – Off-Line Data Collection	
SMART III – Off-Line Read Scanning with Defect Reallocation	<ul style="list-style-type: none"> <li>By avoiding actual hard drive failures, SMART hard drives act as "insurance" against unplanned user downtime and potential data loss from hard drive failure</li> </ul>

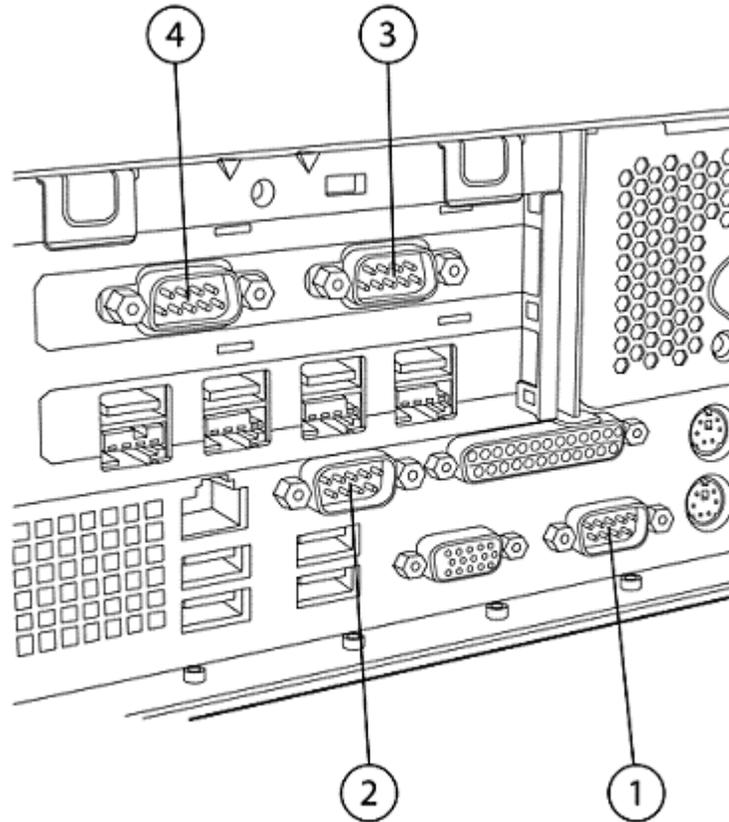
### Technical Specifications - Audio

<b>High Definition Audio</b>	<b>Type</b>	Integrated
	<b>High Definition Stereo Codec</b>	Yes – Realtek ALC262 codec
	<b>Audio Jacks</b>	Line-In (64-K ohm Input Impedance) Line-Out * (200 ohms Output Impedance, expects at least a 10-K ohm load)
	<b>NOTE:</b> *Internal speaker amplifier is for internal speaker only. External speakers need to be powered externally.	
	<b>Sampling</b>	8 kHz – 192 kHz
	<b>Wavetable Syntheses (software)</b>	Yes - Uses OS soft wavetable
	<b>Analog Audio</b>	Yes
	<b>Number of Channels on Line-Out (mono/stereo)</b>	Stereo (Left & Right channels)
	<b>Internal Audio Speaker Power Rating</b>	1.5 W
	<b>Internal Speaker</b>	Yes
<b>External Speaker Jack (Line-Out)</b>	Yes	

### Technical Specifications - Communications

#### Serial Ports

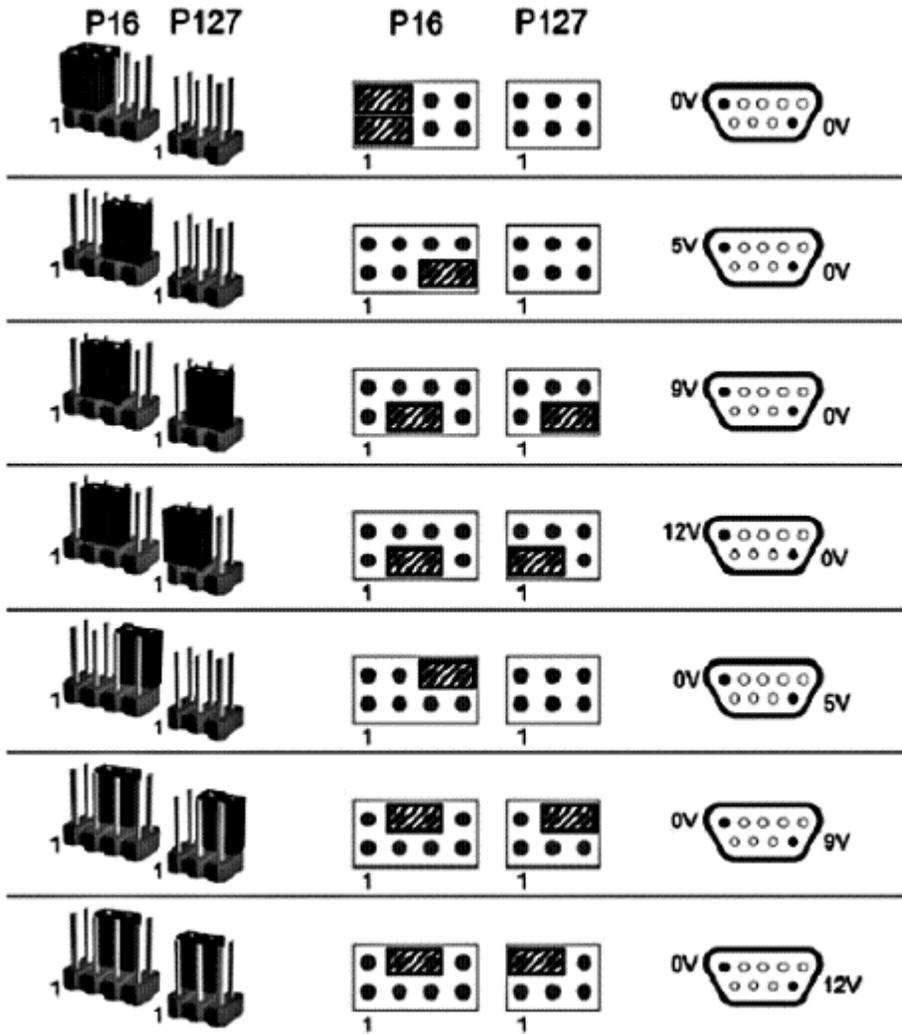
All serial (COM) ports can be custom configured in either standard mode or powered mode. By repositioning the jumpers (provided) on the system board and on the COM port PCI add-in card (some models), each COM port power can achieve power on pin 1 or pin 9. The illustration and table below indicate the COM port assignments and voltage supported for each COM port.



