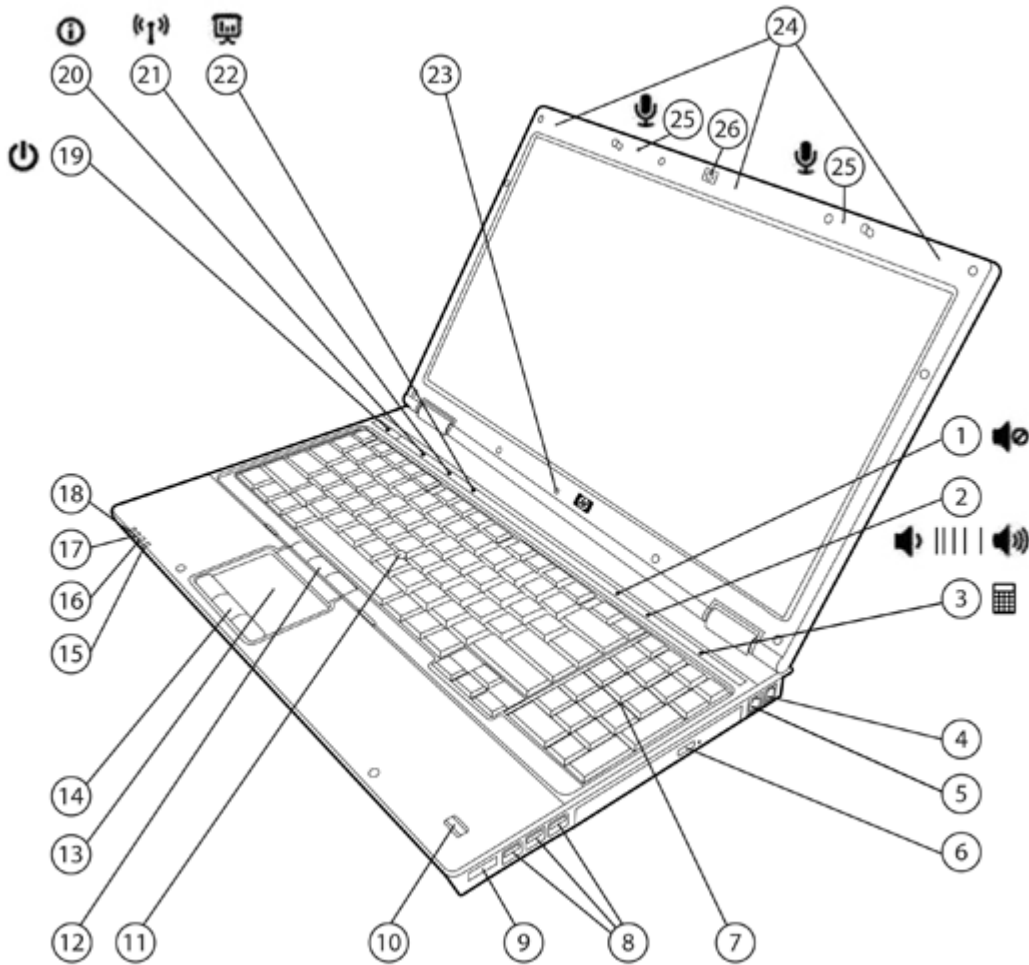


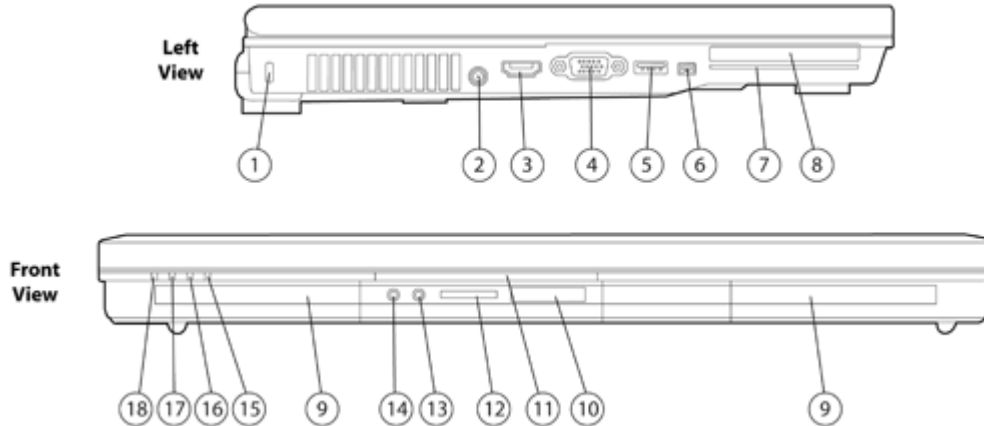
### Overview

HP recommends Windows Vista®  
Business

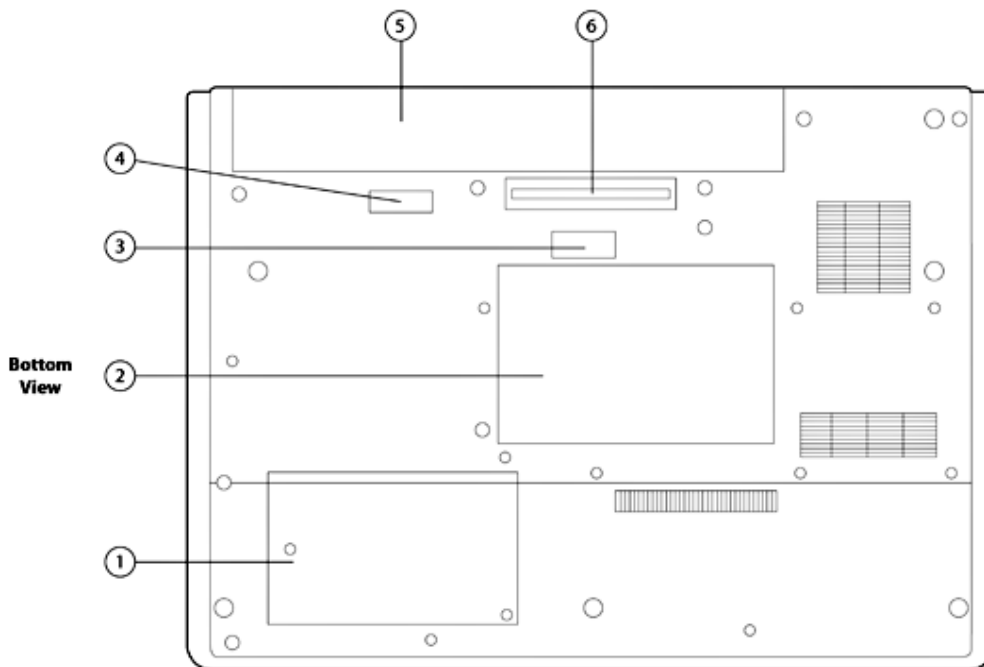


1. Volume mute button with LED indicator
2. Volume scroll zone with up/down LED indicators
3. Calculator button
4. RJ-11/modem port
5. RJ-45/Ethernet port
6. Upgrade Bay (optical drive or second hard drive)
7. Full numeric keypad
8. (3) USB 2.0 ports
9. eSATA connector
10. HP Fingerprint Sensor
11. Pointstick
12. Pointstick buttons, three
13. Touchpad with scroll zone
14. Touchpad buttons, three
15. Hard drive / optical drive activity / HP 3D DriveGuard LED
16. Battery charging LED
17. Power/standby LED
18. Wireless on/off LED
19. Power button with LED
20. HP Info / HP QuickLook button with LED indicator
21. Wireless on/off button with LED indicator
22. HP Presentation button with LED indicator
23. Ambient Light Sensor
24. Three WLAN antennas (with WLAN option)
25. Dual-microphone array
26. Optional 2 MP Webcam with LED

