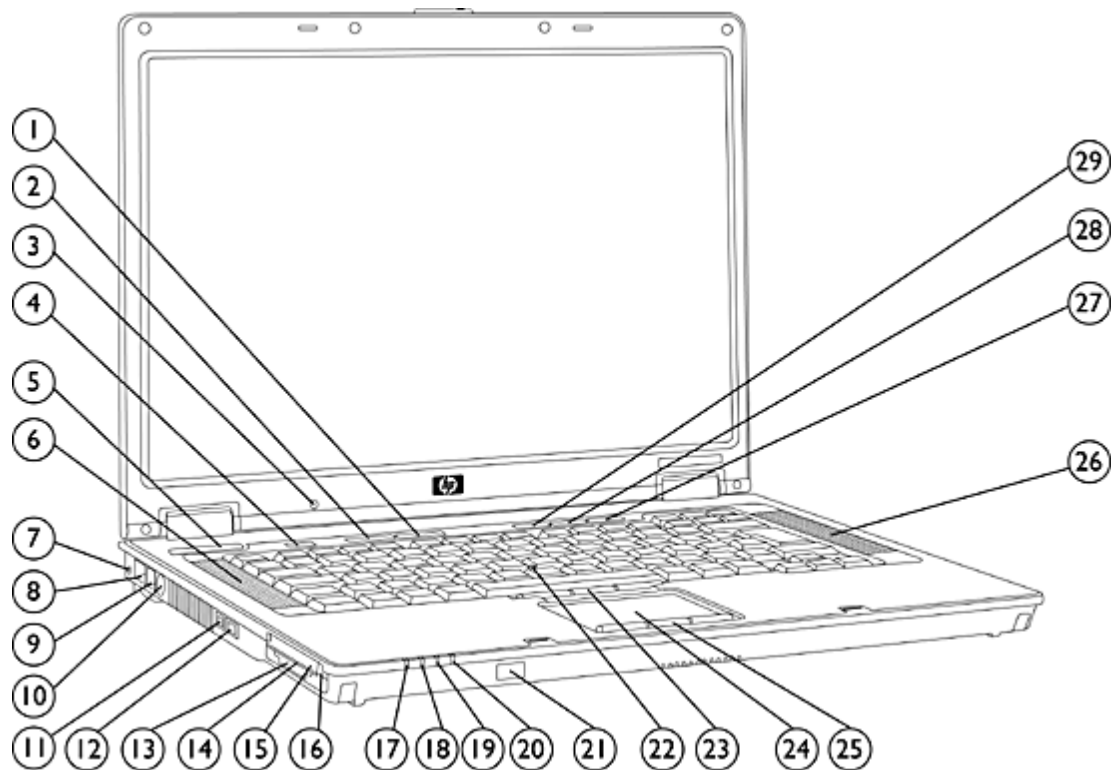
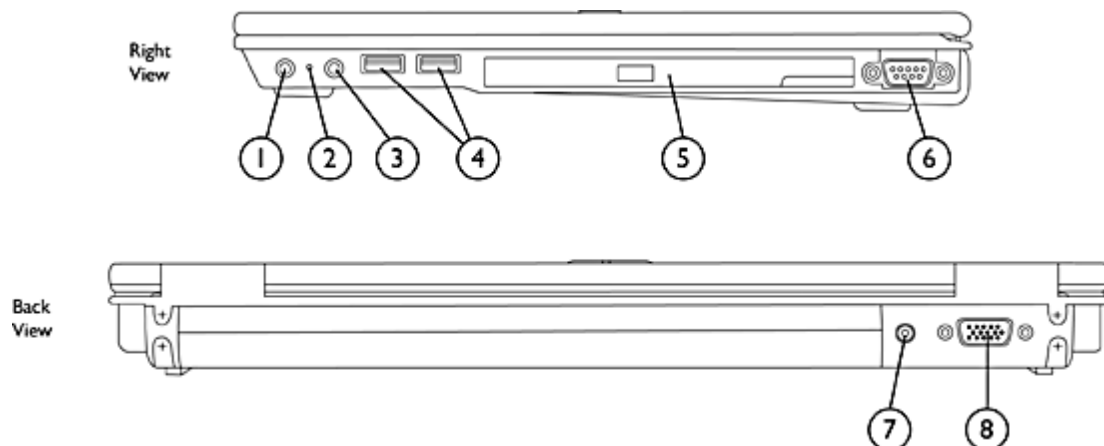


Overview



- | | |
|------------------------------------|---------------------------------|
| 1. Presentation Mode Button | 16. PC Card Eject Button |
| 2. Wireless On/Off Button with LED | 17. Wireless On/Off LED |
| 3. Ambient Light Sensor | 18. Power/Standby LED |
| 4. HP Info Center Button | 19. Battery Charging LED |
| 5. Power Button with LED | 20. Hard Drive Activity LED |
| 6. Left Speaker | 21. Fast Infrared Port |
| 7. Kensington Lock Slot | 22. Pointstick |
| 8. RJ-45 Port (NIC) | 23. Pointstick Buttons |
| 9. RJ-11 Port (Modem) | 24. Touchpad with Scroll Zone |
| 10. S-Video TV Out | 25. Touchpad Buttons |
| 11. IEEE 1394 Port | 26. Right Speaker |
| 12. USB 2.0 Port | 27. Volume Up Button |
| 13. Integrated Secure Digital Slot | 28. Volume Down Button |
| 14. Integrated Smart Card Reader | 29. Volume Mute Button with LED |
| 15. PC Card Slot | |

Overview



- | | |
|--------------------|--|
| 1. Headphone Jack | 5. MultiBay II Drive Bay with Easy Release |
| 2. Microphone | 6. Serial Port |
| 3. Microphone Jack | 7. Power Connector |
| 4. 2 USB 2.0 Ports | 8. VGA/External Monitor Port |

At A Glance

- Microsoft Windows XP Professional or FreeDos
- Sleek industrial design weighing 5.8 lb/2.6 kg and 1.1-inch/28 mm thin (at front)
- Intel® Pentium® M processors 730 to 770*
- Mobile Intel 915PM Express Chipset
- ATI MOBILITY FireGL V5000 graphics controller with 128 MB of discrete video memory
- Optional integrated 802.11 a/b/g or 802.11 b/g wireless LAN module
- Support for optional Intel Centrino™ mobile technology
- Optional integrated Bluetooth®
- 256-MB DDR2 SDRAM, upgradeable to 2048-MB maximum
- Up to 80-GB 5400 rpm, user-removable hard drive
- 15.4-inch wide screen display
- IEEE 1394 Port
- Integrated Secure Digital (SD) slot
- Security features include integrated Smart Card Reader and optional Trusted Platform Module (TPM) Embedded Security Chip
- NetXtreme Gigabit PCI Express Ethernet Controller
- Dual pointing devices
- Support for ultra-slim MultiBay II devices
- Protected by 3/3/3 (in the U.S. and Canada) standard warranty – certain restrictions and exclusions apply.