COM port assignment	Description	Standard Mode	+5V	+9V	+12V
1	COM1 (yellow)	Yes	Yes	Yes	Yes
2	COM2	Yes	Yes	No	Yes
3	COM3 (some models)	Yes	Yes	No	Yes
4	COM4 (some models)	Yes	Yes	No	Yes

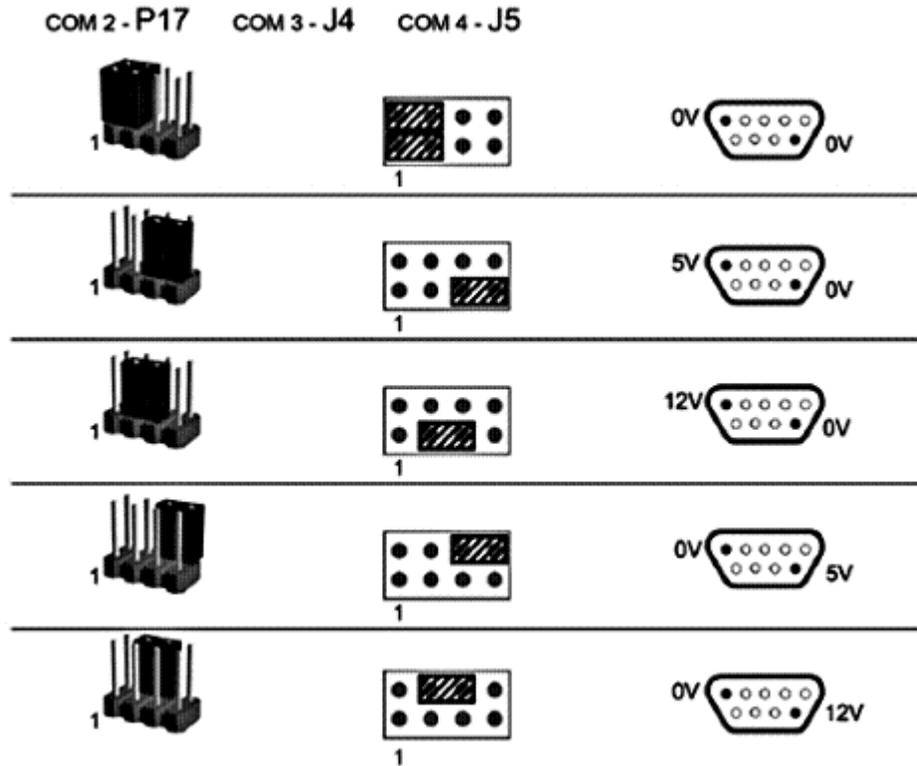
The following illustrations show how to position the jumpers on the system board and on the COM port PCI add-in card (available on some models) to achieve power on pin 1 or pin 9. P16 and P127 are located on the system board behind the COM1 port.

### Technical Specifications - Communications



P17 and J4 are located on the optional COM port card

### Technical Specifications - Communications



#### Integrated Broadcom 5755 Gigabit Ethernet

<b>Connector</b>	RJ-45
<b>Controller</b>	Broadcom 5755 PCI-Express LAN Controller
<b>Memory</b>	Integrated 96Kb frame buffer memory
<b>Data rates supported</b>	10/100/1000 Mbps
<b>Compliance</b>	IEEE 802.1P, 802.1Q, 802.2, 802.3, 802.3AB and 802.3u compliant, 802.3x flow control
<b>Bus architecture</b>	PCI-E
<b>Data path width</b>	Single channel, PCI-E
<b>Data transfer mode</b>	Bus-master DMA
<b>Hardware certifications</b>	FCC, B, CE, TUV- cTUVus Mark Canada and United States
<b>Power requirement</b>	1.33 watts @ +3.3V AUX supply with 5V tolerance
<b>Boot ROM support</b>	Yes
<b>Network transfer mode</b>	Full-duplex Half-duplex (not available for the 1000BASE-T transceiver)
<b>Network transfer rate</b>	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

### Technical Specifications - Communications

<b>Environmental</b>	<b>Operating temperature</b>	32° to 131°F (0° to 55° C)
	<b>Operating humidity</b>	85% at 131° F (55° C)
<b>Management capabilities</b>	ASF 2.0, ACPI, WOL and DMI 2.0, PXE 2.0, WfM 2.0, Broadcom mgmt utility	
<b>Alerting</b>	ASF 2.0	