### Overview



- |                                   |  |
|-----------------------------------|--|
| 1. Kensington Lock slot           | 10. Display release latch                      |
| 2. Power connector                | 11. Business Card slot                         |
| 3. HDMI port                      | 12. Media Card Reader                          |
| 4. VGA/external monitor connector | 13. Stereo microphone in                       |
| 5. USB 2.0 port                   | 14. Stereo headphone/line out                  |
| 6. 1394a port                     | 15. Hard drive activity / HP 3D DriveGuard LED |
| 7. Integrated Smart Card Reader   | 16. Battery charging LED                       |
| 8. ExpressCard/54 slot            | 17. Power/standby LED                          |
| 9. Integrated stereo speakers     | 18. Wireless on/off LED                        |



- |                                       |                          |
|---------------------------------------|--------------------------|
| 1. Hard drive bay                     | 4. Battery release latch |
| 2. Memory module and WLAN compartment | 5. Battery bay           |
| 3. Secondary battery connector        | 6. Docking connector     |

### Overview

#### At A Glance

- Genuine Windows Vista Business 32, Genuine Windows Vista Business 64, Genuine Windows Vista Ultimate 32, Genuine Windows Vista Business with downgrade to Windows XP Professional custom installed, or FreeDOS
- NVIDIA Quadro FX 3700M graphics with up to 1 GB dedicated memory, NVIDIA Quadro FX 2700M graphics with up to 512 MB dedicated memory, or ATI Mobility FireGL V5725 graphics with up to 256 MB dedicated memory
- DirectX 10 support and Dual Link DVI (available through optional docking) provides faster rendering capabilities and support for ultra-high resolution monitors
- Intel® Centrino® 2 with vPro™ technology capable, with Intel Core™ 2 Extreme or Intel Core™ 2 Duo processors
- Business Rugged - designed to meet the military standard Mil-Std-810F for dust, altitude, and high temperature operation\*
- HP Performance Tuning Framework for optimal configuration, compatibility and performance
- HDMI high definition video/audio port
- eSATA connector for external optical drive, hard drive, or RAID array
- Upgrade Bay for easy optical drive upgrade or optional second hard drive for RAID 1 Mirroring or RAID 0 Striping
- Optional Blu-Ray DVD +/-RW SuperMulti DL Drive
- Designed to travel, with weight starting at 7.5 lb/3.40 kg and 1.3-inch/32 mm thin at front
- Widescreen 17.0-inch diagonal display with wide-viewing angle (select models), Ambient Light Sensor and HP Privacy Filter support
- Optional HP DreamColor panel is available with NVIDIA graphics for maximum colour control
- Integrated Media Card Reader
- Full-sized keyboard with separate numeric keypad
- Flexible wireless connectivity options:
  - Integrated 802.11 a/b/g/draft-n, or a/b/g wireless LAN module
  - Bluetooth®
- Enhanced security features including integrated Smart Card Reader, HP ProtectTools, HP SpareKey, HP Fingerprint Sensor, TPM 1.2 Embedded Security Chip\*\*
- Optional 2 MP Webcam with Business Card Reader Software
- HP QuickLook 2 for instant access to email, calendar, and contact information
- Enhanced reliability with HP DuraCase, HP DuraKeys and HP DuraFinish
- Up to 8 GB of 800 MHz DDR2 SDRAM supported, dual channel memory support
- Up to 320 GB 7200 rpm or 250 GB 5400 rpm SATA II user-removable hard drive with HP 3D DriveGuard protection
- Integrated Intel Gigabit Network Connection (10/100/1000 NIC)
- Enhanced dual pointing devices (touchpad with scroll zone and pointstick)

\* Testing was not intended to demonstrate fitness for DOD contracts requirements or for military use. Test results are not a guarantee of future performance under these test conditions.

\*\* TPM module disabled where not permitted by law (for example, Russia and China).

### Standard Features

#### Processors

Intel Core 2 Extreme Processor X9100 (3.06 GHz, 6 MB L2 cache, 1066 MHz FSB)\*

Intel Core 2 Quad Processor Q9100 (2.26 GHz, 12 MB L2 cache, 1066 MHz FSB)\*

Intel Core 2 Duo Processor T9600 (2.80 GHz, 6 MB L2 cache, 1066 MHz FSB)\*

Intel Core 2 Duo Processor T9400 (2.53 GHz, 6 MB L2 cache, 1066 MHz FSB)\*

Intel Core 2 Duo Processor P8600 (2.40 GHz, 3 MB L2 cache, 1066 MHz FSB)\*

Intel Core 2 Duo Processor P8400 (2.26 GHz, 3 MB L2 cache, 1066 MHz FSB)\*

\* Intel's numbering is not a measurement of higher performance.

**NOTE:** Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.

#### Operating System

##### Preinstalled

Genuine Windows Vista Business 32\*

Genuine Windows Vista Business 64\*

Genuine Windows Vista Ultimate 32\*

Genuine Windows Vista Business with downgrade to Windows XP

Professional custom installed\*†

FreeDOS

##### Supported

Genuine Windows XP Professional 32

Genuine Windows XP Professional 64

##### Certified

SuSE Linux Enterprise Desktop 10

\* 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 at least 25 customer systems with the same custom image.

#### Chipset

Mobile Intel PM45 Express Chipset ICH9M-Enhanced

#### Intel Centrino 2 with vPro technology capable

Intel Centrino 2 with vPro technology is a selectable feature that is available on units configured with an Intel WiFi Link 5300. It provides advances in remote manageability, security, energy efficient performance, and wireless connectivity. Intel Active Management Technology (AMT) offers built-in manageability and proactive security for networked notebook PCs, even when they are powered off\* or when the operating system is inoperable. It can help identify threats before they reach the operating system, isolate infected systems, and update PCs regardless of their power state.

\*Requires a Windows operating system, network hardware and software, connection with a power source, and a direct (non-VPN) corporate network connection which is either cable or wireless LAN.

**NOTE:** Some functionality of Intel Centrino 2 and vPro technology, such as Intel Active Management technology and Intel Virtualization technology, requires additional 3rd party software in order to run. Availability of future "virtual appliances" applications for Centrino 2 and vPro technology is dependant on 3rd party software providers. Compatibility with future "virtual appliances" is yet to be determined.

### Standard Features

#### Business Rugged

Meets the military standard Mil-Std-810F\* for:

- High Temperature: Method 501.4, Proc I & II (140°F/60°C operational)
- Dust: Method 510.4, Proc. I (Blowing Dust)
- Altitude: Method 500.4 Low Pressure, Proc. I & II (15,000 feet operational)

\*Requires a Windows operating system, network hardware and software, connection with a power source, and a direct (non-VPN) corporate network connection which is either cable or wireless LAN.

#### Graphics

Models with NVIDIA graphics:

NVIDIA Quadro FX 3700M with 1 GB of dedicated video memory, or  
NVIDIA Quadro FX 2700M with 512 MB of dedicated video memory  
Microsoft DirectX 10 (Shader 4.0) and OpenGL 2.1 capable

Models with ATI graphics:

ATI Mobility FireGL V5725 with 256 MB of dedicated video memory  
Microsoft DirectX 10.1 (Shader 4.1) and OpenGL 2.1 capable

#### Display

##### Internal

17.0-inch diagonal WSXGA+ anti-glare wide-viewing angle (1680 x 1050 resolution)  
17.0-inch diagonal WUXGA wide-viewing angle anti-glare (1920 x 1200 resolution)  
17.0-inch diagonal WUXGA DreamColor wide-viewing angle (1920 x 1200 resolution)\*  
Ambient light sensor  
Integrated lid switch  
HP Privacy Filter support

##### External

Up to 32-bit per pixel colour depth  
**VGA** port supports resolutions up to 2048 x 1536 at 75 Hz, and lower resolutions at up to 100 Hz  
**HDMI 1.3** port supports direct connection to high-definition displays with up to 1920 x 1080 resolution and 7-channel audio with one convenient cable (not included).  
**DVI** port in optional HP Docking Station (sold separately) supports resolutions up to 1920 x 1200 for single-link DVI monitors and up to 2560 x 1600 for dual-link DVI monitors.