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

Overview

What's Special

- Increased viewing area with 15.4-inch wide display
- Latest PCI Express technology and DDR2 400-MHz & 533-MHz memory support
- ISV certifications for popular MCAD, DCC, and GIS applications
- Enhanced security features:
 - HP ProtectTools
 - Integrated Smart Card Reader
 - Optional Embedded Security features
- Ease of use features:
 - Ambient light sensor
 - HP Fast Charge Technology
 - HP Wireless Assistant
 - HP power down NIC technology
 - HP MultiBay II Easy Release
 - Up to 4 hours of battery life with standard 8-cell high capacity Lithium-Ion battery
 - HP Mobile Print Driver for on-the-go printing
- Integrated reliability features:
 - HP Mobile Data Protection System
 - HP Panel Protection System
 - Scratch-resistant keyboard deck using In-mold Lamination
 - Magnesium-alloy display enclosure
 - HP spill-resistant keyboard with Mylar film
- Support for new HP docking solutions and HP Travel Battery

Standard Features

Processors	Intel Pentium M processor 770* (2.13-GHz, 533-MHz FSB, 2-MB L2 cache) Intel Pentium M processor 760* (2.00-GHz, 533-MHz FSB, 2-MB L2 cache) Intel Pentium M processor 750* (1.86-GHz, 533-MHz FSB, 2-MB L2 cache) Intel Pentium M processor 740* (1.73-GHz, 533-MHz FSB, 2-MB L2 cache) Intel Pentium M processor 730* (1.60-GHz, 533-MHz FSB, 2-MB L2 cache) <i>* Intel's numbering is not a measurement of higher performance.</i> NOTE: Intel Pentium M processors support enhanced Intel SpeedStep™ technology. Processor speed denotes maximum performance mode; processors will run at approximately 800 MHz in battery optimization mode.						
Operating System	Microsoft Windows XP Professional SP2 FreeDOS NOTE: Microsoft Windows 2000 Professional is not available pre-installed, drivers are downloadable from http://www.hp.com .						
Chipset	Mobile Intel 915PM Express Chipset						
Graphics	ATI MOBILITY FireGL V5000 graphics controller with 128 MB of discrete video memory, OpenGL support						
Display	<table><tr><td>Internal</td><td>15.4-inch TFT WXGA (1280 x 800 resolution and 16 M colors) 15.4-inch TFT WSXGA+ wide-viewing angle (1680 x 1050 resolution and 16 M colors) 15.4-inch TFT WUXGA wide-viewing angle (1920 x 1200 resolution and 16 M colors) Ambient light sensor</td></tr><tr><td>External</td><td>Up to 32-bit per pixel color depth Supports 640 x 480, 800 x 600, 1024 x 768, 1280 x 768, 1280 x 1024, or 1600 x 1200 resolutions up to 100-Hz refresh rate, dependent upon monitor capability, and resolution and color depth settings</td></tr></table>	Internal	15.4-inch TFT WXGA (1280 x 800 resolution and 16 M colors) 15.4-inch TFT WSXGA+ wide-viewing angle (1680 x 1050 resolution and 16 M colors) 15.4-inch TFT WUXGA wide-viewing angle (1920 x 1200 resolution and 16 M colors) Ambient light sensor	External	Up to 32-bit per pixel color depth Supports 640 x 480, 800 x 600, 1024 x 768, 1280 x 768, 1280 x 1024, or 1600 x 1200 resolutions up to 100-Hz refresh rate, dependent upon monitor capability, and resolution and color depth settings		
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External	Up to 32-bit per pixel color depth Supports 640 x 480, 800 x 600, 1024 x 768, 1280 x 768, 1280 x 1024, or 1600 x 1200 resolutions up to 100-Hz refresh rate, dependent upon monitor capability, and resolution and color depth settings						
Memory	<table><tr><td>Standard</td><td>256-MB, 512-MB, or 1024-MB 400-MHz or 533-MHz DDR2 SDRAM; two SODIMM slots</td></tr><tr><td>Maximum</td><td>Upgradeable to 2048-MB maximum (1024-MB SODIMM in slots 1 and 2)</td></tr><tr><td>Dual-channel</td><td>Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.</td></tr></table> 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.	Standard	256-MB, 512-MB, or 1024-MB 400-MHz or 533-MHz DDR2 SDRAM; two SODIMM slots	Maximum	Upgradeable to 2048-MB maximum (1024-MB SODIMM in slots 1 and 2)	Dual-channel	Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.
Standard	256-MB, 512-MB, or 1024-MB 400-MHz or 533-MHz DDR2 SDRAM; two SODIMM slots						
Maximum	Upgradeable to 2048-MB maximum (1024-MB SODIMM in slots 1 and 2)						
Dual-channel	Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.						

Standard Features

Communications NetXtreme Gigabit PCI Express Ethernet Controller (10/100/1000 NIC*) with HP power down NIC technology
56K modem** with digital line guard

* 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/sec. 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.

Wireless Devices Support for a broad range of secure, integrated wireless LAN options featuring support for the latest industry standards. Integrated Bluetooth is also an option (factory configurable only) and can be combined with any one of the supported wireless LAN options.

All integrated wireless LAN options	Wi-Fi certified Cisco Compatible Extensions support (Version 3.0) 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 WiFi certified for WPA2, WMM Dual antennas integrated in the display enclosure
Broadcom 802.11b/g WLAN	Integrated support for 802.11 b and g Up to 54-mbps data rate
Broadcom 802.11a/b/g WLAN	Integrated support for 802.11 a, b and g Up to 54-mbps data rate
Intel PRO/Wireless 2200BG 802.11 b/g WLAN	Intel Centrino mobile technology Integrated support for 802.11 b and g Up to 54-mbps data rate
Intel PRO/Wireless 2915ABG 802.11 a/b/g WLAN	Intel Centrino mobile technology Integrated support for 802.11 a, b and g Up to 54-mbps data rate
Integrated Bluetooth	Bluetooth Specification v1.2 compliant Works with a wide range of Bluetooth devices

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 an integrated numeric keypad, hotkeys for instant access to power conservation, brightness, and other features, 19-mm x 19-mm key pitch (center-to-center spacing), 2.5-mm stroke, comfort-dished keycaps, and bright key legends for improved visibility in low light conditions.

