Overview
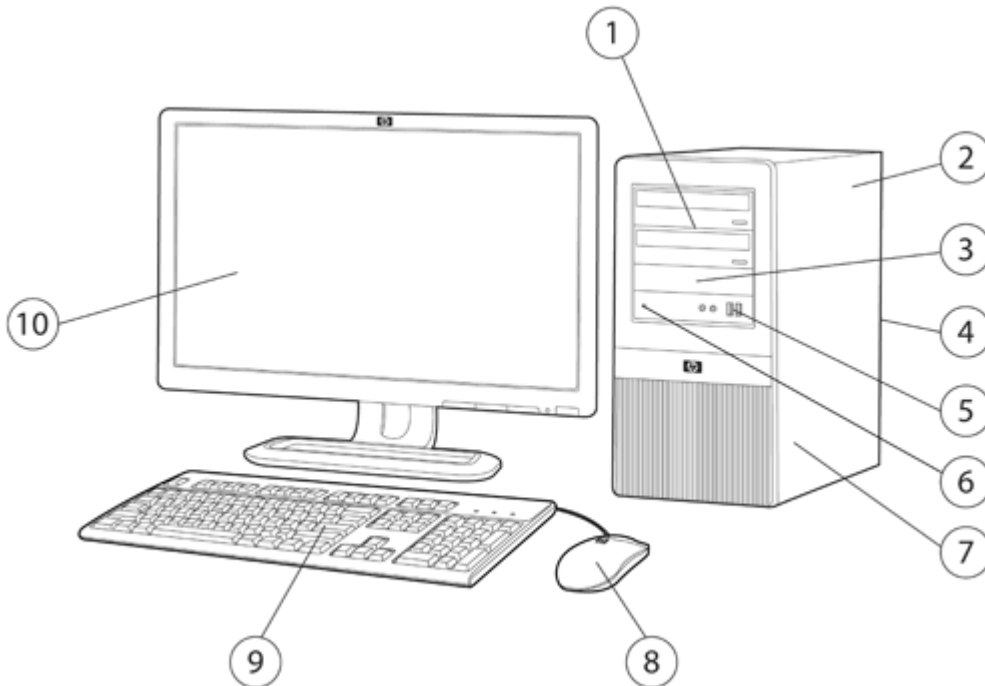
HP recommends
Windows Vista® Business

Microtower*

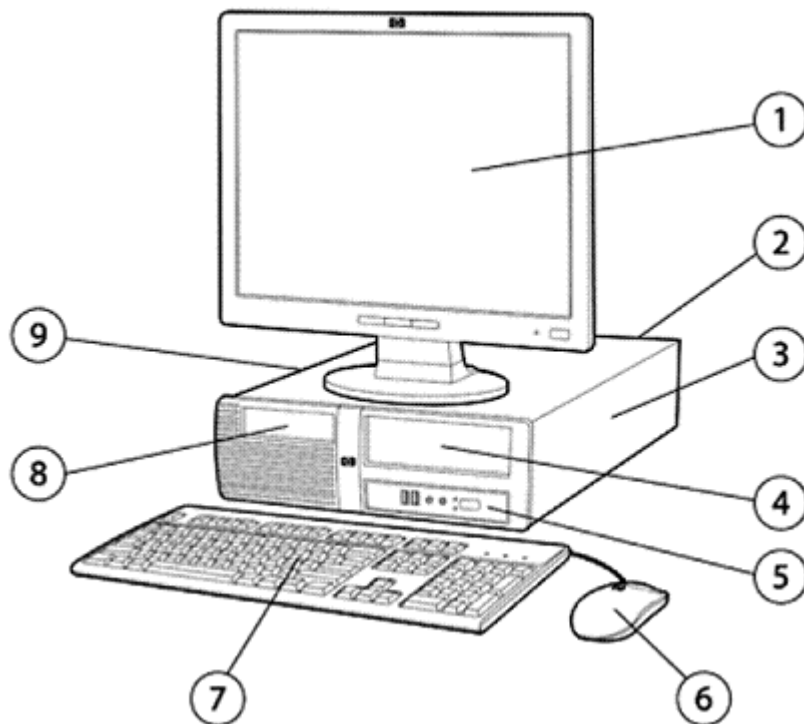
1. (2) external 5.25" drive bays for optional optical drives; (2) internal 3.5" hard drive drive bays
2. 250W PFC power supply as default, and 300W PFC power supply as option
3. (1) external 3.5" drive bay for optional media reader or diskette drive
4. Rear IO: (6) USB 2.0 ports, (2) PS/2, (1) RJ-45, (1) VGA, (1) Parallel, (1) COM, (1) audio in – (1) audio out – (1) MIC
5. Front I/O: (2) USB 2.0 ports, (1) MIC – (1) audio out (Headphone)

6. Recovery/reset button**

7. (2) full-height PCI 2.3 slot, (1) PCIe x1 slots, (1) PCIe x16 slot
8. PS/2 Scroll Mouse

9. HP Standard Keyboard

10. Monitor (sold separately)

* Model dx2818 (available only in China) differentiate from dx2810 on the front bezel: there is Chinese characters on the top-right of center band
**Reset function will be set for China/Hong Kong/Korea; Recovery function will be set for the rest of APJ

QuickSpecs

Overview

Small Form Factor

1. Monitor (sold separately)
2. Rear IO: (6) USB 2.0 ports, (2) PS/2, (1) RJ-45, (1) VGA, (1) Parallel, (1) COM, (1) audio in – (1) audio out – (1) MIC
3. 250 watt PFC power supply

4. (1) external 5.25" drive bay for optional optical drives; (1) internal 3.5" drive bay
5. Front I/O: (2) USB 2.0 ports, (1) MIC - (1) audio out (Headphone)

6. PS/2 Scroll Mouse
7. HP Standard Keyboard

8. (1) external 3.5" drive bay for optional media reader or diskette drive
9. (2) PCI 2.3 slot, (1) PCIe x1 slots, (1) PCIe x16 slot

Overview

At A Glance

- Support for Intel® Core™ 2 Duo and Core™ 2 Quad processors, Intel Pentium® dual-core processors, Intel Celeron® processors
- Choice of operating systems:
    - Genuine Windows Vista Business 32
    - Genuine Windows Vista Business 64
    - Genuine Windows Vista Home Basic
    - Genuine Windows Vista Business with downgrade to Windows XP Professional custom installed
    - Genuine Windows XP Home Basic (China only)
    - Novell Sled
    - Red Flag (China only)
    - FreeDOS
- Intel G45 Express Chipset
- Legacy parallel and serial port support
- Intel I/O Controller Hub 10 (ICH10R)
- Intel Graphics Media Accelerator X4500HD with DX10 support
- PCI Express I/O bus
- Serial ATA controller
- Realtek 8111C-VB-GR Gigabit Ethernet Controller
- Choice of hard drives and optical drives
- DDR2 SDRAM system memory
- 250W PFC HV immunity power as Standard configuration (300W PFC HV immunity PSU can be selected as option on Microtower)
- Protected by HP Services. Terms and conditions vary by country. Certain restrictions and exclusions apply.