**NOTE:** Resolutions are dependent upon monitor capability, and resolution and colour depth settings.

\* DreamColor LED display is available only with NVIDIA graphics.

### Standard Features

Memory	<b>Standard</b>	800 MHz DDR2 SDRAM; two slots supporting dual channel memory 1024 MB, 2048 MB, 4096 MB, or 8192 MB
	<b>Maximum</b>	Upgradeable to 8192 MB with 4096 MB SODIMMs in slots 1 and 2
	<b>Dual-channel</b>	Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

**NOTE:** Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed. Availability of 4 GB or more of memory requires Windows Vista Business 64-bit or Linux. With Windows 32-bit operating systems, memory above 3 GB may not all be available due to system resource requirements.

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Communications	Integrated Intel Gigabit Network Connection (10/100/1000 NIC)* 56K V.92 modem**
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\* The term "10/100/1000" or "Gigabit" Ethernet indicates compliance with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

\*\* Designed for downloads from 56K modem compliant sources. Maximum achievable download transmission rates currently do not reach 56 KB/s, and will vary with line conditions. Modem availability is subject to country regulatory approval.

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Wireless Devices	Support for a broad range of secure, integrated wireless LAN options featuring support for the latest industry standards. Wireless LAN is factory configurable or available as an option to be added later. Integrated Bluetooth is also available (factory configurable only) and can be combined with any of the supported wireless LAN options.
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<b>All 802.11 integrated wireless LAN options</b>	Wi-Fi CERTIFIED* Cisco Compatible Extensions support Wired Equivalent Privacy (WEP) support up to 128-bit keys Wi-Fi Protected Access (WPA) and WPA2 support 802.1x authentication support, including EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, and LEAP Advanced Encryption Standard (AES) support Three antennas integrated in the display enclosure
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<b>Intel WiFi Link 5300</b>	Integrated support for 802.11a, b, g, and n draft 2.0* Up to 450 mbps data rate
-----------------------------	--

<b>HP Integrated Module with Bluetooth Wireless Technology</b>	Bluetooth Specification v2.0 compliant Works with a wide range of Bluetooth devices
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\* The specifications for 802.11n draft 2.0 are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11n WLAN devices. In countries where n draft 2.0 is not allowed, this capability is not enabled.

### Standard Features

#### Keyboard

The 101/102-key compatible keyboard features an industry standard, full-pitch key layout with desktop keyboard features, such as the isolated inverted-T cursor control keys, editing keys, both left and right control and alt keys, and 12 function keys. US and International key layouts are available. Other features include a full numeric keypad, hotkeys for instant access to power conservation, brightness, and other features, 19.05-mm x 19.05-mm key pitch (center-to-center spacing), 3.0-mm stroke, and comfort-dished keycaps.

HP DuraKeys is a clear coating applied over the notebook keyboard that helps protect the finish and the printed characters on the keys. HP DuraFinish helps protect the finish on the keyboard deck, graphics, and icons from normal wear and tear.

#### Touch-sensitive controls

Touch-sensitive controls provide easy access to the following features: HP Info Center, HP QuickLook 2, wireless on/off, HP Presentation button, volume up, volume down, mute, and calculator button.

#### Pointing device

Enhanced dual pointing devices:  
Touchpad with scroll zone, three pick buttons  
and  
Pointstick, three pick buttons

#### Expansion card slots

<b>ExpressCard/54 slot</b>	Supports ExpressCard/54 and ExpressCard/34
<b>Integrated Smart Card Reader</b>	Compatible with ISO 7816 compliant Smart Cards PC/SC interface support
<b>Media Card Reader</b>	Supports SD (Secure Digital), MMC (MultiMedia Card), Memory Stick, Memory Stick Pro, Memory Stick Duo*, xD-Picture card

\* Memory Stick Duo Adapters are required and sold separately. Inserting a Memory Stick Duo Card directly into your notebook could damage the memory card and/or notebook.

#### Storage

<b>Internal Storage Device</b>	160/250 GB 5400 rpm SMART SATA II Hard Drive 160/250/320 GB 7200 rpm SMART SATA II Hard Drive
<b>NOTE:</b> Hard drives are customer removable and will withstand multiple insertion/removal cycles. Up to 10 GB is reserved for the system recovery software.	
<b>HP 3D DriveGuard</b>	The hard drive is mounted directly to the notebook frame, reducing the transmission of shock away from the hard drive. Uses three-axis digital motion detection with intelligent sensitivity to help protect the hard drive during normal use from shock and vibration. The digital accelerometer temporarily halts all data transfer and parks the hard drive when abrupt motion is detected.
<b>Upgrade Bay</b>	Fixed 12.7 mm SATA optical drive      Blu-ray R/RE DVD+/-RW SuperMulti DL Drive DVD+/-RW SuperMulti DL LightScribe Drive DVD-ROM Drive
	or
	Second hard drive*      250 GB 5400 rpm SMART SATA II Hard Drive 250/320 GB 7200 rpm SMART SATA II Hard Drive

\* For RAID configurations, both hard drive capacities must be equal.

### Standard Features

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<b>Interfaces</b>	ExpressCard/54 slot	One
	Smart Card Reader	One
	Media Card Reader	One
	External monitor	One – VGA
	1394a	One – 4-pin connector
	Stereo microphone in	One
	Stereo headphone/line out	One
	Power connector	One
	RJ-11/modem	One
	RJ-45/Ethernet	One
	HDMI	One – 1.3 compliant
	eSATA	One
	USB 2.0	Four
	Docking connector	One
	Secondary battery connector	One
	LED status indicators	Sixteen

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### Audio/Visual

High Definition Audio support w/24-bit DAC  
Integrated stereo speakers  
Integrated dual-microphone array  
Touch-sensitive controls for volume up, volume down, and mute  
Stereo headphone/line out  
Stereo microphone in

Optional 2 MP Webcam with Business Card Reader Software

- Supports videoconferencing and still image capture
  - Large image sensor for excellent color matching and good low light sensitivity
  - Up to 30 frames/sec
  - AutoMacro focus lens
  - Video capture at VGA, 1.3 Mpixel, and 2 Mpixel resolutions
  - 16-bit true color (camera sensors output YCrCb format among others)
-



### Standard Features

Software	<b>Preinstalled software with Windows Vista or Windows XP</b>	HP Recovery Manager (Vista only) HP Help and Support Center HP QuickLook 2 HP Universal Print Driver HP ProtectTools Security Manager: BIOS Configuration for HP ProtectTools Credential Manager for HP ProtectTools Device Access Manager for HP ProtectTools Drive Encryption for HP ProtectTools Embedded Security for HP ProtectTools File Sanitizer for HP ProtectTools Privacy Manager for HP ProtectTools HP Quick Launch Buttons HP Wireless Assistant Microsoft Office Ready with 60-day Office Professional 2007 Trial Edition (select models) PDF Complete Special Edition Intervideo WinDVD – DVD Player Roxio Creator Business (for optional DVD+/-RW and DVD/CD-RW drives) McAfee Total Protection* Synaptics Touchpad Driver Microsoft Windows Live Messenger (select models) HP Webcam Software MS OneNote
	<b>Additional software available from the web</b>	HP SoftPaq Download Manager HP Client Manager Software HP Client Management Solutions Java Card Security for HP ProtectTools

\* 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.