One-Touch Productivity Buttons Provide one-touch access to the following features: HP Info Center, Wireless On/Off, Presentation Mode, Volume Up, Volume Down, and Volume Mute.

Standard Features

Pointing Device	Dual Pointing devices – Touchpad with scroll zone and Pointstick Both devices have three buttons.	
Expansion Card Slots	One Type I/II PC Card slot	Supports 32-bit CardBus and 16-bit PC Cards
	One Integrated Smart Card Reader	Compatible with ISO 7816 compliant Smart Cards PC/SC interface support
Media Slots	One integrated Secure Digital slot	Supports SD (Secure Digital) and MMC (MultiMedia Card) media
Storage	Hard Drives	40-, 60-, 80-GB 5400 rpm SMART 60-GB 7200 rpm SMART
	NOTE: These hard drives are customer removable and will withstand multiple insertion/removal cycles.	
	Optical Drives	MultiBay II (9.5-mm) DVD-ROM MultiBay II Drive DVD/CD-RW Combo MultiBay II Drive DVD+/-RW MultiBay II Drive
	Second Hard Drive	MultiBay II (9.5-mm) 80-GB 5400 rpm MultiBay II Hard Drive
Interfaces	PC Card Slot	One – Type I/II
	Smart Card Reader	One
	External Monitor	One – VGA
	External Microphone	One
	Headphone/Line out	One
	Power Connector	One
	RJ-11 (Modem)	One
	RJ-45 (NIC)	One
	Ambient Light Sensor	One
	Fast Infrared Port	One (4-Mb/s support) IrDA 4-MB compliant; IR performance will vary depending on performance of IR peripherals and application used.
	Serial Port	One
	IEEE 1394 Port (4-pin)	One
	S-Video TV Out	One (Support for NTSC/PAL)
	USB 2.0	Three
	Docking Connector	One
	Travel Battery Connector	One
	LED Status Indicators	Eleven

Standard Features

Audio	<p>ADI AC '97 CODEC Integrated 16-bit Sound Blaster Pro compatible audio Integrated stereo speakers External volume up, volume down, and mute buttons Stereo headphone/line out Stereo microphone in</p>						
Software	<table border="0"> <tr> <td style="vertical-align: top;">Preloaded Software for Microsoft Windows XP</td> <td> <p>Adobe Acrobat Reader HP Local Recovery provided by Altiris* HP One-Touch Button Software HP Mobile Print Driver Synaptics Touchpad Driver HP Help and Support HP ProtectTools Security Manager: BIOS Configuration for HP ProtectTools Credential Manager for HP ProtectTools HP Wireless Assistant Sonic RecordNow! (for optional DVD+/-RW and DVD/CDRW drives)* Symantec Norton Antivirus with complimentary 60-day live update Intervideo WinDVD - DVD Player (for optional DVD+/-RW, DVD/CDRW and DVD drives)*</p> </td> </tr> <tr> <td style="vertical-align: top;">Software on CD</td> <td> <p>Intervideo WinDVD Creator – DVD Authoring (for optional DVD+/-RW drives)</p> </td> </tr> <tr> <td style="vertical-align: top;">Additional software available from the Web</td> <td> <p>HP Client Manager Software HP ProtectTools Security Manager: Embedded Security for HP ProtectTools Smart Card Security for HP ProtectTools</p> </td> </tr> </table> <p>* Software is loaded on the hard drive and must be installed by running the Software Setup utility</p>	Preloaded Software for Microsoft Windows XP	<p>Adobe Acrobat Reader HP Local Recovery provided by Altiris* HP One-Touch Button Software HP Mobile Print Driver Synaptics Touchpad Driver HP Help and Support HP ProtectTools Security Manager: BIOS Configuration for HP ProtectTools Credential Manager for HP ProtectTools HP Wireless Assistant Sonic RecordNow! (for optional DVD+/-RW and DVD/CDRW drives)* Symantec Norton Antivirus with complimentary 60-day live update Intervideo WinDVD - DVD Player (for optional DVD+/-RW, DVD/CDRW and DVD drives)*</p>	Software on CD	<p>Intervideo WinDVD Creator – DVD Authoring (for optional DVD+/-RW drives)</p>	Additional software available from the Web	<p>HP Client Manager Software HP ProtectTools Security Manager: Embedded Security for HP ProtectTools Smart Card Security for HP ProtectTools</p>
Preloaded Software for Microsoft Windows XP	<p>Adobe Acrobat Reader HP Local Recovery provided by Altiris* HP One-Touch Button Software HP Mobile Print Driver Synaptics Touchpad Driver HP Help and Support HP ProtectTools Security Manager: BIOS Configuration for HP ProtectTools Credential Manager for HP ProtectTools HP Wireless Assistant Sonic RecordNow! (for optional DVD+/-RW and DVD/CDRW drives)* Symantec Norton Antivirus with complimentary 60-day live update Intervideo WinDVD - DVD Player (for optional DVD+/-RW, DVD/CDRW and DVD drives)*</p>						
Software on CD	<p>Intervideo WinDVD Creator – DVD Authoring (for optional DVD+/-RW drives)</p>						
Additional software available from the Web	<p>HP Client Manager Software HP ProtectTools Security Manager: Embedded Security for HP ProtectTools Smart Card Security for HP ProtectTools</p>						