Standard Features and Configurable Components

Processor and Speed One of the following	**Intel Celeron Processors** Intel Celeron 430 Processor (1.80 GHz, 512 KB L2 cache, 800 MHz FSB) Intel Celeron 440 Processor (2.00 GHz, 512 KB L2 cache, 800 MHz FSB) Intel Celeron 450 Processor (2.2-GHz, 512-KB L2 cache, 800-MHz FSB) **Intel Celeron Dual-Core Processors** Intel Celeron Dual Core E1200 Processor (1.60 GHz, 512 KB L2 cache, 800 MHz FSB) Intel Celeron E1400 Processor (2.0-GHz, 512K L2 cache, 800-MHz FSB) **Intel Pentium Dual-Core Processors** Intel Pentium E2200 Processor (2.2-GHz, 1-MB L2 cache, 800-MHz FSB) Intel Pentium E2220 Processor (2.4-GHz, 1-MB L2 cache, 800-MHz FSB) Intel Pentium E5200 Processor (2.5-GHz, 2-MB L2 cache, 800-MHz FSB) Intel Pentium E5300 Processor (2.6-GHz, 2-MB L2 cache, 800-MHz FSB)* Intel Pentium E5400 Processor (2.7-GHz, 2-MB L2 cache, 800-MHz FSB)* **Intel Core 2 Duo Processors** Intel Core 2 Duo E7300 Processor (2.66-GHz, 3 MB L2 cache, 1066-MHz FSB) Intel Core 2 Duo E7400 Processor (2.8-GHz, 3 MB L2 cache, 1066-MHz FSB) Intel Core 2 Duo E8400 Processor (3.0-GHz, 6 MB L2 cache, 1333-MHz FSB) Intel Core 2 Duo E8500 Processor (3.16-GHz, 6-MB L2 cache, 1333-MHz FSB) Intel Core 2 Duo E8600 Processor (3.33-GHz, 6 MB L2 cache, 1333-MHz FSB) **Intel Core 2 Quad Processors** Intel Core 2 Quad Q6600 Processor (2.4-GHz, 8 MB L2 cache, 1066-MHz FSB) Intel Core 2 Quad Q8200 Processor (2.33-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 Q9550 Processor (2.83-GHz, 12 MB L2 cache, 1333-MHz FSB) Intel Core 2 Quad Q9650 Processor (3.0-GHz, 12 MB L2 cache, 1333-MHz FSB) NOTE: Intel processor numbers are not a measure of performance. Processor numbers differentiate features within each processor family, not across different processor families. * Launch in January 2009

Standard Features and Configurable Components

Operating Systems and Application Software (availability varies by region)	Genuine Windows Vista Business 32* Genuine Windows Vista Business 64* Genuine Windows Vista Home Basic* Genuine Windows Vista Business downgrade to Windows XP Professional custom installed*† Genuine Windows XP Home Basic**(China only) Novell Sled** Red Flag (China only) Free DOS

* Certain Windows Vista product features require advanced or additional hardware. See: http://www.microsoft.com/windowsvista/getready/hardwarereqs.mspx and http://www.microsoft.com/windowsvista/getready/capable.mspx for details. Windows Vista Upgrade Advisor can help you determine which features of Windows Vista will run on your computer. To download the tool, visit: http://www.windowsvista.com/upgradeadvisor.
† Windows Vista Business disk may be included for future upgrade if desired. To qualify for this downgrade an end user must be a business (including governmental or educational institutions) and is expected to order annually at least 25 customer systems with the same custom image.
** Launch in February 2009

Microsoft Office 2007 Basic
Microsoft Office 2007 Small Business
Microsoft Office 2007 Professional
HP Backup and Recovery Manager

Mozilla Firefox for HP Virtual Solutions
Hard Disk Partitioning
Roxio Easy Media Creator 10**
Intervideo WinDVD 8**
McAfee Total Protection Anti-Virus***
PDF Complete
2008 Intel Matrix Storage Manager
HP Power Manager v2.0 (Edison)
Credential Manager 2.5 for dx Series
HP Total Care Advisor
Sun Java Runtime Environment
Welcome Center SMB Offers

** Supporting software available with certain optical drive configurations
*** 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	80-GB Serial ATA 3.0-Gb/s Hard Drive (7200 rpm) 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 Driver (7200 rpm)

QuickSpecs

Standard Features and Configurable Components

System Memory	512 MB DDR2 Synch DRAM PC2-6400 (800 MHz) Non-ECC (1 x 512 MB)
	1 GB DDR2 Synch DRAM PC2-6400 (800 MHz) Non-ECC (2 x 512 MB)
	1 GB DDR2 Synch DRAM PC2-6400 (800 MHz) Non-ECC (1 x 1 GB)
	2 GB DDR2 Synch DRAM PC2-6400 (800 MHz) Non-ECC (2 x 1 GB)
	3 GB DDR2 Synch DRAM PC2-6400 (800 MHz) Non-ECC (3 x 1 GB)
	4 GB DDR2 Synch DRAM PC2-6400 (800 MHz) Non-ECC (4 x 1 GB)
	4 GB DDR2 Synch DRAM PC2-6400 (800 MHz) Non-ECC (2 x 2 GB)
	8-GB DDR2 Synch DRAM PC2-6400 (800-MHz) Non-ECC (4 x 2GB) (for MT only)

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.