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<b>Workstation ISV Certifications</b>	<b>MCAD</b> (Mechanical CAD/Architectural Engineering and Construction)	AutoDesk AutoCAD AutoDesk Inventor AutoDesk Revit AutoDesk AliasStudio AutoDesk Map 3D AutoDesk Civil 3D Bentley InRoads XM Bentley Microstation Bentley Navigator CEI CoCreate OneSpace Dassault Systemes CATIA V5 ICEM Surf Intelligent Light MSC Software MSC.Patran MSC Software SimXpert PTC Pro/ENGINEER Wildfire SensAble Siemens PLMS NX
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### Standard Features

	Siemens PLMS NX I-deas
	Siemens PLMS Solid Edge
	Siemens PLMS TeamCenter Visualization
	Solidworks
<b>DCC</b> (Digital Content Creation)	Adobe Premiere
	Adobe After effects
	Adobe Encore
	Adobe Photoshop
	AutoDesk 3DS MAX/Combustion
	AutoDesk Maya
	Avid Xpress Pro
	Avid Media Composer
	SoftImage XSI
<b>GIS</b> (Geographic Information Systems)	ESRI ArcGIS
<b>Oil and Gas</b>	Landmark R5000
	Paradigm EPOS, GoCAD
	Schlumberger / GeoFrame
	Schlumberger Petrel
	SeismicMicro Technology

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**HP Performance Tuning Framework** HP Performance Tuning Framework (PTF) enables optimal configuration of HP Mobile Workstations delivering stability and best performance. HP PTF will guide your system setup allowing a "custom" configuration that best matches the workstation to user requirements.

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**HP Recovery Manager** Each Windows Vista unit is shipped with HP Recovery Manager. HP Recovery Manager enables fast recovery of the factory preinstalled image if the system becomes corrupted or if important system files are accidentally deleted. Up to 10 GB of the hard drive is reserved for the system recovery software.

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**SMBIOS Version 2.4** System Management BIOS, previously known as DMI BIOS, is used to store system management information.

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**HP ProtectTools Security Manager** HP ProtectTools Security Manager is the security platform for business notebooks and desktops. The HP ProtectTools Security Manager is an extensible client security console that delivers enhanced security capabilities through add-on software modules. Modules currently available are:

- BIOS Configuration for HP ProtectTools
- Credential Manager for HP ProtectTools
- Device Access Manager for HP ProtectTools
- Drive Encryption for HP ProtectTools
- File Sanitizer for HP ProtectTools
- Set-up Wizard for HP ProtectTools
- Privacy Manager for HP ProtectTools (Chat & Sign)
- Embedded Security for HP ProtectTools
- Java Card Security for HP ProtectTools

### Standard Features

<b>Security</b>	<b>Standard Features</b>	HP ProtectTools Security Manager Enhanced Pre-Boot Security HP SpareKey One-Step Logon HP Fingerprint Sensor Integrated Smart Card Reader Configuration Control Hardware Memory Change Alert Ownership Tag Setup Password Power-On Password TPM 1.2 Embedded Security Chip* TPM Enhanced DriveLock* HP Disk Sanitizer HP 3D DriveGuard Kensington Lock Slot Support for Computrace / LoJack for Laptops (must be purchased separately)
	<b>Optional Features</b>	HP Privacy Filter      Narrows viewing area so that screen data is visible only to persons directly in front of the monitor

\* TPM module disabled where use is restricted by law; for example, Russia and China.  
For more information on HP security solutions refer to <http://www.hp.com/go/security>.

### Power Supply

External 120 watt\* or 150 watt Smart AC adapter, 6-foot (1.8-meter) power cord included.  
Total length including external AC adapter is 12 feet (3.66 meter).  
HP Fast Charge\*\*

\* 120 watt power supply not available with NVIDIA graphics or Intel Core2 Extreme Processor

\*\* HP Fast Charge recharges your battery up to 90% within 90 minutes when the system is off. HP Fast Charge does not apply to 12-cell Ultra-Capacity batteries.

### Battery

<b>Primary battery</b>	8-cell (73 WHr) Lithium-Ion battery
<b>Optional HP Extended Life Battery</b>	8-cell (52 WHr) high capacity Lithium-Ion battery
<b>Optional HP Ultra-Capacity Battery</b>	12-cell (95 WHr) high capacity Lithium-Ion battery

### Standard Features

Battery Life	Primary battery	Up to TBD hours
	Primary battery and optional HP Extended Life Battery	Up to TBD hours
	Primary battery and optional HP Ultra-Capacity Battery	Up to TBD hours

**NOTE:** The listed battery life measurements were taken on models running Microsoft Windows XP Professional. Battery life will vary depending on the product configuration, product model, applications loaded on the product, power management settings of the product, and the product features used by the customer. As with all batteries, the maximum capacity of this battery will decrease with time and usage.

System Standby Time	Up to TBD weeks
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Power Conservation	NVIDIA PowerMizer 7.0 technology (models with NVIDIA graphics) ATI PowerPlay technology (models with ATI graphics) Hibernation Standby ACPI compliance
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Docking and Stands	HP Advanced Docking Station HP Docking Station HP Standard Monitor Stand HP Adjustable Notebook Stand HP External MultiBay II
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HP's shared docking solutions provide simple and convenient port replication and cable management. Features include Gigabit NIC pass through, modem pass through, legacy parallel and serial ports, Dual Link DVI-D, USB 2.0 ports, integrated security mechanism\*, integrated MultiBay II and ExpressCard\*\* slots. These docking solutions are compatible across multiple Business Notebook platforms enabling a lower total cost of ownership.

\* HP/Kensington Cable Lock required (purchased separately)

\*\* HP Advanced Docking Station only

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Service and Support	HP Services offers limited 3-year warranty; 1-year limited warranty on primary battery. Warranty upgrades are also available. HP Care Pack Services extend service contracts beyond the standard warranties. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at <a href="http://www.hp.com/go/lookuptool">http://www.hp.com/go/lookuptool</a> . Additional HP Care Pack Services information by product is available at <a href="http://www.hp.com/hps/carepack">http://www.hp.com/hps/carepack</a> .
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**NOTE:** Certain restrictions and exclusions apply. Consult the HP Customer Support Center for details. <http://h20000.www2.hp.com/bizsupport/TechSupport/ProductRoot.jsp>.

### Options

<b>Memory</b>	HP 1 GB (DDR2 800 MHz) SODIMM	KT292AA
	HP 2 GB (DDR2 800 MHz) SODIMM	KT293AA
	HP 4 GB (DDR2 800 MHz) SODIMM	KT294AA
<b>Storage</b>	HP Notebooks USB Diskette Drive	DC361B
	HP 250GB Pocket Media Drive	FE477AA
	HP Primary SATA 250 GB 5400 rpm Hard Drive	AK072AA
	HP Upgrade Bay SATA 250 GB 5400 rpm Hard Drive	AK868AA
	HP Upgrade Bay SATA DVD+/-RW SuperMulti DL LightScribe Drive	AK869AA
<b>MultiBay II Storage</b> (9.5-mm) <b>NOTE:</b> Requires HP Advanced Docking Station or HP External MultiBay II	HP MultiBay II DVD-ROM Drive	PA849A
	HP MultiBay II DVD+/-RW SuperMulti DL Drive	PA851A
<b>Expansion Solutions</b>	HP Docking Station	EN488AA#ABA
	HP Advanced Docking Station	EN489AA#ABA
	HP 2008 120W Docking Station	KP080AA#ABA
	HP 2008 150W Docking Station	KQ751AA#ABA
	HP 2008 150W Advanced Docking Station	KP081AA#ABA
	HP 2008 180W Advanced Docking Station	KQ752AA#ABA
	HP External MultiBay II	PA509A#ABA
	HP Standard Monitor Stand	PA507A
	HP Adjustable Notebook Stand	PA508A
	HP Mobile Port Replicator	AK155AA
HP Dual-Monitor Stand	AK084AA	
<b>Communications</b>	Intel WiFi Link 5300	KM591AA#ABA