#### LSI PCIe x1 Hi-Speed 56K International SoftModem

<b>Data Transmission</b>	Technology speeds: 56,000 Kbps maximum downstream data, controllerless <b>NOTE:</b> 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.
<b>Data Speeds</b>	(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
<b>Data Standards</b>	ITU-T V.90, ITU-T, ITU-T V.34, V.44, V.42, V.42bis21, V.32bis, Bell 212A, and Bell 103
<b>Fax Speeds</b>	14,400/12,000/9,600/7,200/4,800/2,400/1,200/300 b/s
<b>Fax Mode Capabilities</b>	ITU-T T.31 class 1 FAX, V. 17, V.29, V.27ter, and V.21 Channel 2
<b>Error Correction and Data Compression</b>	V.44, 42bis, V.42 and MNP2-5
<b>Power Management</b>	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.
<b>Upgradeability</b>	Driver upgradeable for future enhancements
<b>Video</b>	ITU-T V.80 video ready interface
<b>Other</b>	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
<b>Operating Temperature</b>	32° to 158° F (0° to 70° C)
<b>Operating Humidity</b>	20% to 90%, non-condensing
<b>Power</b>	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
<b>Chipset</b>	LSI SV92EX - Integrated PCI interface with 3.3-V tolerant buffers and CardBus support
<b>Dimensions (L X H)</b>	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
<b>Connection</b>	Single RJ-11 connector
<b>Other Features</b>	Digital line protection, call progress monitoring via on-board piezo device, support for high profile and low profile brackets, PnP ID support
<b>Safety</b>	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)

### Technical Specifications - Communications

<b>EMC</b>	FCC Part 15, IC ES003, EN 55022, 3rd edition, EN 55024, annex A, EN 61000-4-6, EN 61000-4-8
<b>Telecom</b>	FCC Part 68, IC-CS-03 (Canada); Worldwide PTT approvals
<b>Other</b>	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.

<b>HP Wireless 802.11b/g/n PCIe</b>	<b>Dimensions (LxH)</b>	3.3 x 4.7 inches (8.5 x 12 cm)		
	<b>Weight</b>	0.08 pounds (40 g)		
	<b>Controller</b>	Ralink RT2790		
	<b>System interface</b>	PCIExpress x1		
	<b>Network standard</b>	802.11 b/g/n		
	<b>Frequency band</b>	2.400 - 2.497 GHz		
	<b>Operating temperature</b>	14° to 149°F, operating (-10° to 65°C, operating)		
	<b>Storage temperature</b>	-40° to 176°F, non-operating (-40° to 80°C, non-operating)		
	<b>Humidity</b>	10-90% operating 5-95% non-operating		
	<b>Operating voltage</b>	3.3V +/- 9% 12V +/- 8%		
	<b>Power consumption</b>	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		
<b>Output power (approximately)</b>	<b>802.11b modes</b>	<b>802.11g modes</b>	<b>EWC modes</b>	
	+19 dBm +/- 1.0 dB maximum	+17 dBm +/- 1.0 dB maximum	+17 dBm +/- 1.0 dB maximum (total power in all transmit chains)	
<b>Receive sensitivity</b>	<b>Mode</b>	<b>Data rate</b>	<b>Sensitivity</b>	
	802.11b	1 Mbps	-94 dBm	
	802.11g	11 Mbps	-85 dBm	

### Technical Specifications - Communications

	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
<b>Data transfer rate</b>	<b>Data Rate (MCS)</b>	<b>Minimum Throughput</b>	
	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	

### Technical Specifications - Communications

<b>Security</b>	<ul style="list-style-type: none"><li>• IEEE and WiFi compliant 64 / 128 bit WEP encryption</li><li>• AES: CCM</li><li>• 802.1x authentication</li><li>• WPA: 802.1x. WPA-PSK and TKIP</li><li>• WPA2 certification</li><li>• IEEE 802.11i</li><li>• Cisco Certified Extensions, all versions through V5</li></ul>
<b>Antenna</b>	HP part number 497792-001
<b>Certifications</b>	Wi-Fi certified
<b>Certifications for use by country</b>	United States, Canada, Peru

### 2006 Agere PCI 56K International SoftModem

<b>Data Transmission</b>	Technology speeds: 56,000 Kbps maximum downstream data, controllerless <b>NOTE:</b> 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.
<b>Data Speeds</b>	(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
<b>Data Standards</b>	ITU-T V.90, ITU-T, ITU-T V.34, V.44, V.42, V.42bis21, V.32bis, Bell 212A, and Bell 103
<b>Fax Speeds</b>	14,400/12,000/9,600/7,200/4,800/2,400/1,200/300 b/s
<b>Fax Mode Capabilities</b>	ITU-T T.31 class 1 FAX, V. 17, V.29, V.27ter, and V.21 Channel 2
<b>Error Correction and Data Compression</b>	V.44, 42bis, V.42 and MNP2-5
<b>Power Management</b>	ACPI; PPMI 1.1 and wake support with PME and Vaux; meets PCI 2.3 requirements and PC 2001 requirements
<b>Upgradeability</b>	Driver upgradeable for future enhancements
<b>Video</b>	ITU-T V.80 video ready interface
<b>Other</b>	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
<b>Operating Temperature</b>	32° to 158° F (0° to 70° C)
<b>Operating Humidity</b>	20% to 90%, non-condensing
<b>Power</b>	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
<b>Chipset</b>	Agere Systems SV92PL – Integrated PCI interface with 5-V tolerant buffers and CardBus support
<b>Dimensions (L X H)</b>	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
<b>Connection</b>	Single RJ-11 connector