Workstation ISV Certifications	<table border="0"> <tr> <td style="vertical-align: top;">MCAD (Mechanical CAD/Architectural Engineering and Construction)</td> <td> <p>AutoDesk AutoCAD 2002 & 2004 AutoDesk Inventor Bentley Microstation Dassault Catia V5 EDS/PLM I-DEAS 9 W2K EDS/PLM I-DEAS 10 W2K EDS/PLM Unigraphics 18 EDS/PLM Unigraphics NX EDS/PLM Unigraphics NX2 ICEM Surf PTC Pro/E 2001 Mechanica W2K & WXP PTC Pro/E Wildfire Mechanica W2K & WXP Solidedge Solidworks MSC.Patran</p> </td> </tr> <tr> <td style="vertical-align: top;">DCC (Digital Content Creation)</td> <td> <p>Discreet 3DS MAX/Combustion Alias Maya Alias Studio Tools Avid SoftImage XSI/3D Avid Express DV 3.5 Pinnacle Edition Adobe Premiere/After Effects</p> </td> </tr> </table>	MCAD (Mechanical CAD/Architectural Engineering and Construction)	<p>AutoDesk AutoCAD 2002 & 2004 AutoDesk Inventor Bentley Microstation Dassault Catia V5 EDS/PLM I-DEAS 9 W2K EDS/PLM I-DEAS 10 W2K EDS/PLM Unigraphics 18 EDS/PLM Unigraphics NX EDS/PLM Unigraphics NX2 ICEM Surf PTC Pro/E 2001 Mechanica W2K & WXP PTC Pro/E Wildfire Mechanica W2K & WXP Solidedge Solidworks MSC.Patran</p>	DCC (Digital Content Creation)	<p>Discreet 3DS MAX/Combustion Alias Maya Alias Studio Tools Avid SoftImage XSI/3D Avid Express DV 3.5 Pinnacle Edition Adobe Premiere/After Effects</p>
MCAD (Mechanical CAD/Architectural Engineering and Construction)	<p>AutoDesk AutoCAD 2002 & 2004 AutoDesk Inventor Bentley Microstation Dassault Catia V5 EDS/PLM I-DEAS 9 W2K EDS/PLM I-DEAS 10 W2K EDS/PLM Unigraphics 18 EDS/PLM Unigraphics NX EDS/PLM Unigraphics NX2 ICEM Surf PTC Pro/E 2001 Mechanica W2K & WXP PTC Pro/E Wildfire Mechanica W2K & WXP Solidedge Solidworks MSC.Patran</p>				
DCC (Digital Content Creation)	<p>Discreet 3DS MAX/Combustion Alias Maya Alias Studio Tools Avid SoftImage XSI/3D Avid Express DV 3.5 Pinnacle Edition Adobe Premiere/After Effects</p>				

Standard Features

GIS
(Geographic Information
Systems) ESRI ArcInfo

System Recovery for Microsoft Windows XP systems only

Each unit is shipped with a recovery kit containing Operating System Recovery and Driver/Application Recovery discs. These discs allow users to either recover or repair the notebook operating system and select drivers without losing personal data. The Operating System disc also provides the option of reinstalling the operating system software provided with the notebook.

Client Management Software

HP Client Manager Software (CMS) provides asset tracking, alerting, diagnostics, and SoftPaq distribution for HP business desktops, notebooks, and workstations. HP CMS is the foundation for HP Client Management Solutions. For more information and to download HP Client Manager Software, please refer to the HP website at <http://www.hp.com/go/easydeploy>.

SMBIOS Version 2.3.4

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

HP Local Recovery Provided by Altiris

Provides data and system file protection for HP business PCs to enable fast recovery of information that is accidentally deleted or if the system becomes corrupted. Designed for disconnected or seldom-connected users, Local Recovery protects your HP computer's data and system state by taking scheduled snapshots, which are then stored in a protected area on the local hard disk. System backup and disaster recovery is now simple and fast for all users, regardless of connectivity. For more information and to download, please refer to the HP website at <http://www.hp.com/go/easydeploy>.

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 or planned are:

- Smart Card Security for HP ProtectTools
 - BIOS Configuration for HP ProtectTools
 - Embedded Security for HP ProtectTools
 - Credential Manager for HP ProtectTools
-

Standard Features

Security	Standard Features	Configuration Control Hardware Memory Change Alert Ownership Tag Setup Password Power-On Password Drivelock Enabled for PC Smart Card options Kensington Lock Slot
	Optional Features	Integrated Smart Card Reader Compatible with ISO 7816 compliant Smart Cards PC/SC interface support TPM Embedded Security Chip Designed to the Trusted Computing Group (TCG) standard Microsoft Crypto API and PKCS#11 software interface support RSA Secured Partner program certification NOTE: Full functionality of the TPM Embedded Security Chip is available only with Windows XP Professional.

For more information on HP security solutions refer to <http://www.hp.com/go/security>.

Power Supply	External 90-watt 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 technology
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Battery	Primary Battery	8-cell high capacity Lithium-Ion (69Wh) – one-year warranty
	Optional Travel Battery	8-cell high capacity Lithium-Ion (52Wh)

Battery Life	Primary Battery	Up to 4 hours and 30 minutes
	Primary Battery and optional HP Travel Battery	Up to 8 hours

NOTE: 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 1 week
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Power Conservation	Supports enhanced Intel SpeedStep technology with Intel Pentium M processors (allows Battery Optimized Mode, Maximum Performance Mode, or Automatic mode) ATI PowerPlay technology HP power down NIC technology Hibernation Standby ACPI compliance
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Standard Features

MultiBay II Devices	MultiBay II devices may be swapped with the system powered on (hot) under Microsoft Windows XP Professional or Windows 2000 (except MultiBay II secondary hard drive).
<hr/>	
Docking	<p>HP Docking Station HP Advanced Docking Station</p> <p>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, DVI, S-video TV out, 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.</p> <p>* HP/Kensington Cable Lock required (purchased separately) ** HP Advanced Docking Station only</p>
<hr/>	
Service and Support	<p>HP Services includes a 3/3/3 (parts, labor, and onsite repair) standard warranty (in the U.S. and Canada), and toll-free 7 x 24 hardware technical phone support. On-site service and warranty upgrades are also available.</p> <p>NOTE: Certain restrictions and exclusions apply. Consult the HP Customer Support Center for details. http://h20000.www2.hp.com/bizsupport/TechSupport/ProductRoot.jsp.</p>

Models

Select Model(s)

nw8240 PZ328UA#ABA	Processor	Intel Pentium M processor 750* (1.86-GHz, 533-MHz FSB, 2-MB L2 cache)
	Operating System	Microsoft Windows XP Professional
	System Memory	512-MB 533-MHz DDR2 SDRAM (512-MB SODIMM in slot 1)
	Hard Drive	80-GB 5400 rpm
	Display	15.4-inch color TFT WSXGA+ with wide-viewing angle and (1680 x 1050) resolution (up to 16.7 M colors internal)
	Graphics	ATI Mobility FireGL V5000 with 128-MB video memory, OpenGL support
	Video Memory	128 MB
	Audio	ADI AC '97 CODEC, Line out headphone and microphone jacks
	Optical Drive	9.5-mm DVD/CDRW Combo
	Communications	56K Fax Modem, Integrated NetXtreme Gigabit PCI Express Ethernet Controller (10/100/1000 NIC)
	Integrated Wireless	Intel PRO Wireless 2200 BG 802.11b/g WLAN
	TPM Embedded Security Chip	No
	Integrated Smart Card Reader	Yes
	Pointing Device	Dual pointing devices (both Pointstick and Touchpad)
	Battery	8-cell high capacity Lithium-Ion (69Wh)