### Options

<b>Power</b>	HP 1-Bay Battery Charging Station	RW635AA#ABA
	HP 5-Bay Battery Charging Station	RW636AA#ABA
	HP Battery Adapter Kit	KV830AA
	HP 150W Smart AC Adapter	AL192AA#ABA
	HP 100W Smart AC Adapter	AK875AA#ABA
	HP 90W Smart Combo Adapter	AJ652AA#ABA
	90W Smart Auto/Truck Adapter	ED493AA
	HP Primary 8-cell Battery pack	KU533AA
	HP Extended Life Battery	AJ359AA
HP 12-cell Ultra-Capacity Battery	EJ092AA	

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<b>Carrying Cases</b>	HP Universal Nylon Case	RR315AA
	HP Executive Leather Case	RR316AA
	HP Deluxe Nylon Backpack	RR317AA
	HP Deluxe Roller Case	GD405AA

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<b>Security</b>	HP ExpressCard Smart Card Reader with Java Card	AJ451AA
	HP ProtectTools Java Card – 10 units	EL348AA
	HP/Kensington MicroSaver Security Lock	PC766A
	HP Privacy Filter	AJ358AA

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<b>Input/Output Devices</b>	HP PS/2 Keyboard & Mouse Bundle*	RC464AA#ABA
	HP USB Keyboard & Mouse Bundle	RC465AA#ABA
	HP USB/PS2 Optical 2-Button Scroll Mouse	DC369A
	HP USB Optical Travel Mouse	RH304AA

\* Requires HP Docking Station, HP Advanced Docking Station, HP 2008 Docking Station or HP 2008 Advanced Docking Station. Availability may vary by region.

### Memory

800-MHz DDR2 SDRAM

Two DIMM slots supporting dual channel memory

DIMM sizes supported: 1024 MB, 2048 MB, and 4096 MB

#### Standard Memory

- 1024 MB (1024 MB x 1)
- 2048 MB (2048 MB x 1 or 1024 MB x 2)
- 4096 MB (4096 MB x 1 or 2048 MB x 2)
- 8192 MB (4096 MB x 2)

#### Optional Memory Upgrades

Support for up to 8192 MB of memory with the installation of optional DDR2 SDRAM memory kits. Both memory slots are user accessible. Please refer to the Hardware and Software Guide for installation procedures. Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

Up to	Slot 1	Slot 2
1024 MB	1024 MB	Empty
2048 MB	1024 MB	1024 MB
3072 MB	2048 MB	1024 MB
4096 MB	2048 MB	2048 MB
8192 MB	4096 MB	4096 MB

**NOTE:** This chart does not represent all possible memory configurations. Due to the non-industry standard nature of some third-party memory modules, we strongly recommend using only HP branded memory modules to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed. Availability of 4 GB or more of memory requires Windows Vista Business 64-bit or Linux. With Windows 32-bit operating systems, memory above 3 GB may not all be available due to system resource requirements.

#### Memory Upgrades

HP 1 GB (DDR2 800 MHz) SODIMM

KT292AA

HP 2 GB (DDR2 800 MHz) SODIMM

KT293AA

HP 4 GB (DDR2 800 MHz) SODIMM

KT294AA

## Storage

### Upgrade Bay Drive Support

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	Quantity Supported	Drive Bay
Blu-ray R/RE DVD+/-RW SuperMulti DL Drive	One	Upgrade Bay
DVD+/-RW SuperMulti DL LightScribe Drive	One	Upgrade Bay
DVD-ROM Drive	One	Upgrade Bay
250 GB 5400 rpm SMART SATA II Hard Drive	One	Upgrade Bay
320 GB 7200 rpm SMART SATA II Hard Drive	One	Upgrade Bay
250 GB 7200 rpm SMART SATA II Hard Drive	One	Upgrade Bay

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### Internal Storage Device

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	Quantity Supported	Drive Bay
<b>Hard Drives</b>		
250 GB 5400 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
160 GB 5400 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
320 GB 7200 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
250 GB 7200 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay
160 GB 7200 rpm SMART SATA II Hard Drive	One	Dedicated hard drive bay



### Technical Specifications

<b>System Unit</b>	<b>Dimensions (HxWxD)</b>	1.3 in (at front) x 15.5 in x 11.1 in 32 mm (at front) x 393 mm x 282 mm
	<b>Weight</b>	Starting from 7.6 lb (3.40 kg)
	<b>NOTE:</b> Height varies depending upon where on the notebook the measurement is made. Starting weight includes 8-cell battery, hard drive, 1 GB memory, 802.11 wireless communications module, Bluetooth, and optical drive. Weight varies by configuration and components.	
<b>Stand-Alone Power Requirements (AC Power)</b>	Nominal Operating Voltage	18.5 V
	Average Operating Power	TBD W
	Max Operating Power	< 150 W
<b>Temperature</b>	Operating	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)
	Non-operating	-4° to 140° F (-20° to 60° C)
<b>Relative Humidity</b>	Operating	10% to 90%, non-condensing
	Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
<b>Shock</b>	Operating	125 G, 2 ms, half-sine
	Non-operating	200 G, 2 ms, half-sine
<b>Random Vibration</b>	Operating	0.75 grms
	Non-operating	1.50 grms
<b>Altitude (unpressurized)</b>	Operating	-50 to 10,000 ft (-15.24 to 3,048 m)
	Non-operating	-50 to 40,000 ft (-15.24 to 12,192 m)
<b>Industry Standard Certifications</b>	UL	Yes
	CSA	Yes
	FCC Compliance	Yes
	ENERGY STAR	TBD
	EPEAT	TBD
	ICES	Yes
	GS	Yes
	Australia / NZ A-Tick Compliance	Yes
	CCC	Yes
	Japan VCCI Compliance	Yes
	MIC	Yes
	BSMI	Yes
	CE Marking Compliance	Yes
	BNCI or BELLIS	Yes
	CIT	Yes
	GOST	Yes
Saudi Arabian Compliance (ICCP)	Yes	
SABS	Yes	

### Technical Specifications

UKRSERTCOMPUTER Yes

For accessibility information on HP products, please visit <http://www.hp.com/accessibility>.

HP 120W Smart AC Adapter*	Weight	1.52 lb (0.69 kg) (adapter) 0.29 lb (0.13 kg) (power cord)	
	Dimensions	6.65 x 2.56 x 1.50 in (16.9 x 6.5 x 3.8 cm)	
	Input	Operating Input Voltage	100 to 240 VAC
		Operating Input Current	PFC Version: 2.20 A at 90 VAC 1.10 A at 180 VAC
			Non-PFC Version: 2.5 A at 110 VAC 1.25 A at 180 VAC
	Output	Operating Frequency Range	47 to 63 Hz AC
		Efficiency	83% minimum at 115 VAC
		Output power	120 W
		DC Output Voltage	18.5 V
	Environmental Design	Operating Temperature	32° to 104° F (0° to 35° C)
		Non-operating (storage) Temperature	-4° to 149° F (-20° to 65° C)
		Altitude	0 to 10,000 ft (0 to 3,048 m)
		Humidity	20% to 80%
	EMI and Safety Certifications	Storage Humidity	10% to 90%
CE Mark: full compliance with LVD and EMC directives		Worldwide safety standards: IEC60950, EN60950, UL60950, Class2, SELV	
		Agency approvals: C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE, S-Mark, Australian Electric Permit, PSB, eK, BSMI, BNCI, KONCAR, GS, GOST, SASO, SABS, UKRSERTCOMPUTER	
<b>NOTE:</b> Approvals in italics apply to PFC version only.			