### Technical Specifications - Communications

<b>Other Features</b>	Digital line protection, call progress monitoring via on-board piezo device, support for high profile and low profile brackets, PnP ID support
<b>Safety</b>	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
<b>EMC</b>	FCC Part 15, IC ES003, EN 55022, 3rd edition, EN 55024, annex A, EN 61000-4-6, EN 61000-4-8
<b>Telecom</b>	FCC Part 68, IC-CS-03 (Canada); Worldwide PTT approvals
<b>Other</b>	Bare PCB material compliant to 94V-0 or better (marked as such) PC 2001 compliant, PCI version 2.3, WHQL approved; ACPI compliant

### Technical Specifications - Graphics

<b>Integrated Graphics Media Accelerator 3000</b>	<b>Graphic Controller</b>	Integrated GMA 3000
	<b>Bus type</b>	Integrated
	<b>RAMDAC</b>	Single 400 MHz integrated
	<b>Memory</b>	UMA with DVMT 4.0 support for frame buffer sizes 8-256 MB
	<b>Controller clock speed</b>	667 MHz
	<b>Overlay planes</b>	One 16-bit video overlay plane
	<b>Maximum Color Depth</b>	32 bpp
	<b>Maximum vertical refresh rate</b>	85 Hz
	<b>Multi-display Support</b>	One VGA and one DVI-D in conjunction with an ADD2 card, clone and extended desktop modes are enabled by the addition of the HP ADD2 DVI-D Adapter
	<b>Graphics/Video API Support</b>	DirectX 9.0c, WGF 1.0, DirectX VA 2.0, Shader Model 3.0, OpenGL 1.5

**Resolutions Supported<sup>1</sup>**

Resolution	Maximum Refresh Rate (Hz)	
	Analog Monitor	Digital Monitor
640 x 480	85	60
800 x 600	85	60
1024 x 768	85	60
1280 x 1024	85	60
1600 x 1200	85	60
1920 x 1080	85	60-R <sup>2</sup>
1920 x 1200	85	60-R <sup>2</sup>
1920 x 1440	60	N/A

**NOTES:**

<sup>1</sup> 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.).

<sup>2</sup> -R denotes reduced blanking timings (some digital monitors may not support reduced blanking timings). Other resolutions and refresh rates may be selectable but are not recommended.

### Technical Specifications - Graphics

<b>ADD2 SDVO DVI-D Adapter Form Factor</b>	Low-profile card (full-height (ATX) and low-profile brackets included in kit)																																								
<b>Dual head support</b>	Yes																																								
<b>Host Interface Connector</b>	<ul style="list-style-type: none"> <li>• Mechanically compliant with PCI-e standard</li> <li>• Complies with the Intel ADD2 and Intel Serial Digital Video Output (SDVO) specifications</li> </ul>																																								
<b>Dot Clock</b>	165 MHz maximum																																								
<b>Display Modes</b>	Supports display modes that require up to 165-MHz bandwidth on the link, as shown in the following table.																																								
<b>Resolutions Supported</b>	<table border="1"> <thead> <tr> <th>Resolutions</th> <th>60-Hz LCD</th> <th>60-Hz</th> <th>75-Hz</th> <th>85-Hz</th> </tr> </thead> <tbody> <tr> <td>Blanking</td> <td>5% reduced</td> <td>GTF</td> <td>GTF</td> <td>GTF</td> </tr> <tr> <td>640 x 480 VGA</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> </tr> <tr> <td>800 x 600 SVGA</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> </tr> <tr> <td>1024 x 768 XGA</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> <td>Yes</td> </tr> <tr> <td>1280 x 1024 SXGA</td> <td>Yes</td> <td>Yes</td> <td>No</td> <td>No</td> </tr> <tr> <td>1600 x 1200 UXGA</td> <td>Yes</td> <td>Yes</td> <td>No</td> <td>No</td> </tr> <tr> <td>1920 x 1200</td> <td>Yes</td> <td>No</td> <td>No</td> <td>No</td> </tr> </tbody> </table>	Resolutions	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	1920 x 1200	Yes	No	No	No
Resolutions	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																																					
1920 x 1200	Yes	No	No	No																																					
<b>Color Depth</b>	All modes support 8-bpp, 16-bpp, and 24-bpp color depths (up to 16.7 million colors)																																								

<b>NVIDIA NVS 300 PCIe x1 Graphics Cards</b>	<b>Bus type</b>	PCIe x1; Low profile								
	<b>Graphics Controller</b>	Nvidia GT218 GPU								
	<b>Memory</b>	512 MB DDR3								
	<b>Connector</b>	Single high-density DMS-59 Flex Connector								
	<b>Dimensions</b>	Low-profile, 2.586 x 5.7 in (6.57 x 14.48 cm)								
	<b>Multi-monitor support</b>	Dual analog (VGA) or digital (Single Link DVI or DisplayPort) monitors (DVI support requires optional DVI cable kit DL139A; DisplayPort support requires DMS-59 to Dual DisplayPort Cable Kit required)								
	<b>RAMDAC</b>	Dual 400 MHz (integrated)								
	<b>Maximum pixel clock</b>	400 MHz								
	<b>Overlay planes</b>	One 16-bit Video overlay plane								
	<b>Video Acceleration</b>	DirectX 10.1; OpenGL 3.3, CUDA, DirectCompute								
	<b>High-definition Video Processor (HDVP)</b>	Full screen, full frame video playback of HDTV, Blu-Ray and DVD content Inbuilt video decoder for multiple video formats including MPEG2, VC-1, WMV9, H.264, and MVC Capable of decoding dual Video Streams at HD (1080p) resolutions Hardware color-space conversion (YUV 4:2:2 and 4:2:0) High-Quality in-built Filtering/Scaling Stereo & HD Audio (LPCM 7.1) support for HDMI outputs (HDMI via optional DVI-HDMI dongles) with the DMS-59 to DisplayPort Adapter								
	<b>Board configuration</b>	<table border="0"> <thead> <tr> <th>Specification</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>GPU</td> <td>GT218</td> </tr> <tr> <td>Core clock</td> <td>520 MHz</td> </tr> <tr> <td>Memory clock</td> <td>790 MHz</td> </tr> </tbody> </table>	Specification	Description	GPU	GT218	Core clock	520 MHz	Memory clock	790 MHz
	Specification	Description								
GPU	GT218									
Core clock	520 MHz									
Memory clock	790 MHz									