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

Diskette Drive
1.44 MB Diskette Drive

Media Reader
HP 22-in-1 Media Reader with 1394
HP 22-in-1 Media Reader

Optical Drives (Serial ATA)
SATA DVD-ROM Drive
SATA SuperMulti LightScribe DVD Writer Drive

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

Audio

Realtek ALC662 High Definition audio codec

3D audio compliant with AC'97 Rev. 2.3 and HD Audio compatible

Internal PC speaker MT
Internal PC speaker SFF
HP USB Powered Flat Speakers

Communication

Realtek 8111C-VB-GR GbE Ethernet Controller

Intel PRO/1000 PT Gigabit PCIe Controller

LSI PCIe x1 56K International SoftModem

HP Wireless 802.11 b/g/n PCIe x1 Card

Standard Features and Configurable Components

Graphics

Intel Graphics Media Accelerator X4500HD

ATI Radeon HD 2400XT 256MB Dual Head graphics adapter (PCIe x16)

ATI Radeon HD 3450 256MB Single Head PCIe x16 Card

ATI Radeon HD 3470 256MB Single Head graphics adapter (PCIe x16)

ATI Radeon HD 3650 512MB Dual Head graphics adapter (PCIe x16) (FH for MT only)
ATI Radeon HD 4650 512MB Dual Head PCIe x16 Card (FH for MT only)*
HP ADD2 SDVO PCIe DVI-D Adapter*

HP DisplayPort To DVI-D Adapter (for HD3470 and HD3650)
HP DisplayPort To VGA Adapter (for HD3470 and HD3650)

* Launch in February 2009

Miscellaneous

Hood Sensor MT
Hood Sensor SFF
Rear I/O Port Cover (MT only)
2nd serial port
Belkin 3-port 1394, FH for MT
Belkin 3-port 1394, LP for SFF

QuickSpecs

System Details

Base Unit	• MT: Micro ATX Microtower chassis, including power supply and front bezel; five (5) drive bays and four expansion slots
	• SFF: Micro ATX Small Form Factor chassis, including power supply and front bezel; three (3) drive bays and four expansion slots
	• Active type heatsink
	• 92 x 92 x 25 mm chassis fan for Microtower chassis
	• No chassis fan for Small Form Factor chassis
	• System board with Intel G45 Express chipset, Intel I/O Controller Hub 10R (ICH10R), Realtek RTL8111C Ethernet controller, Intel GMA X4500HD graphics, and Realtek audio, (1) PCI Express x1 slots, (1) PCI Express x16 slot, (2) PCI, (4) DDR2 DIMM memory slots, (4) Serial ATA data connectors, (8) USB Ports (see USB support below), (1) Parallel and (1) serial port in the rear IO
	• Power cord

Slots	**PCI**	One (1) full-height PCI Express x1 slots on PCA
		One (1) full-height PCI Express x16 slot on PCA (for graphic cards)
		Two (2) full-height PCI slots on PCA
	Memory Expansion	Four (4) DDR2 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**	MT: Two (2) 3.5-inch
		SFF: One (1) 3.5-inch
	External	MT: Two (2) 5.25-inch; One (1) 3.5-inch
		SFF: One (1) 5.25-inch; One (1) 3.5-inch

USB Support	EHCI high-speed USB 2.0 controller
	MT: Two (2) front ports; Six (6) rear ports, three (3) internal ports on system board (one for front ports, one for media card reader, one reserved for future upgrade)
	SFF: Two (2) front ports; Six (6) rear ports, three (3) internal ports on system board (one for front ports, one for media card reader, one reserved for future upgrade)

Interfaces (Legacy)	One (1) PS/2 keyboard port
	One (1) PS/2 mouse port
	One (1) analog VGA video port
	One (1) Parallel port
	One (1) serial port
	One (1) line in; one (1) line out; one (1) mic in
	One (1) RJ45 network port

QuickSpecs

System Details

Weight & Dimensions (MT)	Chassis Dimensions (H x W x D)	15.14 x 7.27 x 16.36 in 385 x 185 x 416 mm
	Packaged Dimensions (D x L x W)	19.63 x 24.13 x 10.56 in 498.6 x 613 x 268.2 mm
	System Weight	18.4 lb (8.34 kg)
	Shipping Weight	26.7 lb (12.1 kg)

Weight & Dimensions (SFF)	Chassis Dimensions (H x W x D)	3.98 x 13.35 x 15.24 in 101 x 339 x 387 mm
	Packaged Dimensions (L x W x H)	23.38 x 19.68 x 9.0 in 593.8 x 500.0 x 228.6 mm
	System Weight	14.96 lb (6.79 kg)
	Shipping Weight	23.00 lb (10.43 kg)

Technology and Features	Memory Type	PC2-6400 DDR2 SDRAM (800MHz) non-ECC Up to 8 GB system memory standard
		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 ATA, RAID and NCQ support

Chassis	Front Panel	Power button Power On LED HDD Activity LED Reset/recovery button (MT only) *
	Cooling Solutions Supported	Power Supply Fan (variable speed) Active heatsink (variable speed) Chassis fan (variable speed) (MT only)
	Slots Supported	Four (4) full-height expansion slots
	Front I/O	MT: Two (2) USB 2.0 ports, Headphone, Mic SFF: Two (2) USB 2.0 ports, Headphone, Mic
	Rear I/O	Standard Micro ATX I/O connectors, including four (6) USB 2.0 ports, serial and parallel ports
	Drive Bays (MT)	Two (2) 5.25-inch (13.335 cm) half height external One (1) 3.5-inch (8.89 cm) half height external Two (2) 3.5-inch (8.89 cm) half height internal
	Drive Bays (SFF)	One (1) 5.25-inch (13.335 cm) half height external One (1) 3.5-inch (8.89 cm) half height external One (1) 3.5-inch (8.89 cm) half height internal

System Details

Internal Speaker	Optional	
Security	Padlock loop	
	Kensington Lock Support	
	Noble Universal Clamp Lock Cable Kit	
Power Supply	MT: both 250W and 300-watt ATX Power Supply – PFC HV immunity (410V/s) with a 115v/230v line switch (varies by country/region)	
	SFF: 250-watt Power Supply –PFC PFC HV immunity (410V/s) with a 115/230v line switch.	