Standard Features

Power	External 90W adapter
Warranty	3/3/3 U.S. and Canada only

nw8240
PZ110UA#ABA

Processor	Intel Pentium M processor 760* (2.0-GHz, 533-MHz FSB, 2-MB L2 cache)
Operating System	Microsoft Windows XP Professional
System Memory	1024-MB 533-MHz DDR2 SDRAM (512-MB SODIMM in slot 1 and slot 2)
Hard Drive	60-GB 7200 rpm
Display	15.4-inch color TFT WUXGA with wide-viewing angle and (1920 x 1200) resolution (up to 16.7 M colors internal)
Graphics	ATI Mobility FireGL V5000 with 128-MB video memory, OpenGL support
Video Memory	128 MB
Audio	ADI AC '97 CODEC, Line out headphone and microphone jacks
Optical Drive	9.5-mm DVD +/- RW
Communications	56K Fax Modem, Integrated NetXtreme Gigabit PCI Express Ethernet Controller (10/100/1000 NIC)
Integrated Wireless	Intel PRO Wireless 2915ABG 802.11 a/b/g WLAN Bluetooth
TPM Embedded Security Chip	No
Integrated Smart Card Reader	Yes
Pointing Device	Dual pointing devices (both Pointstick and Touchpad)
Battery	8-cell high capacity Lithium-Ion (69Wh)
Power	External 90W adapter
Warranty	3/3/3 U.S. and Canada only

nw8240
PZ329UA#ABA

Processor	Intel Pentium M processor 760* (2.0-GHz, 533-MHz FSB, 2-MB L2 cache)
Operating System	Microsoft Windows XP Professional
System Memory	1024-MB 533-MHz DDR2 SDRAM (1024-MB SODIMM in slot 1)
Hard Drive	60-GB 7200 rpm
Display	15.4-inch color TFT WUXGA with wide-viewing angle and (1920 x 1200) resolution (up to 16.7 M colors internal)
Graphics	ATI Mobility FireGL V5000 with 128-MB video memory, OpenGL support
Video Memory	128 MB
Audio	ADI AC '97 CODEC, Line out headphone and microphone jacks
Optical Drive	9.5-mm DVD +/- RW
Communications	56K Fax Modem, Integrated NetXtreme Gigabit PCI Express Ethernet Controller (10/100/1000 NIC)

Standard Features

Integrated Wireless	Intel PRO Wireless 2915ABG 802.11a/b/g WLAN Bluetooth
TPM Embedded Security Chip	Yes
Integrated Smart Card Reader	Yes
Pointing Device	Dual pointing devices (both Pointstick and Touchpad)
Battery	8-cell high capacity Lithium-Ion (69Wh)
Power	External 90W adapter
Warranty	3/3/3 U.S. and Canada only

nw8240
PZ093UA#ABA

Processor	Intel Pentium M processor 760* (2.0-GHz, 533-MHz FSB, 2-MB L2 cache)
Operating System	Microsoft Windows XP Professional
System Memory	1024-MB 533-MHz DDR2 SDRAM (1024-MB SODIMM in slot 1)
Hard Drive	80-GB 5400 rpm
Display	15.4-inch color TFT WSXGA+ with wide-viewing angle and (1680 x 1050) resolution (up to 16.7 M colors internal)
Graphics	ATI Mobility FireGL V5000 with 128-MB video memory, OpenGL support
Video Memory	128 MB
Audio	ADI AC '97 CODEC, Line out headphone and microphone jacks
Optical Drive	9.5-mm DVD +/- RW
Communications	56K Fax Modem, Integrated NetXtreme Gigabit PCI Express Ethernet Controller (10/100/1000 NIC)
Integrated Wireless	Intel PRO Wireless 2200 BG 802.11b/g WLAN
TPM Embedded Security Chip	No
Integrated Smart Card Reader	Yes
Pointing Device	Dual pointing devices (both Pointstick and Touchpad)
Battery	8-cell high capacity Lithium-Ion (69Wh)
Power	External 90W adapter
Warranty	3/3/3 U.S. and Canada only

Standard Features

nw8240
PZ846UA#ABA

Processor	Intel Pentium M processor 770* (2.13-GHz, 533-MHz FSB, 2-MB L2 cache)
Operating System	Microsoft Windows XP Professional
System Memory	1024-MB 533-MHz DDR2 SDRAM (1024-MB SODIMM in slot 1)
Hard Drive	80-GB 5400 rpm
Display	15.4-inch color TFT WUXGA with wide-viewing angle and (1920 x 1200) resolution (up to 16.7 M colors internal)
Graphics	ATI Mobility FireGL V5000 with 128-MB video memory, OpenGL support
Video Memory	128 MB
Audio	ADI AC '97 CODEC, Line out headphone and microphone jacks
Optical Drive	9.5-mm DVD +/- RW
Communications	56K Fax Modem, Integrated NetXtreme Gigabit PCI Express Ethernet Controller (10/100/1000 NIC)
Integrated Wireless	Intel PRO Wireless 2915ABG 802.11a/b/g WLAN Bluetooth
TPM Embedded Security Chip	Yes
Integrated Smart Card Reader	Yes
Pointing Device	Dual pointing devices (both Pointstick and Touchpad)
Battery	8-cell high capacity Lithium-Ion (69Wh)
Power	External 90W adapter
Warranty	3/3/3 U.S. and Canada only

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

Options

Memory	256MB 400-MHz/533MHz DDR2 SDRAM	PE830A
	512MB 400-MHz/533MHz DDR2 SDRAM	PE831A
	1024MB 400-MHz/533MHz DDR2 SDRAM	PE832A
MultiBay II Storage (9.5-mm)	8X DVD-ROM MultiBay II Drive	PA849A
	24X Combo DVD/CD-RW MultiBay II Drive	PA850A
	2X DVD+/-RW Dual Format MultiBay II Drive	PA851A
	80-GB 5400 rpm MultiBay II Hard Drive	PH357A
Other Storage	60GB 5400 rpm Primary Hard Drive	PA852A
	40GB Mobile USB Hard Drive	DQ549A
	USB Digital Drive + 256MB Secure Digital Card	DL702C
	USB Diskette Drive	DC361B
Communications	Intel/PRO Wireless 2200BG 802.11 b/g WLAN option kit	PF952AA#ABA
Expansion Solutions	HP Docking Station	PA286A#ABA
	HP Advanced Docking Station	PA287A#ABA
	HP Monitor Stand	PA507A
	HP Adjustable Notebook Stand	PA508A
	HP External MultiBay II (9.5mm)	PA509A#ABA
	HP 4-port USB 2.0 Hub	DG954A
Power	HP 2-bay Battery Charging Station*	DT533A#ABA
	HP 10-bay Battery Charging Station*	DT534A#ABA
	Battery Adapter kit #1	PK402A
	90W AC Adapter	DC895B#ABA
	90W Auto Adapter	DC303B
	90W Air/Auto/AC Combo Adapter	DV574A#ABA
	90W Aircraft Cables	DC899A
	Primary 8-cell Battery Pack	PB992A
HP Travel Battery	PB993A	
*HP 2-bay & 10-bay battery charging stations require use of battery adapter kit for each battery.		
Carrying Cases	HP Entry Value Case	DL617A
	HP Top Load Nylon	DC915A
	HP Executive Leather Case	PA847A
	HP Sport Backpack	DG102A