\*Not available with NVIDIA graphics, Extreme Edition processors, or DreamColor panels

### Technical Specifications

HP 150W Smart AC Adapter	Dimensions	6.65 x 2.76 x 1.57 in (16.9 x 7.0 x 4.0 cm)	
	Weight	1.54 lb (700 g)	
	Input	Input	100 to 240 VAC
		Input Efficiency	83% min at 115 VAC
		Input frequency range	47 to 63 Hz
	Output	Input AC current	2.2 A at 90 VAC, 1.1 A at 180 VAC
		Output power	150W
		DC output	19.0V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<15A, Over voltage protection- 29V max automatic shutdown
	Connector	3 pin/grounded, mates with interchangeable cords	
	Environmental Design	Operating temperature	32° to 104° F (0° to 35° C)
		Non-operating (storage) temperature	-4° to 149° F (-20° to 65° C)
Altitude		0 to 10,000 ft (0 to 3,048 m)	
Humidity		20% to 80%	
EMI and Safety Certifications	Storage Humidity	10% to 90%	
	CE Mark- full compliance with LVD and EMC directives; Worldwide safety standards- IEC950, EN60950, UL1950, Class 1, SELV; Agency approvals- C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCIB, NOM-1 NYCE; MTBF- over 200,000 hours at 25°C ambient condition.		

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Optional HP Ultra-Capacity Battery	Dimensions (H x W x L)	1.3 x 6.0 x 10.6 in (3.33 x 15.25 x 26.88 cm)	
	Weight	1.77 lb (0.803 kg)	
	Cells/Type	12-cell Lithium-Ion	
	Energy	Watt-hour Capacity	95 WHr
		Temperature	Operating (Charging) 32° to 113° F (0° to 45° C)
	Battery Re-Charge Time	Operating (Discharging)	14° to 140° F (-10° to 60° C)
		Non-operating	-4° to 140° F (-20° to 60° C)
		Smart Adapter	3 to 4 hours
	Fuel Gauge	System ON	4 to 5 hours (depending on system power consumption)
		When pressed, LEDs light indicating level of charge remaining on battery	

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### Technical Specifications

<b>Optional HP Extended Life Battery</b>	<b>Dimensions (H x W x L)</b>	1.0 x 3.9 x 8.7 in (2.5 x 10.0 x 22.0 cm)	
	<b>Weight</b>	1.00 lb (0.455 kg)	
	<b>Cells/Type</b>	8-cell Lithium-Ion	
	<b>Energy</b>	Watt-hour Capacity	52 WHr
	<b>Temperature</b>	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 140° F (-10° to 60° C)
		Non-operating	-4° to 140° F (-20° to 60° C)
	<b>Battery Re-Charge Time</b>	System in OFF mode or Standby	3 hours
		System ON	3 to 5 hours (depending on system power consumption)
		HP Fast Charge Technology	Charges the battery up to 90% within 90 minutes when system is OFF
<b>Fuel Gauge</b>	When pressed, LEDs light indicating level of charge remaining on battery		

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<b>8-Cell (73 WHr) Lithium-Ion battery</b>	<b>Dimensions (H x W x L)</b>	0.8 x 1.9 x 10.6 in (2.0 x 4.8 x 27.0 cm)	
	<b>Weight</b>	0.980 lb (0.445 kg)	
	<b>Cells/Type</b>	8-cell Lithium-Ion	
	<b>Energy</b>	Watt-hour Capacity	73 WHr
	<b>Temperature</b>	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 140° F (-10° to 60° C)
		Non-operating	-4° to 140° F (-20° to 60° C)
	<b>Battery Re-Charge Time</b>	System in OFF mode or Standby	2.5 hours
System ON		3 to 5 hours (depending on system power consumption)	
HP Fast Charge Technology		Charges the battery up to 90% within 1.5 hours when system is OFF	

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### Displays

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### Technical Specifications

17.0-inch WSXGA+ wide-viewing angle, anti-glare	Active Area (W x H)	14.5 x 9.0 in (36.7 x 22.9 cm)		
	Diagonal Size	17.0 in (43.2 cm)		
	Surface Treatment	Anti-glare		
	Contrast Ratio	300:1 typical		
	Refresh Rate	60 Hz		
	Brightness	200 nit typical		
	Pixel Resolution	Pitch	0.219 mm	
		Format	1680 x 1050	
		Configuration	RGB Stripe	
	Backlight	CCFL		
PPI	116			
Viewing Angle	±60° Horizontal, ±50° Vertical (minimum) or ±70° Horizontal, ±60° Vertical (typical)			

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17.0-inch WUXGA wide-viewing angle, anti-glare	Active Area (W x H)	14.5 x 9.0 in (36.7 x 22.9 cm)		
	Diagonal Size	17.0 in (43.2 cm)		
	Surface Treatment	Anti-glare		
	Contrast Ratio	300:1 typical		
	Refresh Rate	60 Hz		
	Brightness	200 nit typical		
	Pixel Resolution	Pitch	0.191 mm	
		Format	1920 x 1200	
		Configuration	RGB Stripe	
	Backlight	CCFL		
PPI	133			
Viewing Angle	±60° Horizontal, ±50° Vertical (minimum) or ±70° Horizontal, ±60° Vertical (typical)			

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### Technical Specifications

17.0-inch WUXGA DreamColor wide-viewing angle, anti-glare*	Active Area (W x H)	14.5 x 9.0 in (36.7 x 22.9 cm)
	Diagonal Size	17.0 in (43.2 cm)
	Surface Treatment	Anti-glare
	Contrast Ratio	800:1 typical
	Refresh Rate	60 Hz
	Brightness	300 nit typical
	Pixel Resolution	Pitch 0.191 mm Format 1920 x 1200 Configuration RGB Stripe
	Backlight	LED
	PPI	133
	Viewing Angle	±75° Horizontal, ±55° Vertical (minimum) or ±80° Horizontal, ±60° Vertical (typical)

\* Only on models with NVIDIA graphics

### Internal Storage

320 GB 7200 rpm SATA Hard Drive	Drive Weight	
	Capacity	320 GB
	Height	
	Width	
	Interface	ATA-7 / SATA 2.5
	Transfer Rate	Synchronous (maximum)
	Seek Time (typical reads, including settling)	Single Track Average Maximum
	Rotational Speed	7200 rpm
	Logical Blocks	
	Operating Temperature	41° to 140° F (5° to 60° C) [case temp]
	Features	ATA Security

## Technical Specifications

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250 GB 7200 rpm SATA Hard Drive	Drive Weight	
	Capacity	250 GB
	Height	
	Width	
	Interface	ATA-7 / SATA 2.5
	Transfer Rate	<b>Synchronous</b> (maximum)
	Seek Time	<b>Single Track</b>
	(typical reads, including settling)	<b>Average</b>
		<b>Maximum</b>
	Rotational Speed	7200 rpm
	Logical Blocks	
Operating Temperature	41° to 140° F (5° to 60° C) [case temp]	
Features	ATA Security	

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160 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lb (115 g)
	Capacity	160 GB
	Height	0.37 in (9.5 mm)
	Width	2.75 in (70 mm)
	Interface	ATA-7 / SATA 2.5
	Transfer Rate	<b>Synchronous</b> (maximum) 100 MB/s (Drive Capability)
	Seek Time	<b>Single Track</b> 1 ms
	(typical reads, including settling)	<b>Average</b> 10 ms
		<b>Maximum</b> 18 ms
	Rotational Speed	7200 rpm
	Logical Blocks	312,581,808
Operating Temperature	41° to 140° F (5° to 60° C) [case temp]	
Features	ATA Security	