*Reset function will be set for China/Hong Kong/Korea; Recovery function will be set for the rest of APJ

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 (MT)	Operating	41° to 95° F (5° to 35° C)
	Non-operating	-22° to 149° F (-30° to 65° C)
Relative Humidity (MT)	Operating	10% to 90% (non-condensing at ambient)
	Non-operating	5% to 95% (non-condensing at ambient)
Maximum Altitude (MT) (unpressurized)	Operating	10,000 ft (3048 m)
	Non-operating	30,000 ft (9144 m)
Temperature Range (SFF)	Operating	50° to 95° F (10° to 35° C)
	Non-operating	-22° to 140° F (-30° to 60° C)
Relative Humidity (SFF)	Operating	10% to 90% (non-condensing at ambient)
	Non-operating	10% to 95% (non-condensing at ambient)
Maximum Altitude (SFF) (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 7500 ft (2286 m) for MT and 10000 ft (3000m) for SFF above sea level, no direct sustained sunlight. Maximum rate of change is 7.5 deg C/Hr for MT and 10 deg C/Hr for SFF. 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 single Intel Core 2 Duo and Core 2 Quad, Pentium dual-core, or Celeron processors	
PWM	ON – NCP5392 – 4 phase	
Chipset	Intel G45 Express	
	Intel I/O Controller Hub 10 (ICH10R)	

System Details

Super I/O	Fintek F71862
Front Side Bus Frequency	800/1066/1333 MHz
Memory	DDR2 SDRAM 4 x DIMM slots
Clock Generator	IDTCV193BPAG
Integrated Graphics	Intel Graphics Media Accelerator (GMA) X4500HD
Audio	Realtek ALC662 HD Audio compatible codec with two channel audio 3D audio compliant with AC'97 rev. 2.3
LOM	Realtek RTL8111C
Storage	Four Serial ATA interfaces
Expansion Slots	1 x PCI Express x1 slots 1 x PCI Express x16 slot 2 X PCI
BIOS	SPI FLASH ROM
Industrial Standard	PCIe 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 DB 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 LPC connector 1 x header (1 – 1x2) to support hood sensor 1x COM2 header 1 x Front panel connector, Switch, LED (ON/Flash/OFF) 2 x Fan headers for CPU, chassis, with voltage/fan speed control 1 x header (1 – 2x5,) to support 2 USB 2.0 ports at front side 1 x header (1 – 2x5) to support USB Card Media Reader 1 x header (1 – 2x5) to support additional USB devices, such as tax controoler 1 x header (1 -–1x2) to support one touch reset 1 x header (1 – 1x2) to support one touch recovery 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 with green color
Additional Features	Bootable without keyboard, mouse or monitor Keyboard/mouse/USB wake up Support S3, S4 and S5 ACPI status Hardware monitor capability CPU fan speed control One button reset/recovery*

System Details

*Reset function will be set for China/Hong Kong/Korea; Recovery function will be set for the rest of APJ

Network Interface	Realtek 8111C-VB-GR GbE Ethernet Controller Intel Pro 1000 PT Gb Ethernet PCIe NIC* * Launch in February 2009
Wireless	MT: Wireless 802.11b/g/n PCIe Card (full height bracket) SFF: Wireless 802.11b/g/n PCIe Card (low profile bracket)

Power Supply

- 250W/300W ATX Power Supply – Passive PFC with a 115v/230v line switch, with HV immunity up to 410V/s
- 90 to 132VAC, or 180 to 264VAC operating voltage range
- 100 to 127VAC, or 200 to 240VAC rated voltage range
- 50–60 Hz rated line frequency
- 47–63 Hz operating line frequency range
- 250 or 300 watt maximum rated power (SFF max is 250W)
- High voltage immunity up to 410V/s
- Meet China Telecom YD/T 993-2006 spec
- 80-mm power supply fan – variable speed for optimum acoustics

Power Conservation 'Energy Saver'

- APM 1.2 support
- Screen blanking
- Hard drive 'Idle' mode
- System Idle mode
- ~2 watt power consumption in ES mode – suspend to RAM (S3) (instantly available PC)
- Processor/Cache memory power-down (S3)

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	MT: Operating 41° to 95°F (5 to 35°C) (Test 0 to 104°F (40°C)); SFF: 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 50°F/Hr (10°C/Hr). The upper limit may be limited by the type and number of options installed.
	Storage	MT: Storage: 90% RH @ 60°C for 12 hours (Non-condensing) SFF: –22° to 140°F (–30° to 60°C).
Humidity	Operating	MT: 10% to 90% relative humidity (Rh), 35°C non-condensing SFF: 10% to 90% relative humidity (Rh), 35°C

System Details

		maximum wet bulb temperature, non-condensing
	Storage	MT: 90% relative humidity (Rh), 60°C for 12 hours, non-condensing SFF: 90% relative humidity (Rh), 60°C for 12 hours, non-condensing
Altitude	Operating	MT: 0 to 10,000 feet (0 to 3048 meters) – This value may be limited by the type and number of options installed. SFF: 0 to 10,000 feet (0 to 3048 meters) – This value may be limited by the type and number of options installed. Maximum allowable altitude change rate is 1,000 ft/min (304.8 m/min).
	Non-Operating	MT: 0 to 30,000 feet (0 to 9,144 meters) SFF: 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 an 2~3 ms half-sine shock pulse, 11 ms trapezoidal shock pulse.
	Non-Operating	MT: 35G's (Half-sine Shock) 30G's (Trapezoidal Shock) SFF: 35G's (Half-sine Shock) 45G'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	MT: Random vibration at 5Hz@0.00025G^2/Hz, 10Hz@0.01G^2/Hz, 100Hz@0.01G2/Hz, 300Hz@0.00001G^2/Hz 5Hz to 300Hz, (0.25G's nominal). SFF: 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	MT: ~2.09Grms (5-500Hz), Non-Operational SFF: 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).
	MT: IDLE (Fixed disk drive spinning)	LWAd = 4.3 Bels, Desktop Average LpAm = 32 dBA
	SFF: IDLE (Fixed disk drive spinning)	LWAd = 4.3 Bels, Desktop Average LpAm = 32 dBA

System Details

MT: FIXED DISK (Random write)	LWAd = 4.4 Bels, Desktop Average LpAm = 33 dBA
SFF: FIXED DISK (Random write)	LWAd = 4.4 Bels, Desktop Average LpAm = 33dBA
MT: DVD-ROM (Sequential Reads)	LWAd = 5.5 Bels, Deskside Average LpAm = 44 dBA
SFF: DVD-ROM (Sequential Reads)	LWAd = 5.2 Bels, Deskside Average LpAm = 42dBA

Service and Support

On-site Warranty[1]: 1-1-1, 3-1-1, 3-3-3, 4-4-4, 5-5-5, 3-3-3 limited or 90-0-0 limited warranty delivers on-site, next business-day[2] service for parts and labor and includes free telephone support[3] 24 x 7. Global coverage[2] ensures that any product purchased in one country and transferred to another non-restricted country will remain fully covered under the original warranty and service offering. One-year onsite and labor are not available in all countries.