Options

Security	PC Card Smart Card Reader	DC350B
	Smart Card Bulk Pack (1-100)	DR032A
	HP/Kensington Cable Lock	PC766A

Input/Output Devices	USB/PS2 Keyboard	DC852A#ABA
	USB/PS2 Optical Mouse	DC369A
	HP USB Optical Travel Mouse	F2100A

Memory

Up to 2048 MB of 400-MHz or 533-MHz DDR2 SDRAM

Two DIMM slots

DIMM sizes supported: 256 MB, 512 MB, or 1024 MB

Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

Standard Memory

- 256 MB (256 MB x 1)
- 512 MB (512 MB x 1 or 256 MB x 2)
- 1024 MB (1024 MB x 1 or 512 MB x 2)

Optional Memory

Upgrades

Support for up to 2048 MB of memory is available (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.

Up to	Slot 1	Slot 2
768 MB	512 MB	256 MB
1024 MB	1024 MB	Empty
1024 MB	512 MB	512 MB
1280 MB	1024 MB	256 MB
1536 MB	1024 MB	512 MB
2048 MB	1024 MB	1024 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.

Memory Upgrades

1024-MB 533-MHz DDR2 SDRAM

PE832A

512-MB 533-MHz DDR2 SDRAM

PE831A

256-MB 533-MHz DDR2 SDRAM

PE830A

Storage

Removable Media Drive Support

	Quantity Supported	Drive Bay
DVD+/-RW MultiBay II Drive*	One	MultiBay II
DVD/CD-RW Combo MultiBay II Drive*	One	MultiBay II
DVD-ROM MultiBay II Drive*	One	MultiBay II

Hard Drive Support

	Quantity Supported	Drive Bay
Primary Hard Drives		
60-GB 7200 rpm SMART Hard Drive	One	Dedicated hard drive bay
80-GB 5400 rpm SMART Hard Drive*	Up to two	Dedicated hard drive bay and/or MultiBay II
60-GB 5400 rpm SMART Hard Drive	One	Dedicated hard drive bay
40-GB 5400 rpm SMART Hard Drive	One	Dedicated hard drive bay

* MultiBay II drives supported in the internal MultiBay II are also supported in the optional HP External MultiBay II and the HP Advanced Docking Station.

Technical Specifications

System Unit	Dimensions (HxWxD)	1.1 (at front) x 14.0 x 10.2 in (28 (at front) x 355 x 259 mm)
	Weight	nw8240 with MultiBay II weight saver 5.8 lb (2.63 kg) nw8240 with MultiBay II DVD optical drive 6.1 lb (2.77 kg)
NOTE: Height varies depending upon where on the notebook the measurement is made. Weight includes 8-cell battery, 60-GB hard drive, 512-MB memory, 15.4-inch WUXGA display, 802.11 wireless communications module, and TPM Embedded Security Chip. Weight varies by configuration and components.		
Stand-Alone Power Requirements	Nominal Operating Voltage (Lithium-Ion)	19 V
	Average Operating Power	28.5 W
	Max Operating Power	< 90 W
Temperature	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)
Relative Humidity	Operating	10% to 90%, non-condensing
	Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
Shock	Operating	125 G, 2 ms, half-sine
	Non-operating	200 G, 2 ms, half-sine
Random Vibration	Operating	0.75 grms
	Non-operating	1.50 grms
Altitude (unpressurized)	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)
Industry Standard Certifications	Blue Angel	No
	UL	Yes
	Energy Star Compliant	Yes
	ICES	Yes
	TUV GS	Yes
	Australia / NZ Compliance	Yes
	CCC	Yes
	Japan Compliance	Yes
	MIC	Yes
	BSMI	Yes
	CE Marking Compliance	Yes
	KONCAR	Yes
	GOST	Yes
	SASO	Yes
	SABS	Yes
UKRSERTCOMPUTER	Yes	

Technical Specifications

90W External AC Adapter	Weight	0.82 lb (0.37 kg) (adapter) 0.29 lb (0.13 kg) (power cord)	
	Dimensions	5.00 x 1.97 x 1.1 in (12.7 x 5.0 x 2.9 cm)	
	Input	Operating Input Voltage	100 to 240 VAC
		Operating Input Current	PFC Version: 1.5 A at 90 VAC 0.75 A at 180 VAC
			Non-PFC Version: 2.4 A at 90 VAC 1.2 A at 180 VAC
	Output	Operating Frequency Range	47 to 63 Hz AC
		Efficiency	83% minimum at 115 VAC
		Output Power	90 W
		DC Output Current	18.5 V
	Environmental	Operating Temperature	32° to 104° F (0° to 40° 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, Class2, 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		

69Wh Primary Lithium-Ion Battery Pack	Dimensions (H x W x L)	0.8 x 1.9 x 10.6 in (2.0 x 4.8 x 27.0 cm)		
	Weight	0.980 lb (0.445 kg)		
	Cells/Type	8-cell Lithium-Ion		
	Energy	Voltage	14.4 V	
		Amp-hour Capacity	4.8Ah	
		Watt-hour Capacity	69Wh	
	Temperature	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)	
	Battery Re-Charge Time	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		

Technical Specifications

Optional 52Wh Travel Battery	Dimensions (H x W x L)	1.0 x 3.9 x 8.7 in (2.5 x 10.0 x 22.0 cm)		
	Weight	1.00 lb (0.455 kg)		
	Cells/Type	8-cell Lithium-Ion		
	Energy	Voltage	14.4 V	
		Amp-hour Capacity	3.6Ah	
		Watt-hour Capacity	52Wh	
	Temperature	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)	
	Battery Re-Charge Time	System in OFF mode or Standby	3 hours	
System ON		3 to 5 hours (depending on system power consumption)		
Fuel Gauge	When pressed, LEDs light indicating level of charge remaining on battery			