### Technical Specifications - Graphics

#### Resolutions supported

Frame buffer

512MB DDR3, 64-bit wide

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 720	85	60
1280 x 1024	85	60
1440 x 900	75	60
1600 x 1200	85	60
1680 x 1050	75	60
1920 x 1080	85	60-R*
1920 x 1200	85	60-R*
1920 x 1440	85	N/A
2048 x 1536	75	N/A

### Technical Specifications - Hard Drives

#### Serial ATA 3.0-Gb/s Hard Drives (7200 rpm) 1 TB

<b>Capacity</b>	1,000,204,886,016 byte	
<b>Height</b>	1 in (2.54 cm)	
<b>Width</b>	Media diameter: 3.5 in (8.89 cm) Physical size: 4 in (10.2 cm)	
<b>Interface</b>	Serial ATA (3.0 Gb/s)	
<b>Synchronous Transfer Rate (Maximum)</b>	Up to 3 Gb/s	
<b>Buffer</b>	32 MB	
<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b>	2.0 ms
	<b>Average</b>	11 ms
	<b>Full-Stroke</b>	21 ms
<b>Rotational Speed</b>	7,200 rpm	
<b>Logical Blocks</b>	1,953,525,168	
<b>Operating Temperature</b>	41° to 131°F (5° to 55°C)	

#### 500 GB

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

#### 250 GB

<b>Capacity</b>	250,059,350,016 bytes	
<b>Height</b>	1 in (2.6 cm)	
<b>Width</b>	Media diameter: 3.5 in (8.9 cm) Physical size: 4 in (10.2 cm)	
<b>Interface</b>	Serial ATA (3.0 Gb/s)	
<b>Synchronous Transfer Rate (Maximum)</b>	Up to 3 Gb/s	
<b>Buffer</b>	8 MB	

### Technical Specifications - Hard Drives

	<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b>	1.0 ms
		<b>Average</b>	8.5 ms
		<b>Full-Stroke</b>	18 ms
	<b>Rotational Speed</b>		7,200 rpm
	<b>Logical Blocks</b>		488,397,168
	<b>Operating Temperature</b>		41° to 131°F (5° to 55°C)
<b>160-GB</b>	<b>Capacity</b>		163,928,604,672 bytes
	<b>Height</b>		1 in (2.54 cm)
	<b>Width</b>		Media diameter: 3.5 in (8.9.x cm) Physical size: 4 in (10.2 cm)
	<b>Interface</b>		Serial ATA (3.0 Gb/s)
	<b>Synchronous Transfer Rate</b> (Maximum)		Up to 3 Gb/s
	<b>Buffer</b>		8 MB
	<b>Seek Time</b> (typical reads, includes controller overhead, including settling)	<b>Single Track</b>	0.9 ms
		<b>Average</b>	9.3 ms
		<b>Full-Stroke</b>	18 ms
	<b>Rotational Speed</b>		7,200 rpm
	<b>Logical Blocks</b>		320,173,056
	<b>Operating Temperature</b>		41° to 131°F (5° to 55°C)

### Technical Specifications - Solid State Drives

<b>2.5" Solid State Drives</b>	<b>80-GB</b>	<b>Unformatted Capacity*</b>	80 GB
		<b>Architecture</b>	Multi Level Cell (MLC) NAND Flash with wear leveling 10 channel controller
		<b>Interface type</b>	SATA 3Gb/sec
		<b>Dimensions-external (W x H x D)</b>	2.74 x 0.37 x 4 in (6.98 x 0.95 x 10.2 cm)
		<b>Weight</b>	0.18 lb (80 g)
		<b>Bandwidth Performance</b>	<b>Sustained Sequential Read</b> Up to 250 MB/s
			<b>Sustained Sequential Write</b> Up to 70 MB/s
			<b>Random Read (4KB)</b> up to 35K IOPs
			<b>Random Write (4KB)</b> up to 6.6K IOPs
		<b>Latency</b>	<b>Read</b> 65 ms
			<b>Write</b> 85 ms
		<b>Power</b>	<b>Total power consumption</b> 0.15 Watt (Active); 0.075 Watt (Idle)
		<b>Useful drive life</b>	<b>5 years</b> 35TB written, up to 20GB/day for 5 years
		<b>Environmental (all conditions, non-condensing)</b>	<b>Temperature (operating)</b> 32° to 158° F (0° to 70° C)
			<b>Relative Humidity (operating)</b> 5% to 95%
			<b>Maximum Wet Bulb Temperature (operating)</b> 84° F (29° C)
			<b>Shock (operating)</b> 1,500 G/0.5 msec