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

[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.

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

After-Market Options

Communications	NICs	
	Intel Pro 1000 PT Gb Ethernet PCIe NIC	EH352AA
	Wireless LAN	
	HP Wireless 802.11/b/g/n PCIe x1	FH971AA
	Modems	
	LSI PCIe x1 56K International SoftModem	FH970AA
Hard Disk Drives	HP 500 GB SATA 3.0-Gb/s Hard Drive	PV943A
	HP 320-GB SATA 3.0-Gb/s Hard Drive	FH963AA
	HP 250 GB SATA 3.0-Gb/s Hard Drive	PY278AA
	HP 160 GB SATA 3.0-Gb/s Hard Drive	PY277AA
	HP 80 GB SATA 3.0-Gb/s Hard Drive	PY276AA
Removable Storage Devices	Diskette Drive	
	HP 1.44 MB USB Diskette Drive – External	DC141B
	22-in-1 Media Reader	FX273AA
Input Devices	Keyboards	
	HP PS/2 Standard Keyboard	DT527A
	HP USB Standard Keyboard	DT528A
	Mice	
	HP USB 2-Button Laser Mouse	GW405AA
	HP USB 2-Button Optical Scroll Mouse	DC172B
	HP USB 2-Button Laser Mouse	GW405AA
Memory	HP 512-MB PC2-6400 (DDR2 800-MHz) DIMM	AH056AA
	HP 1-GB PC2-6400 (DDR2 800-MHz) DIMM	AH058AA
	HP 2-GB PC2-6400 (DDR2 800-MHz) DIMM	AH060AA
Audio	HP Thin USB Powered Speakers	KK912AA

After-Market Options

Graphics	ATI Radeon HD 2400 XT 256MB DH PCIe x16 Graphics Card	KD060AA
	ATI Radeon HD 3450 256MB SH PCIe x16 Card - China Only	FG731AA
	ATI Radeon HD 3470 256MB SH PCIe x16 Graphics Card	FH972AA
	ATI Radeon HD 3650 512MB DH PCIe x16 Graphics Card (MT Only)	KS505AA
	HP ADD2 SDVO DVI-D Adapter**	DY674A
	ATI Radeon HD 4650 512MB DH PCIe x16 Graphics Card (MT Only)**	TBD

* 1GB of system memory required. Graphics cards use part of the total system memory to enhance graphics performance.
**Launch in February 2009

| Optical Drives | HP SATA DVD-ROM Drive | AH047AA |
| | HP SATA SuperMulti LightScribe DVD Writer Drive | GF343AA |

| Security | HP Business PC Security Lock Kit | PV606AA |
| | Security Cable with Kensington Lock | PC766A |

Miscellaneous Accessories	Belkin Serial to USB adapter	EM449AA
	Adaptec FireConnect 2100 FireWire (1394) PCI card	PA997A
	HP 2nd Serial Port Adapter	PA716A

Memory

DDR SYNCH DRAM NON-ECC MEMORY
The Intel G45 Express chipset supports non-ECC DDR2 memory up to PC2-6400 (800-MHz). 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.

CAUTION: You must shut down the computer **and disconnect the power cord** before adding or removing memory modules. Regardless of the power-on state, voltage is always supplied to the memory modules as long as the computer is plugged in to an active AC outlet. Adding or removing memory modules while voltage is present may cause irreparable damage to the memory modules or system board.
HP recommends dual-channel symmetric configurations for maximum performance.
For best performance, add the same amount of total memory to each channel and do not mix speeds. For dual-channel symmetric performance, the total amount of memory in each channel must be equal. If speeds are mixed, speed will default to the slowest DIMM.

STANDARD MEMORY
512-MB, 1-GB, 2-GB DDR2 SYNCH DRAM

OPTIONAL MEMORY UPGRADES
Supports up to 8-GB of DDR2 SYNCH DRAM. Not all memory configurations possible are represented below.
NOTE: For systems configured with more than 3 GB of memory and a 32-bit operating system, all memory may not be available due to system resource requirements. Addressing memory above 4 GB requires a 64-bit operating system.

DIMM Size	Slot 1 (White)	Slot 2 (Black)	Slot 3 (White)	Slot 4 (Black)
512-MB	512-MB			
1-GB	1-GB			
2-GB (dual-channel symmetric)	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 (dual-channel symmetric)	2-GB	2-GB	2-GB	2-GB

Storage
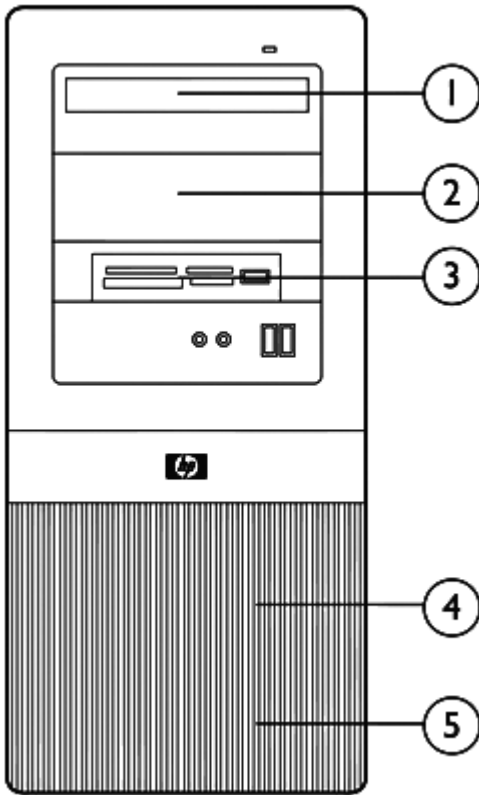
HP Compaq dx2810 Microtower Business PC