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### Technical Specifications

250 GB 5400 rpm SATA Hard Drive	Drive Weight	0.22 lb (101 g)	
	Capacity	250 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-7 / SATA 2.5	
	Transfer Rate	<b>Synchronous</b> (maximum) 100 MB/s (Drive Capability)	
	Seek Time (typical reads, including settling)	<b>Single Track</b>	3 ms
		<b>Average</b>	13 ms
		<b>Maximum</b>	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	488,397,168	
	Operating Temperature	41° to 140° F (5° to 60° C) [case temp]	
Features	ATA Security		

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160 GB 5400 rpm SATA Hard Drive	Drive Weight	0.22 lb (101 g)	
	Capacity	160 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-7 / SATA 2.5	
	Transfer Rate	<b>Synchronous</b> (maximum) 100 MB/s (Drive Capability)	
	Seek Time (typical reads, including settling)	<b>Single Track</b>	3 ms
		<b>Average</b>	13 ms
		<b>Maximum</b>	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	312,581,808	
	Operating Temperature	41° to 140° F (5° to 60° C) [case temp]	
Features	ATA Security		

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### Optical Drives

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### Technical Specifications

DVD-ROM Drive	Access Times	Random	<116 ms CD (typical) <125 ms DVD (typical)
	Max Data Transfer Rate	24X CD-ROM 8X-DVD	Up to 3,600 KB/s Up to 10,800 KB/s
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
	Supported Media (read)	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	
	Supported Media (write)	None	
	Max Media Capacity (read)	4.7 GB	
	Transport	Tray Loading	

DVD+/-RW SuperMulti DL LightScribe Drive	Access Times	Random	<175 ms CD (typical) <230 ms DVD (typical)
	Max Data Transfer Rate	24X CD-ROM 8X DVD 24X CD-R 16X CD-RW 8X DVD+R 4X DVD+RW 8X DVD-R 4X DVD-RW 2.4X DVD+R(9) 5X DVD-RAM	Up to 3,600 KB/s Up to 10,800 KB/s Up to 3,600 KB/s Up to 2,400 KB/s Up to 10,800 KB/s Up to 5,400 KB/s Up to 10,800 KB/s Up to 5,400 KB/s Up to 2,700 KB/s Up to 6,750 KB/s
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
	Supported Media (read)	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	
	Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM, LightScribe	
	Max Media Capacity (read)	8.5 GB	
	Max Media Capacity (write)	8.5 GB	
	Transport	Tray Loading	

### Technical Specifications

<b>Blu-ray R/RE DVD+/-RW SuperMulti DL Drive</b>	<b>Access Times</b>	Random	<140 ms CD-ROM (typical) <160 ms DVD-ROM (typical) <300 ms BD-ROM (typical)
	<b>Max Data Transfer Rate</b>	24X CD-ROM 8X DVD-ROM 8X CD-R 8X CD-RW 8X DVD+R 4X DVD+RW 8X DVD-R 4X DVD-RW 2.4X DVD+R(9) 5X DVD-RAM 1X BD-ROM 1X BD-R 1X BD-RE	Up to 3,600 KB/s Up to 10,800 KB/s Up to 1,200 KB/s Up to 1,200 KB/s Up to 10,800 KB/s Up to 5,400 KB/s Up to 10,800 KB/s Up to 5,400 KB/s Up to 2,700 KB/s Up to 6,750 KB/s Up to 4,500 KB/s Up to 4,500 KB/s Up to 4,500 KB/s
	<b>Transfer Mode</b>	UDMA Mode 5	
	<b>Interface</b>	Gen 1 SATA	
	<b>Supported Media (read)</b>	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM, BD-ROM, BD-R, BD-RE	
	<b>Supported Media (write)</b>	CD-R, CD-RW, DVD+R, DVD+R(9), DVD+RW, DVD-R, DVD-R(9), DVD-RW, DVD-RAM, BD-R, BD-RE	
	<b>Max Media Capacity (read)</b>	50.0 GB	
	<b>Max Media Capacity (write)</b>	50.0 GB	
	<b>Transport</b>	Tray Loading	

### Security

### Technical Specifications

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HP Fingerprint Sensor	Mobile Voltage Operation	3.0V–3.6V Single Supply
	Operating Temperature	32° – 158°F (0° – 70°C)
	Current Consumption @ 3.3V	Less than 70 mA peak imaging and scrolling Less than 25 mA hardware finger detection Advanced Power Management
	High-Rate Image Capture	Up to 240 image frames /sec
	ESD Resistance	IEC 61000-4-2 Level 4 (±15KV)
	Detection Matrix	192 x 16 Pixels 9.7 mm x 0.81 mm 500 ppi High-Resolution Images

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### Audio

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Hardware	Implementation	ADI1984A High Definition CODEC
	Touch-Sensitive Volume Controls	Volume up, volume down, and mute
	Full Duplex	Yes
	Sound Blaster Pro compatible	Yes
	Microphone In	Stereo
	Headphone/Line Out	Stereo
Integrated Microphone	Yes	

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Audio Output Quality	Frequency Response	20 Hz – 20 kHz
	Signal to Noise Ratio	>85 dB
	Total Harmonic Distortion	0.01%
	Noise Floor	-110 dB
	Play/Record Sampling Rate(s)	8 kHz – 48kHz
	DAC	16, 20 or 24-bit
	ADC	16 or 20-bit

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Integrated Stereo Speakers	Power Rating	2 Watts
	Impedance	4 Ohms

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### Communications

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### Technical Specifications

<p><b>Integrated Intel Gigabit Network Connection</b> (10/100/1000 NIC)</p> <p>82567LM</p>	<p><b>Ethernet Features</b></p>	<p>10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14)</p> <p>100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30)</p> <p>1000 Mbit/s operation (1000BASE-T; IEEE 802.3z and 802.3ab; IEEE 802.3 clauses 34-42)</p> <p>Auto-Negotiation (Automatic Speed Selection)</p> <p>Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s</p> <p>IEEE 802.1p QoS (Quality of Service) Support</p> <p>IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable)</p>
	<p><b>Power Management</b></p>	<p>ACPI compliant -- multiple power modes</p> <p>Situation-sensitive features reduce power consumption</p>
	<p><b>Performance Features</b></p>	<p>TCP/IP/UDP Checksum Offload (configurable)</p>
	<p><b>Manageability</b></p>	<p>Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only)</p> <p>PXE 2.1 Remote Boot</p> <p>Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30))</p> <p>Comprehensive diagnostic and configuration software suite</p> <p>Intel Advanced Management Technology (iAMT)</p>
	<p><b>Interface</b></p>	<p>PCI Express x1</p>
	<p><b>NIC Device Driver Name</b></p>	<p>Intel 82567 Gigabit Network Connection</p>

<p><b>V.92 56K Data/Fax Modem</b></p>	<p><b>Form Factor</b></p>	<p>MDC 1.5 Daughtercard</p>
	<p><b>Power Management Support</b></p>	<p>APM Revision 1.2, ACPI</p>
	<p><b>Approvals/Certifications</b></p>	<p>UL, CSA, NEMKO, CCIB, Industry Canada, FCC Part 68, CTR21, FCC Part 15 Class B, Canadian ICES-003 Class B, C.I.S.P.R.22, Australian ACA, CE Mark, Other Countries</p>
	<p><b>Data Mode Capabilities</b></p>	<p>V.92 data</p> <p>V.8bis</p> <p>V.80</p> <p>V44, V.42bis, MNP5 (Compression)</p> <p>V.42 (LAPM, MNP2-4) (Error Correction)</p> <p><b>Optional symbol rates:</b> 2800, 3429 Asymmetric Symbol rates</p> <p><b>Synchronous primary channel data signaling rates:</b> 3600, 31200 Automatic rate re-negotiation</p> <p>V.34</p> <p>V.32bis</p> <p>V.32</p> <p>V.23</p> <p>V.22bis</p> <p>V.22</p> <p>V.21</p>