### Technical Specifications - Input/Output Devices

<b>USB Keyboard</b>	<b>Physical characteristics</b>	<b>Keys</b>	104, 105, 106, 107, 109 layout (depending upon country)
		<b>Dimensions (L x W x H)</b>	18.0 x 6.4 x 0.98 in (45.8 x 16.3 x 2.5 cm)
		<b>Weight</b>	2 lb (0.9 kg) minimum
	<b>Electrical</b>	<b>Operating voltage</b>	+ 5VDC ± 5%
		<b>Power consumption</b>	50-mA maximum (with three LEDs ON)
		<b>System interface</b>	USB Type A plug connector
		<b>ESD</b>	CE level 4, 15-kV air discharge
		<b>EMI – RFI</b>	Conforms to FCC rules for a Class B computing device
	<b>Mechanical</b>	<b>Microsoft PC 99 – 2001</b>	Functionally compliant
		<b>Languages</b>	38 available
		<b>Keycaps</b>	Low-profile design
		<b>Switch actuation</b>	55-g nominal peak force with tactile feedback
		<b>Switch life</b>	20 million keystrokes (using Hasco modified tester)
		<b>Switch type</b>	Contamination-resistant switch membrane
		<b>Key-leveling mechanisms</b>	For all double-wide and greater-length keys
		<b>Cable length</b>	6 ft (1.8 m)
		<b>Microsoft PC 99 – 2001</b>	Mechanically compliant
	<b>Environmental</b>	<b>Acoustics</b>	43-dBA maximum sound pressure level
		<b>Operating temperature</b>	50° to 122° F (10° to 50° C)
		<b>Non-operating temperature</b>	-22° to 140° F (-30° to 60° C)
		<b>Operating humidity</b>	10% to 90% (non-condensing at ambient)
		<b>Non-operating humidity</b>	20% to 80% (non-condensing at ambient)
		<b>Operating shock</b>	40 g, six surfaces
		<b>Non-operating shock</b>	80 g, six surfaces
		<b>Operating vibration</b>	2-g peak acceleration
		<b>Non-operating vibration</b>	4-g peak acceleration
		<b>Drop (out of box)</b>	26 in (66 cm) on carpet, six-drop sequence
		<b>Drop (in box)</b>	42 in (107 cm) on concrete, 16-drop sequence
	<b>Approvals</b>	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC	
	<b>Ergonomic compliance</b>	ANSI HFS 100, ISO 9241-4, and TUVGS	

### Technical Specifications - Input/Output Devices

<b>PS/2 Keyboard</b>	<b>Physical characteristics</b>	<b>Keys</b>	104, 105, 106, 107, 109 layout (depending upon country)	
		<b>Dimensions (L x W x H)</b>	18.0 x 6.4 x 0.98 in (45.8 x 16.3 x 2.5 cm)	
		<b>Weight</b>	2 lb (0.9 kg) minimum	
	<b>Electrical</b>	<b>Operating voltage</b>	+ 5VDC ± 5%	
		<b>Power consumption</b>	50-mA maximum (with three LEDs ON)	
		<b>System interface</b>	PS/2 6-pin mini din connector	
		<b>ESD</b>	CE level 4, 15-kV air discharge	
		<b>EMI – RFI</b>	Conforms to FCC rules for a Class B computing device	
		<b>Mechanical</b>	<b>Microsoft PC 99 – 2001</b>	Functionally compliant
			<b>Languages</b>	38 available
			<b>Keycaps</b>	Low-profile design
			<b>Switch actuation</b>	55-g nominal peak force with tactile feedback
			<b>Switch life</b>	20 million keystrokes (using Hasco modified tester)
	<b>Switch type</b>		Contamination-resistant switch membrane	
	<b>Key-leveling mechanisms</b>		For all double-wide and greater-length keys	
	<b>Environmental</b>	<b>Cable length</b>	6 ft (1.8 m)	
		<b>Microsoft PC 99 – 2001</b>	Mechanically compliant	
		<b>Acoustics</b>	43-dBA maximum sound pressure level	
		<b>Operating temperature</b>	50° to 122° F (10° to 50° C)	
		<b>Non-operating temperature</b>	–22° to 140° F (–30° to 60° C)	
		<b>Operating humidity</b>	10% to 90% (non-condensing at ambient)	
		<b>Non-operating humidity</b>	20% to 80% (non-condensing at ambient)	
		<b>Operating shock</b>	40 g, six surfaces	
		<b>Non-operating shock</b>	80 g, six surfaces	
		<b>Operating vibration</b>	2-g peak acceleration	
	<b>Approvals</b>	<b>Non-operating vibration</b>	4-g peak acceleration	
		<b>Drop (out of box)</b>	26 in (66 cm) on carpet, six-drop sequence	
<b>Drop (in box)</b>		42 in (107 cm) on concrete, 16-drop sequence		
<b>Ergonomic compliance</b>		UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC		
		ANSI HFS 100, ISO 9241-4, and TUVGS		
<b>HP PS/2 Scroll Mouse</b>	<b>Dimensions</b>	1.5 x 2.5 x 4.6 in (3.8 x 6.3 x 11.6 cm)		
	<b>Weight</b>	4.44 oz (126 g)		
	<b>Environmental</b>	<b>Operating temperature</b>	50° to 122° F (10° to 50° C)	
		<b>Non-operating temperature</b>	–22° to 140° F (–30° to 60° C)	