15.4-inch Color TFT WUXGA Wide Viewing Angle Display	Active Area (W x H)	13.0 x 8.1 in (33.1 x 20.7 cm)		
	Diagonal Size	15.4 in (39.1 cm)		
	Surface Treatment	Anti-glare		
	Number of Colors	Up to 16 M		
	Contrast Ratio	200:1		
	Brightness	180 nit (typical)		
	Pixel Resolution	Pitch	0.172 mm	
		Format	1920 x 1200	
		Configuration	RGB stripe	
	Backlight	CCFL		
	PPI	147		
	Character Display	80 x 25		
	Total Power Consumption	6.0 W		
Viewing Angle	±65° Horizontal, ± 50° Vertical (typical)			

Technical Specifications

15.4-inch Color TFT WSXGA+ Wide Viewing Angle Display	Active Area (W x H)	13.0 x 8.1 in (33.1 x 20.7 cm)		
	Diagonal Size	15.4 in (39.1 cm)		
	Surface Treatment	Anti-glare		
	Number of Colors	Up to 16 M		
	Contrast Ratio	200:1 (typical)		
	Brightness	180 nit (typical)		
	Pixel Resolution	Pitch	0.197 mm	
		Format	1680 x 1050	
		Configuration	RGB stripe	
	Backlight	CCFL		
	PPI	128		
	Character Display	80 x 25		
	Total Power Consumption	7.0 W		
	Viewing Angle	±60° Horizontal, +40°/-50° Vertical (typical)		

15.4-inch Color TFT WXGA Display	Active Area (W x H)	13.0 x 8.1 in (33.1 x 20.7 cm)		
	Diagonal Size	15.4 in (39.1 cm)		
	Surface Treatment	Anti-glare		
	Number of Colors	Up to 16 M		
	Contrast Ratio	200:1 (typical)		
	Brightness	180 nit (typical)		
	Pixel Resolution	Pitch	0.259 mm	
		Format	1280 x 800	
		Configuration	RGB stripe	
	Backlight	CCFL		
	PPI	98		
	Character Display	80 x 25		
	Total Power Consumption	6.5 W		
	Viewing Angle	±45° Horizontal, +15°/-35° Vertical (typical)		

Hard Drives

Technical Specifications

60-GB 7200 rpm	Drive Weight	0.25 lb (113 g)	
	Capacity	60 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-6	
	Transfer Rate	Synchronous (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track	1 ms
		Average	10 ms
		Maximum	18 ms
	Rotational Speed	7200 rpm	
	Logical Blocks	117,210,240	
	Operating Temperature	41° to 131° F (5° to 55° C)	
	Features	ATA Security	

80-GB 5400 rpm	Drive Weight	0.22 lb (99 g)	
	Capacity	80 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-6	
	Transfer Rate	Synchronous (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track	3 ms
		Average	13 ms
		Maximum	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	156,301,488	
	Operating Temperature	41° to 131° F (5° to 55° C)	
	Features	ATA Security	

60-GB 5400 rpm	Drive Weight	0.22 lb (99 g)	
	Capacity	60 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-6	
	Transfer Rate	Synchronous (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track	3 ms
		Average	13 ms
		Maximum	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	117,210,240	
	Operating Temperature	41° to 131° F (5° to 55° C)	
	Features	ATA Security	

Technical Specifications

40-GB 5400 rpm	Drive Weight	0.22 lb (99 g)	
	Capacity	40 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-6	
	Transfer Rate	Synchronous (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track	3 ms
		Average	13 ms
		Maximum	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	78,140,160	
	Operating Temperature	41° to 131° F (5° to 55° C)	
	Features	ATA Security	

Removable Storage Drives – MultiBay II

DVD-ROM MultiBay II Drive	Dimensions	0.37 x 5.51 x 5.04 in (0.95 x 14.0 x 12.8 cm)	
	Weight	0.34 lb (155 g)	
	Access Times	Random	<120 ms CD
			<170 ms DVD
	Max Data Transfer Rate	24X-CD-ROM	3,600 KB/s
		8X-DVD	10,800 KB/s
	Transfer Mode	Multiword DMA Mode 2	
	Interface	EIDE	
	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	
	Supported Media (write)	None	
	Max Media Capacity (read)	4.7 GB	
	Transport	Tray Loading	

Technical Specifications

DVD/CD-RW Combo MultiBay II Drive	Dimensions	0.37 x 5.51 x 5.04 in (0.95 x 14.0 x 12.8 cm)		
	Weight	0.45 lb (205 g)		
	Access Times	Random	<120 ms CD	
			<155 ms DVD	
	Max Data Transfer Rate	24X CD-ROM	3,600 KB/s	
		8X DVD	10,800 KB/s	
		24X CD-R	3,600 KB/s	
		24X CD-RW	3,600 KB/s	
	Transfer Mode	Multiword DMA Mode 2		
	Interface	EIDE		
	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		
	Supported Media (write)	CD-R, CD-RW		
	Max Media Capacity (read)	4.7 GB		
	Max Media Capacity (write)	700 MB		
Transport	Tray loading			

DVD+/-RW MultiBay II Drive	Dimensions	0.37 x 5.51 x 5.04 in (0.95 x 14.0 x 12.8 cm)		
	Weight	0.45 lb (205 g)		
	Access Times	Random	<150 ms CD	
			<125 ms DVD	
	Max Data Transfer Rate	24X CD-ROM	3,600 KB/s	
		8X DVD	10,800 KB/s	
		24X CD-R	3,600 KB/s	
		10X CD-RW	1,500 KB/s	
		2.4X DVD+R	3,240 KB/s	
		2.4X DVD+RW	3,240 KB/s	
		2X DVD-R	2,700 KB/s	
		2X DVD-RW	2,700 KB/s	
	Transfer Mode	Multiword DMA Mode 2		
	Interface	EIDE		
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			
Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW			
Max Media Capacity (read)	4.7 GB			

Technical Specifications

Max Media Capacity (write)	4.7 GB
Transport	Tray Loading

80-GB 5400 rpm MultiBay II Hard Drive	MultiBay II Drive Adapter	Dimensions (H x W x D)	0.37 x 5.51 x 5.04 in (0.95 x 14.0 x 12.8 cm)	
		Weight	0.16 lb (72 g)	
	Drive Weight	0.22 lb (99 g)		
	Capacity	80 GB		
	Height	0.37 in (9.5 mm)		
	Width	2.75 in (70 mm)		
	Interface	ATA-6		
	Transfer Rate	Synchronous (maximum)	100 MB/s (Drive Capability)	
	Seek Time (typical reads, including settling)	Single Track	3 ms	
		Average	13 ms	
		Maximum	24 ms	
	Rotational Speed	5400 rpm		
	Logical Blocks	156,301,488		
Operating Temperature	41° to 131° F (5° to 55° C)			
Features	ATA Security			