	Maximum Quantity Supported	Position Supported	Controller
Drive Support			
Diskette Drives	1	3	SIO
Media Reader	1	3	Internal USB 2.0 port
DVD-ROM Drives	2	1, 2	SATA
SuperMulti LightScribe DVD Writer Drives	2	1, 2	SATA
3.5" (8.89 cm) Serial ATA Hard Drives	2	4, 5	SATA

Storage
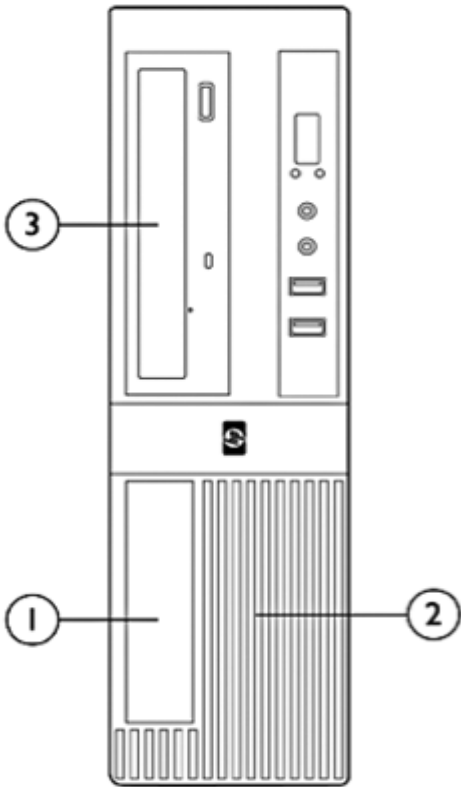
HP Compaq dx2810 Small Form Factor Business PC

	Maximum Quantity Supported	Position Supported	Controller
Drive Support			
Diskette Drives	1	1	SIO
Media Reader	1	1	Internal USB 2.0 port
DVD-ROM Drives	1	3	SATA
SuperMulti LightScribe DVD Writer Drives	1	3	SATA
3.5" (8.89 cm) Serial ATA Hard Drives	1	2	SATA

Technical Specifications

Integrated Realtek ALC662-GR Audio	Type	Integrated
	HD Audio compatible codec	Yes
	Sampling (DAC and ADC)	Supports 44.1/48/96 KHz
	Audio Jacks	Mic-In
		Line-In
		Line-Out / Headphone Out
	Power Support	Digital: 3.3V
		Analog: 5V
	Other	Meets Mircrosoft Windows Vista (WLP 3.08) Premium requirements High-performance DACs with 98dB SNR(A-Weighting) ADCs with 90dB SNR(A-Weighting)

Integrated Realtek 8111C-VB-GR GbE Ethernet Controller	Connector	RJ45
	Controller	Realtek 8111C-VB-GR Gigabit Ethernet Controller
	Memory	Transmit/Receive on-chip buffer support
	Data rates supported	2.5GHz data rate with X1 link width.
	Compliance	IEEE 802.1P, 802.1Q, 802.3, 802.3AB and 802.3u compliant, 802.3x flow control
	Bus architecture	PCI Express 1.1
	Data transfer mode	DMA
	Power requirement(LOM)	1000mbps (TxRx) max.740mW 100mbps (TxRx) max.396mW 10mbps (TxRx) max.436mW D3 hot with Link (10M) 261 mW D3 hot without Link 182 mW D3 cold with Link (10M) 168 mW Link D3 cold without Link 89 mW Link
	Network transfer rate	10/100/1000 Mbps over CAT.5
		100/1000 Mbps over CAT.3
		10 Mbps over CAT.3
	Dimensions	9mm x 9mm
	Power Management	ACPI rev 2.0, PCI PM rev 1.1, ASPM v1.0a

QuickSpecs

Technical Specifications

Intel PRO/1000 PT Gigabit PCIe Controller	Connector	RJ-45
	Controller	Intel 82572EI Gigabit Ethernet Controller
	Memory	Integrated Dual 48K configurable transmit receive FIFO Buffers
	Data rates supported	10/100/1000 Mbps
	Compliance	IEEE 802.1P, 802.1Q, 802.3, 802.3AB and 802.3u compliant, 802.3x flow control
	Bus architecture	PCI Express 1.0a
	Data transfer mode	Bus-master DMA
	Hardware certifications	FCC, B, CE, TUV- cTUVus Mark Canada and United States, TUV- GS Mark for European Union
	Power requirement	Aux 3.3V, 3.0 Watts in 1000base-T and 2.0 Watts in 100Base-T
	Boot ROM support	Yes
	Network transfer rate	10BASE-T (half-duplex) 10 Mbps
		10BASE-T (full-duplex) 20 Mbps
		100BASE-TX (half-duplex) 100 Mbps
		100BASE-TX (full-duplex) 200 Mbps
		1000BASE-T (full-duplex) 2000 Mbps (actual rate limited by PCI Bus)
	Environmental	**Operating temperature** 32° to 131°F (0° to 55° C)
		Operating humidity 85% at 131° F (55° C)
	Dimensions	6.4 x 2.6 x 0.8 in (16.3 x 6.6 x 1.9 cm)
	Management capabilities	ASF, WOL, PXE, DMI, WFM 2.0.

LSI PCIe x1 56K International SoftModem	Data Transmission	Technology speeds: 56,000 Kbps maximum downstream data, controllerless
		NOTE: 56 Kbps technology refers to download speeds only and requires compatible modems at server sites. Other conditions may limit modem speed. FCC limitations allow a maximum of 53 Kbps during download transmissions.
	Data Speeds	(Upload only) 33,600/31,200/28,800/26,400/21,600/19,200/16,800/14,400/12,000/9,600/7,200/4,800/2,400/1,200/300
	Data Standards	ITU-T V.90, ITU-T, ITU-T V.34, V.44, V.42, V.42bis21, V.32bis, Bell 212A, and Bell 103
	Fax Speeds	14,400/12,000/9,600/7,200/4,800/2,400/1,200/300 b/s
	Fax Mode Capabilities	ITU-T T.31 class 1 FAX, V. 17, V.29, V.27ter, and V.21 Channel 2
	Error Correction and Data Compression	V.44, 42bis, V.42 and MNP2-5
	Power Management	PCI Bus Power Management Interface Specification (PCI-PM) Revision 1.2, Appendix A. D0, D3hot, and D3cold. Wake on Ring state when in D3cold. If the power management event (PME) feature is enabled in D3cold, a modem can wake the system via WAKE# (WAKEN) or beacon. Meets PCI Express 1.1 standard.
	Upgradeability	Driver upgradeable for future enhancements
	Video	ITU-T V.80 video ready interface

Technical Specifications

	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.