### Technical Specifications

	Bell 212A Bell 103J
<b>Fax Mode Capabilities</b>	TIA/EIA-578-B (Class 1) T.30, T.4 (Group 3) V.17 V.29 V.27ter V.21 Channel 2
<b>Command Set</b>	V.250 (Partial) TIA-602 Identification: +GMI, +GMM, +GMR Port control: +IPR, +ICF, +IFC, +ILRR Modulation: +MS, +MR, +MA Error control: +ES, +ER, +EB, +ESR, +ETBM Data compression: +DS, +DR V.251

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<b>Intel WiFi Link 5300</b>	<b>Wireless LAN Standards</b>	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n (draft 2.0)
	<b>Interoperability</b>	Wi-Fi certified (802.11abg only) Cisco Compatible Extensions Program compliant (802.11abg only) with Microsoft Windows Vista and XP (details at: <a href="http://www.hp.com/go/notebooks/WLAN">http://www.hp.com/go/notebooks/WLAN</a> ) Tested with wireless access points from several major manufacturers (details at: <a href="http://www.hp.com/go/notebooks/WLAN/draft-n">http://www.hp.com/go/notebooks/WLAN/draft-n</a> )
	<b>Frequency Band</b>	2.4 GHz and 5 GHz
	<b>Data Rates</b>	802.11b: 1, 2, 5.5, 11 Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n (draft): 66 possible data rates, ranging from 6 Mbps to 450 Mbps, depending on the combination of Bandwidth, Modulation Coding Scheme, and Guard Interval used, as defined in IEEE 802.11n (draft) specification
	<b>Modulation</b>	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM
	<b>Security<sup>1</sup></b>	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES (support for key sizes of 128, 192, and 256 bits), 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST.  Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only.
	<b>Sub-channels</b>	Multinational support with frequency bands and channels compliant to local regulations.
	<b>Media Access Protocol</b>	CSMA/CA (Collision Avoidance) with ACK
	<b>Network Architecture Models</b>	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
	<b>Roaming</b>	IEEE 802.11 compliant roaming between access points

### Technical Specifications

<b>Output Power</b> (for CCK) <sup>2</sup>	15 dBm
<b>Output Power</b> (for OFDM; power varies by data rate) <sup>2</sup>	15 dBm
<b>Power Consumption</b>	Transmit: 2.3 Watts (average, with three spatial streams) Receive: 1.9 Watts (average with three receive chains) Idle mode <sup>3</sup> : 30 mW (average) Radio off: 20 mW (max)
<b>Power Management</b>	ACPI compliant power management 802.11 compliant power saving mode
<b>Receiver Sensitivity</b> <sup>4</sup>	300 Mbps: -68 dBm, 54 Mbps: -74 dBm, 6 Mbps: -90 dBm
<b>Antenna Connections</b>	3 U.FL type connectors, 50 ohm nominal impedance
<b>Range</b>	802.11 a – Typical (@6 Mbps)      600 feet – Outdoor Open Area 150 feet – Indoor, Office environment 802.11 b – Typical (@1 Mbps)      1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment 802.11 g – Typical (@1 Mbps)      1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment
<b>Form Factor</b>	PCI-Express MiniCard
<b>Weight</b>	0.013 lb (6 g)
<b>Dimensions</b>	0.19 x 1.2 x 2.0 in (4.75 x 29.85 x 50.8 mm)
<b>Operating Voltage</b>	3.3V +/- 9%, 1.5V +/- 5%
<b>Temperature</b>	Operating      32° to 176° F (0° to 80° C) Non-operating      -40° to 176° F (-40° to 80° C)
<b>Humidity</b>	Operating      10% to 90% (non-condensing) Non-operating      5% to 90% (non-condensing)
<b>Altitude</b>	Operating      0 to 10,000 ft (3,048 m) Non-operating      0 to 50,000 ft (15,240 m)
<b>Configuration Utility</b> <sup>5</sup>	Microsoft Windows XP Choice of Configuration Utility: <ul style="list-style-type: none"><li>● Microsoft Windows XP Wireless Network Connection Manager</li><li>● Intel PROSet for Microsoft Windows XP (required for Cisco Compatible Extensions support)</li></ul> Microsoft Windows Vista <ul style="list-style-type: none"><li>● Microsoft Windows Vista Wireless Network Connection Manager.</li><li>● Intel IHV extensions for Windows Vista available to support Cisco Compatible Extensions.</li></ul>
<b>LED Activity</b>	LED Off – Radio OFF; Solid LED On – Radio ON

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. In Power Save Polling mode and on battery power.
4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
5. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN

### Technical Specifications

supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.

<b>HP Integrated Module with Bluetooth Wireless Technology</b>	<b>Bluetooth Specification</b>	2.0 Compliant
	<b>Dimensions</b>	1.02 x 0.55 x 0.22 in (26 x 14 x 5.7 mm)
	<b>Frequency Band</b>	2402 to 2480 MHz
	<b>Number of Available Channels</b>	79 (1 MHz) available channels
	<b>Data Rates and Throughput</b>	3 Mbps data rate; throughput up to 2.17 Mbps Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric
	<b>Transmit Power</b>	-6 dBm to 4 dBm (Bluetooth Class II)
	<b>Receiver Sensitivity</b>	Better than -80 dBm at 0.1 % raw bit error rate
	<b>Power Consumption</b>	Peak (Tx) 264 mW Peak (Rx) 231 mW Sleep <1 mW
	<b>Antenna</b>	Internally integrated within module
	<b>Range</b>	Up 33 ft (10 m)
	<b>Electrical Interface</b>	USB 2.0 compliant
	<b>OS Support</b>	Microsoft Windows Plug and Play compliant Microsoft Windows XP Professional and Home Microsoft Windows 2000
	<b>Bluetooth Software Supported</b>	Broadcom Bluetooth for Windows Microsoft Windows XP Bluetooth Software
	<b>Link Topology</b>	Point to Point, Multipoint Pico Nets up to 7 slaves
	<b>Security</b>	Full support of Bluetooth Security Provisions
	<b>Power Management</b>	Microsoft Windows ACPI, and USB Bus Support Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff
	<b>Certifications</b>	All necessary regulatory approvals for supported countries, including: FCC (47 CFR) Part 15C, Section 15.247 & 15.249 ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark
	<b>Temperature</b>	Operating -4° to 158° F (-20° to 70° C) Non-operating -40° to 176° F (-40° to 80° C)
	<b>Humidity</b>	Operating 10% to 90% Non-operating 5% to 95%
	<b>Altitude</b>	Operating 15,000 ft (4,572 m) Non-operating 40,000 ft (12,192 m)
<b>Bluetooth Profiles</b>	(with Bluetooth for Windows 4.0 software)	

### Technical Specifications

<b>Supported</b>	Serial Port Profile (SPP)* Dial-Up Networking (DUN)* Generic Object Exchange Profile (GOEP) Object Push Profile (OPP)* File Transfer Profile (FTP) Synchronization Profile (SYNC) Hard Copy Cable Replacement (HCRP)* Personal Area Networking Profile (PAN)* Human Interface Device Profile (HID)* FAX Profile (FAX) Basic Imaging Profile (BIP) Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP)
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\* indicates the profile is also supported by Microsoft Windows XP SP2

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<b>Eco Data</b>	<b>Eco-Label Certifications</b>	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:
	<b>System Configuration</b>	The configuration used for the Energy Consumption and Declared Noise Emissions data is based on a "Typically Configured Notebook"

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