### Technical Specifications - Input/Output Devices

	<b>Operating humidity</b>	10% to 90% (non-condensing at ambient)
	<b>Non-operating humidity</b>	20% to 80% (non-condensing at ambient)
	<b>Operating shock</b>	40 g, 6 surfaces
	<b>Non-operating shock</b>	80 g, 6 surfaces
	<b>Operating vibration</b>	2 g peak acceleration
	<b>Non-operating vibration</b>	4 g peak acceleration
	<b>Drop (out-of-box)</b>	26 in (66 cm) on carpet, 6-drop sequence
	<b>Drop (out-of-box)</b>	1 m on asphalt tile over concrete, 6-drop sequence
<b>Electrical</b>	<b>Operating voltage</b>	5 VDC $\pm$ 10%
	<b>Power consumption</b>	15 mA
	<b>System consumption</b>	PS/2 mini-din connector
	<b>ESD</b>	CE level 4, 15 kV air discharge
	<b>EMI-RFI</b>	Conforms to FCC rules for a Class B computing device
	<b>Microsoft PC99 – 2001</b>	Functionally compliant
<b>Mechanical</b>	<b>Resolution</b>	400 $\pm$ 20% DPI
	<b>Tracking speed</b>	10 in/s (25.4 cm/s) maximum
	<b>Acceleration</b>	100 in/s/s (2.54 m/s/s)
	<b>Switch actuation</b>	65 g nominal peak force
	<b>Switch life</b>	1,000,000 operations (using Hasco modified tester)
	<b>Switch type</b>	Low force micro-switches
	<b>Tracking mechanism life</b>	155 mi (250 km) at average speed of 10 in/s
	<b>Cable length</b>	6 ft (1.8 m)
	<b>Microsoft PC99 – 2001</b>	Mechanically compliant
<b>Scroll wheel</b>	<b>Width</b>	8 mm
	<b>Diameter</b>	0.99 in (25.2 mm)
	<b>Maximum rotation speed</b>	30 mm/s
	<b>Switch type</b>	Light force micro-switch
	<b>Switch life</b>	1 million operations
	<b>Mechanical life</b>	Minimum 200,000 revolutions
<b>Regulatory approvals</b>	<b>Compliant</b>	UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC

### Technical Specifications - Input/Output Devices

<b>USB Scroll Mouse</b>	<b>Environmental</b>	<b>Operating temperature</b>	50° to 122° F (10° to 50° C)
		<b>Non-operating temperature</b>	-22° to 140° F (-30° to 60° C)
		<b>Operating humidity</b>	10% to 90% (non-condensing at ambient)
		<b>Non-operating humidity</b>	20% to 80% (non-condensing at ambient)
		<b>Operating shock</b>	40 g, 6 surfaces
		<b>Non-operating shock</b>	80 g, 6 surfaces
		<b>Operating vibration</b>	2 g peak acceleration
		<b>Non-operating vibration</b>	4 g peak acceleration
		<b>Drop (out-of-box)</b>	26 in (66 cm) on carpet, 6-drop sequence 1 m on asphalt tile over concrete, 6-drop sequence
		<b>Electrical</b>	<b>Operating voltage</b>
<b>Power consumption</b>	15 mA		
<b>System consumption</b>	USB Type-A plug connector		
<b>ESD</b>	CE level 4, 15 kV air discharge		
<b>EMI-RFI</b>	Conforms to FCC rules for a Class B computing device		
<b>Microsoft PC99 – 2001</b>	Functionally compliant		
<b>Mechanical</b>	<b>Resolution</b>	400 ± 20% DPI	
	<b>Tracking speed</b>	10 in/s maximum	
	<b>Acceleration</b>	100 in/s	
	<b>Switch actuation</b>	65 g nominal peak force	
	<b>Switch life</b>	1,000,000 operations (using Hasco modified tester)	
	<b>Switch type</b>	Low force micro-switches	
	<b>Tracking mechanism life</b>	155 mi (250 km) at average speed of 10 in/s	
	<b>Cable length</b>	6 ft (1.8 m)	
	<b>Microsoft PC99 – 2001</b>	Mechanically compliant	
	<b>Scroll wheel</b>	<b>Width</b>	8 mm
<b>Diameter</b>		0.99 in (25.2 mm)	
<b>Maximum rotation speed</b>		30 mm/s	
<b>Switch type</b>		Light force micro-switch	
<b>Switch life</b>		1 million operations	
<b>Mechanical life</b>		Minimum 200,000 revolutions	
<b>Regulatory approvals</b>		<b>Compliant</b> UL, CSA, FCC, CE Mark, TUV, TUV GS, VCCI, BSMI, C-Tick, MIC	

### Technical Specifications - Input/Output Devices

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

### Technical Specifications - Optical Storage

#### SATA DVD+/-RW SuperMulti Drive

<b>Height</b>	5.25-inch, half-height, tray-load		
<b>Orientation</b>	Either horizontal or vertical		
<b>Interface type</b>	SATA/ATAPI		
<b>Disc capacity</b>	8.5 GB DL or 4.7 GB standard		
<b>Dimensions (HxWxD)</b>	5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)		
<b>Weight (maximum)</b>	2.6 lb (1.2 kg)		
<b>Write speeds</b>	<b>DVD+R</b>	Up to 16X	
	<b>DVD+RW</b>	Up to 8X	
	<b>DVD+R DL</b>	Up to 8X	
	<b>DVD-R DL</b>	Up to 4X	
	<b>DVD-R</b>	Up to 16X	
	<b>DVD-RW</b>	Up to 6X	
	<b>CD-R</b>	Up to 48X	
	<b>CD-RW</b>	Up to 32X	
	<b>Read speeds</b>	<b>DVD-RAM</b>	Up to 4X
		<b>DVD+RW, DVD-RW, DVD+R DL, DVD-R DL</b>	Up to 8X
		<b>DVD-ROM, DVD+R, DVD-R</b>	Up to 16X
		<b>CD-ROM, CD-R</b>	Up to 48X
		<b>CD-RW</b>	Up to 32X
	<b>Access time</b> (typical reads, including settling)	<b>Random</b>	DVD: < 130 ms (typical), CD: < 120 ms (typical)
<b>Full Stroke</b>		DVD: < 240 ms (seek), CD: < 200 ms (seek)	
<b>Power</b>	<b>Source</b>	SATA DC power receptacle	
	<b>DC Power Requirement</b>	5 VDC $\pm$ 5%-100 mV ripple p-p 12 VDC $\pm$ 5%-200 mV ripple p-p	
	<b>DC Current</b>	5 VDC (< 1000 mA typical, < 1600 mA maximum) 12 VDC (< 600 mA typical, < 1400 mA maximum)	
<b>Environmental conditions</b> (operating - non-condensing)	<b>Temperature</b>	41° to 122° F (5° to 50° C)	
	<b>Relative humidity</b>	10% to 90%	
	<b>Maximum wet bulb temperature</b>	86° F (30° C)	