HP Wireless 802.11 b/g/n PCIe Card	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13112_div/13112_div.html (Worldwide)

HP ADD2 SDVO DVI-D Adapter	NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12008_div/12008_div.html (Worldwide)

Integrated Intel Graphics Media Accelerator X4500HD	3D/2D Controller	Microsoft DirectX® 10 based with support for Pixel Shader 3.0
	VGA Controller	Integrated
	DVI	Integrated
	Bus Type	PCI Express™ x16
	RAMDAC	Integrated, 350 MHz
	Graphics Engine Clock	667 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

Technical Specifications

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 pre-allocates 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 (GB)	Total Graphics memory (MB)	Pre-Allocated (MB)	DVMT (MB)
0.5	128	32	96
	256	32	224
1	512	32	480
1.5	768	32	736
2 GB & more	1024	32	992

Windows Vista Memory Usage:
Support for DVMT 5.0. The graphics driver will determine DVMT memory. DVMT memory = Total GFX memory - Pre-allocated size and fixed memory = Pre-allocated memory.

HW Video Decode	Full Hardware Accelerated decode for MPEG2 encrypted video; support for PAVP Lite (default) and Heavy (or Paranoid) modes. Full H.264 and VC1 Variable Length Decode Acceleration and Intel Clear Video Technology Support.
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.
Multi-display Support	Dual Independent monitor support facilitated via one VGA port and one DVI integrated on the back plane of the system board and presented as part of the rear I/O set of interfaces. DisplayPort supported via optional HP DisplayPort to DVI-D adapter.
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 the 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
2560x1600	N/A	60*

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

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ATI Radeon HD 2400XT (256MB DH) PCIe Graphics Card

NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12846_div/12846_div.html (Worldwide)

ATI Radeon HD 3650 (512MB DH) PCIe x16 Graphics Card

NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13006_div/13006_div.html (Worldwide)

ATI Radeon HD 3470 (256 SH) PCIe Graphics Card

NOTE: Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/13120_div/13120_div.html (Worldwide)

ATI Radeon HD 3450 (256MB SH) PCIe Graphics Card

Bus type	PCI Express (x16 lanes)
Maximum vertical refresh rate	85 Hz
Display support	Integrated 400 MHz RAMDAC
Display max resolution	2560 x 1600 digital, 2048 x 1536 analog
Board display options	Supports two displays via the DisplayPort and DVI connectors
Board configuration	

Specification	Description
Graphics Chip	RV620
Core clock	750 MHz
Memory clock	500 MHz
Frame buffer	256 MB DDR2, 128 bit wide

Languages supported	24 languages: English, Arabic, Chinese Simplified, Chinese Traditional, Czechoslovakian, Danish, Dutch, Finnish, French, German, Greek, Hebrew, Hungarian, Italian, Japanese, Korean, Norwegian, Polish, Portuguese, Russian, Spanish, Swedish, Thai, Turkish
Core power	22 W
Dimensions	2.71 in x 6.60 in (68.90 mm x 167.65 mm)
Compliance standards	EMC Emissions:

a. FCC Part 15, Subpart B - Unintentional Radiators, Class B Computing Devices for Home & Office Use
b. Taiwanese Standard BSMI
c. Australian C-Tick
d. Korean (MIC)

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

ATI Radeon HD 3450 (256MB SH) PCIe Graphics Card display resolutions and refresh rates
NOTE: Other resolutions may be available but are not recommended as they may not have been tested and qualified by HP.

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

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

ATI Radeon HD 4650 (512MB DH) PCIe Graphics Card	Bus type	PCI Express (x16 lanes)
	Maximum vertical refresh rate	85 Hz
	Display support	Dual 400 MHz integrated RAMDACs
	Display max resolution	

- Analog max resolution supported up to 2048x1536x32bpp @ 85Hz &1920x1440x32bpp @ 60Hz
- DVI Digital single link support w/ a max resolution of 1920x1200x32bpp @ 60Hz (reduced blanking)
- DVI Digital dual link support w/ a max resolution of

Technical Specifications

2560x1600x32bpp @ 60Hz (reduced blanking)
- HDMI support w/ a max resolution of 1080p @ 60Hz

Board display options	Dual Display Support: VGA+DVI, VGA+HDMI
Board configuration	

Specification	Description
Graphics Chip	RV730Pro
Core clock	600 MHz
Memory clock	500 MHz
Frame buffer	512 MB DDR2, 128 bit wide

Languages supported	21 languages: US English, UK English, Spanish, French, Swedish, Norwegian, T-Chinese, S-Chinese, Korean, Japanese, Dutch(Holland), German, Italian, Portuguese, Danish, Finnish, Canadian French, Spanish-Mexico, Russian, Polish, Thai
Core power	65 W
Compliance standards	TBD

ATI Radeon HD 4650 (512MB DH) PCIe Graphics Card display resolutions and refresh rates
NOTE: Other resolutions may be available but are not recommended as they may not have been tested and qualified by HP.