### Technical Specifications - Optical Storage

<b>SATA DVD-ROM Drive</b>	<b>Height</b>	5.25-inch, half-height, tray-load		
	<b>Orientation</b>	Either horizontal or vertical		
	<b>Interface type</b>	SATA/ATAPI		
	<b>Disc capacity</b>	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)		
	<b>Dimensions (W x H x D)</b>	5.9 x 1.7 x 8.0 in (15.0 x 4.4 x 20.3 cm)		
	<b>Weight (max)</b>	2.6 lb (1.2 kg)		
	<b>Read speeds</b>	<b>DVD+R/-R/+RW/-RW/+R DL /-R DL</b>	Up to 8X	
		<b>DVD-ROM</b>	Up to 16X	
		<b>DVD-RAM</b>	Up to 4X	
		<b>CD-ROM, CD-R</b>	Up to 48X	
		<b>CD-RW</b>	Up to 32X	
	<b>Removable Storage – Media Compatibility – DVD-ROM</b>	<b>Media (READ ONLY – drive is not write capable)</b>		
			CD-ROM	
			CD-R	
			CD-RW	
		DVD-ROM		
		DVD-ROM DL		
		DVD-RAM		
		DVD+R		
		DVD+R DL		
		DVD+RW		
<b>Access times (typical reads, including setting)</b>	<b>Random</b>	DVD: < 140 ms (typical), CD: < 125 ms (typical)		
	<b>Full Stroke</b>	DVD: < 250 ms (seek), CD: < 210 ms (seek)		
	<b>Cache Buffer</b>	2 MB (minimum)		
	<b>Data Transfer Modes</b>	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)		
	<b>Power</b>	SATA DC power receptacle		
<b>Environmental (all conditions non-condensing)</b>	<b>DC Power Requirement</b>	5 VDC ± 5%-100 mV ripple p-p 12 VDC ± 5%-200 mV ripple p-p		
	<b>DC Current</b>	5 VDC (< 1000 mA typical, < 1600 mA maximum) 12 VDC (< 600 mA typical, < 1400 mA maximum)		
	<b>Temperature</b>	41° to 122° F (5° to 50° C)		
	<b>Relative Humidity</b>	10% to 90%		
	<b>Maximum Wet Bulb Temperature</b>	86° F (30° C)		

### 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 Federal Energy Management Program (FEMP)
- IT ECO declaration

**Energy Consumption**

	115 VAC, 60 Hz	230 VAC, 50 Hz	100 VAC, 60 Hz
Normal Operation	62.9 W	61.8 W	63.1 W
Sleep (ENERGY low power mode)	3.1 W	3.4 W	3 W
Off	1.06 W	1.35 W	1.04 W

**Heat Dissipation\***

	115 VAC, 60 Hz	230 VAC, 50 Hz	100 VAC, 60 Hz
Normal Operation	214.614 BTU/hr	210.861 BTU/hr	215.297 BTU/hr
Sleep	10.577 BTU/hr	11.6 BTU/hr	10.236 BTU/hr
Off	3.616 BTU/hr	4.606 BTU/hr	3.548 BTU/hr

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

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

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

System Fan Off	Sound Power ( $L_{Wad}$ , bels)	Sound Pressure ( $L_{pAm}$ , decibels)
Idle	3.61	28.2 dB(A)
Fixed Disk (random writes)	3.8	30.2 dB(A)
Optical Drive (sequential reads)	4.9	44.3 dB(A)

**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 include:

- Higher endurance capacitors for longer life.
- Higher temperature rated capacitors for longer life and reliability
- Improved gold plating on connectors, ports, and add-in cards for longer life and reliability
- Over current protection using polyfuses for USB, serial, PS/2, and video ports for improved reliability and hardware protection
- On-board thermal sensors for improved reliability and thermal protection
- More stringent thermal and humidity testing inside a special cabinet to simulate a thermally harsh POS environment

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 5 ppm by weight

### Technical Specifications - Environmental Data

- Cadmium greater than 10 ppm by weight
- Lead greater than 15 ppm by weight.

Battery size: CR2032 (coin cell)

Battery type: Lithium/Manganese Dioxide

#### 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.
- Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.
- The rp5700 Point of Sale System contains an average of 10% post-consumer recycled plastic.
- This product is >91% recyclable when properly disposed of at end of life.

<b>Packaging Materials</b>	<b>Corrugated Paper</b>	1407 g
	<b>EPE Foam</b>	290 g
	<b>LDPE Bag</b>	63.5 g
	<b>HIPS Cushion</b>	127.01 g

- The EPE foam packaging material is made from no post consumer recycled content.
- The corrugated paper packaging materials contain at least 25% post consumer recycled content.

#### 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](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:

### Technical Specifications - Environmental Data

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

#### End-of-life Management and Recycling

Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: <http://www.hp.com/recycle> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

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

#### Hewlett-Packard Corporate Environmental Information

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

Global Citizenship Report

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

Eco-label certifications

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

ISO 14001 certificates:

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

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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>.

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