	Maximum Refresh Rate (Hz)
Comprehensive mode list	
640x480, 16/32bpp	60/70/72/75/85/90/100/120/140/150/160/200 Hz
704x480, 16/32bpp	30/60 Hz
720x400, 16/32bpp	70/75/85/160/200 Hz
720x480, 16/32bpp	29(29.97)/59(59.94)/60/72/75/85/90/100 Hz
720x576, 16/32bpp	25/50/59(59.94)/60/75/100 Hz
800x600, 16/32bpp	47i/50/56/60/70/72/75/85/90/100/120/140/160/200 Hz
848x480, 16/32bpp	60/75/85/88 Hz
856x480, 16/32bpp	60 Hz
864x480, 16/32bpp	60/75 Hz
960x720, 16/32bpp	60 Hz
1024x480, 16/32bpp	60 Hz
1024x600, 16/32bpp	60 Hz
1024x768, 16/32bpp	16/32bpp, 43i/60/70/72/75/85/90/100/120/140/150/160 Hz
1152x864, 16/32bpp	43i/47i/60/70/72/75/80/85/90/100/120/150/160/200 Hz
1280x600, 16/32bpp	60 Hz
1280x720, 16/32bpp	50/59(59.94)/60/75/85 Hz
1280x768, 16/32bpp	56/60/75/85 Hz
1280x900, 16/32bpp	60 Hz
1280x960, 16/32bpp	60/70/72/75/85/100/120/160/200 Hz
1280x1024, 16/32bpp	16/32bpp, 43i/47i/60/70/74/75/85/90/100/120/160/180 Hz
1360x1024, 16/32bpp	60/75/85 Hz
1400x1050, 16/32bpp	60 Hz
1440x900, 16/32bpp	60 Hz
1536x864, 16/32bpp	60/85/100/120/160 Hz
1600x900, 16/32bpp	60/75/85/100/120/160 Hz
1600x1000, 16/32bpp	60/75/85/100/120/160 Hz

Technical Specifications

1600x1024, 16/32bpp	60/75/76/85/100 Hz
1600x1200, 16/32bpp	52/58/60/66/70/72/75/76/85/90/92/100/120 Hz
1680x1050, 16/32bpp	60/75/85/100 Hz
1792x1344, 16/32bpp	60/72/75/85/90/100/120 Hz
1800x1440, 16/32bpp	60/70/72/75/85/90/100/120 Hz
1856x1392, 16/32bpp	60/72/75/90/100 Hz
1920x1080, 16/32bpp	24/25/29i(29.97)/30i/60/70/72/75/85/90/100/120 Hz
1920x1200, 16/32bpp	24/25/30/40/41/59/60/72/75/76/80/85/90/100 Hz
1920x1440, 16/32bpp	60/72/75/85/90 Hz
2048x1152, 16/32bpp	60/75/85/100 Hz
2048x1280, 16/32bpp	60/70/75/85/90/100 Hz
2048x1536, 16/32bpp	16/32bpp, 60/66/70/72/75/85 Hz

NOTE: * not all ports support the highest resolutions, please refer to key features section of this document.

HP PS/2 or USB Standard Keyboard

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/11880_div/11880_div.html
(Worldwide)

HP USB 2-Button Laser Mouse

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/12912_div/12912_div.html
(Worldwide)

HP PS/2 2-Button Optical Scroll Mouse

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/12490_div/12490_div.html
(Worldwide)

HP USB Optical Scroll Mouse

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/11356_div/11356_div.html
(Worldwide)

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

80 GB
160 GB
250 GB
320 GB
500 GB

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/11356_div/11356_div.html
(Worldwide)

SATA DVD-ROM Drive

NOTE: Please see the QuickSpecs for Technical Specifications and additional information:
http://h18000.www1.hp.com/products/quickspecs/12548_div/12548_div.html
(Worldwide)

Technical Specifications

HP SATA SuperMulti LightScribe Drive	**NOTE:** Please see the QuickSpecs for Technical Specifications and additional information: http://h18000.www1.hp.com/products/quickspecs/12739_div/12739_div.html (Worldwide)		

HP 1.44-MB Diskette Drive	Size	3.5 in (8.89 cm)	
	LED Indicators (front panel)	Green	
	Read/Write Capacity per Diskette (high/low)	1.44 MB/720 KB	
	Drive Height	One-third	
	Drive Rotation	300 rpm	
	Transfer Rate (high/low)	500/250 KB/s	
	Bytes/Sector	512	
	Sectors/Track (high/low)	18/9	
	Tracks/Side (high/low)	80/80	
	Access Times	Track-to-Track (high/low)	3/6 ms
		Average (high/low)	94/173 ms
		Settling Time	15 ms
		Latency Average	100 ms
	Cylinders (high/low)	80/80	
	Read/Write Heads	Two	

HP 22-in-1 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	- Supports hardware ECC (Error Correction Code) function - Supports hardware CRC (Cyclic Redundancy Check) function - Supports MS 4-bit parallel transfer mode - Supports MS-PRO 4-bit parallel transfer mode - Supports SD 4-bit parallel transfer mode - Supports high-speed 50 MHz SD 4-bit card (version 1.1) - Support high-speed 52 MHz MMC 8-bit card (version 4.x)	
	Supported media types	- Supports CompactFlash Card Type I (CF I), CompactFlash Card Type II (CF II),MicroDrive (MD) - Supports 3.3V SmartMedia Card (SM), SmartMedia ROM (SM ROM), xD-Picture Card (xD) - Supports Secure Digital Card (SD), Secure Digital ROM Card (SD ROM), miniSD, MultiMediaCard (MMC), Secure MultiMediaCard (Secure MMC), ROM Type MultiMediaCard (MMC ROM), Reduced Size MultiMediaCard (RS MMC), MultiMediaCard 4.0 (MMC Plus), Reduced Size MultiMediaCard 4.0 (MMC Mobile) - Support Memory Stick (MS), Memory Stick ROM (MS ROM), MagicGate Memory Stick (MG), Memory Stick Select, Memory Stick Duo (MS Duo), Memory Stick PRO (MS-PRO), Memory Stick PRO Duo (MS PRO Duo)	
	Mechanical	Length (3.5")	124.7 cm

Technical Specifications

	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 ±5% nominal supply voltage. 10°C 10% R.H. ? 24 hours 10°C 90% R.H. ? 24 hours 20°C 90% R.H. ? 24 hours 30°C 90% R.H. ? 24 hours 40°C 90% R.H. ? 24 hours 50°C 90% R.H. ? 24 hours 50°C 10% R.H. ? 24 hours
	Storage Environmental Extremes	Test Parameters/Conditions 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. 1.2 FCC, CE, BSMI, C-Tick, VCCI, MIC, cUL, TUV-T

Eco Data	Eco-Label Certifications & 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

- China Energy Conservation Program
- Korea Eco-label