Audio

Hardware	Implementation	ADI AC '97 CODEC
	Volume Controls	Up, down, and mute buttons
	Full Duplex	Yes
	Sound Blaster Pro compatible	Yes
	Microphone Jack	Stereo or mono
	Headphone/Line Out Jack	Stereo

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)	7 kHz - 48 kHz
	AD/DA Resolution	16 bit

Internal Speakers	Power Rating	2 Watts
	Impedance	4 Ohms

Technical Specifications

Communications

Integrated Broadcom NetXtreme Gigabit PCI Express Ethernet Controller (10/100/1000 NIC)	Ethernet Features	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3z and 802.3ab; IEEE 802.3 clauses 34-42) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s IEEE 802.1p QoS (Quality of Service) Support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable)
	Power Management	ACPI 1.1a compliant -- multiple power modes Situation-sensitive features reduce power consumption NIC Battery Saving Mode (enabled by default)
	Performance Features	TCP/IP/UDP Checksum Offload (configurable) Microsoft Large Send Offload (configurable) TCP Segmentation Offload CPU Task Offload Adaptive Interrupts
	Manageability	Wake-on-LAN from all Power-Managed States (configurable; Magic Packet and Microsoft Wake-Up Frame) PXE 2.0 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite Cable Analyzer
	NIC Device Driver Name Drivers Available	Broadcom NetXtreme Gigabit Ethernet Microsoft Windows XP Microsoft Windows 2000
Agere Systems AC'97 Modem	Form Factor Power Management Support Approvals/Certifications	MDC Daughtercard APM Revision 1.2, ACPI 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

Technical Specifications

Data Mode Capabilities	56K modem (a-law, mu-law) V.8bis V.80 V44, V.42bis, MNP5 (Compression) V.42 (LAPM, MNP2-4) (Error Correction) V.34 (file date: 10/96) Optional symbol rates: 2800, 3429 Asymmetric Symbol rates Synchronous primary channel data signaling rates: 3600, 31200 Automatic rate re-negotiation V.32bis V.32 V.23 V.22bis V.22 V.21 Bell 212A Bell 103J
Fax Mode Capabilities	TIA/EIA-578-B (Class 1) T.30, T.4 (Group 3) V.17 V.29 V.27ter V.21 Channel 2
Command Set	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

Broadcom 802.11b/g WLAN	Wireless LAN Standards	IEEE 802.11b IEEE 802.11g
	Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliant (details at http://www.hp.com/go/notebooks/WLAN)
	Frequency Band	2.4 GHz
	Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
	Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM

Technical Specifications

Security¹	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST.	
Sub-channels	Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program). Multinational support with frequency bands and channels compliant to local regulations.	
Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK	
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)	
Roaming	IEEE 802.11 compliant roaming between access points.	
Output Power (for CKK)²	17.5 dBm +/- 1.5 dB	
Output Power (for OFDM; power varies by data rate)²	13.5 dBm +/- 1.5 dB	
Power Consumption	Transmit: 2.0 W (max) Receive: 1.5 W (max) Idle mode: 248 mW (nominal) Sleep mode: 20 mW (max)	
Power Management	ACPI compliant power management 802.11 Compliant Power Saving Mode	
Receiver Sensitivity³	54 Mbps: -72 dBm, 1 Mbps: -94 dBm	
Antenna type	High efficiency dual band antenna with polarization diversity, mounted in the display enclosure	
Range	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
Form Factor	MiniPCI Type IIIB	
Weight	0.026 lb (12 g)	
Dimensions	0.20 x 1.75 x 2.34 in (4.9 x 44.6 x 59.8 mm)	
Operating Voltage	3.3v	
Temperature	Operating	32° to 122° F (0° to 50° C)
	Non-operating	-14° to 158° F (-10° to 70° C)
Humidity	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
Altitude	Operating	0 to 15,000 ft (4,572 m)
	Non-operating	0 to 40,000 ft (12,192 m)

Technical Specifications

Configuration Utility⁴

Choice of Configuration Utility:

- Microsoft Windows XP Wireless Network Connection Manager
- Broadcom Wireless Configuration Utility (required for Cisco Compatible Extensions support)

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. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
4. WLAN supplier's client utility is required for Cisco Compatible Extensions support. WLAN may also be compatible with certain third-party software suppliers.

Broadcom 802.11a/b/g WLAN	Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g
	Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliant (details at http://www.hp.com/go/notebooks/WLAN)
	Frequency Band	2.4 GHz and 5 GHz
	Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
	Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM
	Security¹	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 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).
	Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
	Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK
	Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
	Roaming	IEEE 802.11 compliant roaming between access points
	Output Power (for CCK)²	17.5 dBm +/- 1.5 dB
	Output Power (for OFDM; power varies by data rate)²	13.5 dBm +/- 1.5 dB
	Power Consumption	Transmit: 2.0 W (max) Receive: 1.5 W (max) Idle mode: 248 mW (nominal) Sleep mode: 20 mW (max)
	Power Management	ACPI compliant power management 802.11 compliant power saving mode
	Receiver Sensitivity³	802.11a - 54 Mbps: -70 dBm; 802.11g - 54 Mbps: -72 dBm, 1 Mbps: -94 dBm
	Antenna type	High efficiency dual band antenna with polarization diversity, mounted in the display enclosure

Technical Specifications

Range	802.11 a – Typical (@6 Mbps)	1000 feet – Outdoor Open Area 300 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
Form Factor	MiniPCI Type IIIA	
Weight	0.035 lb (16 g)	
Dimensions	0.19 x 2.00 x 2.35 in (4.8 x 50.95 x 59.75 mm)	
Operating Voltage	3.3v	
Temperature	Operating	32° to 122° F (0° to 50° C)
	Non-operating	-14° to 158° F (-10° to 70° C)
Humidity	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
Altitude	Operating	0 to 15,000 ft (4,572 m)
	Non-operating	0 to 40,000 ft (12,192 m)
Configuration Utility⁴	Choice of Configuration Utility:	
	<ul style="list-style-type: none"> • Microsoft Windows XP Wireless Network Connection Manager • Broadcom Wireless Configuration Utility (required for Cisco Compatible Extensions support) 	
	<ol style="list-style-type: none"> 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. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation). 4. WLAN supplier's client utility is required for Cisco Compatible Extensions support. WLAN may also be compatible with certain third-party software suppliers. 	

Intel PRO/Wireless 2200BG 802.11b/g WLAN

Wireless LAN Standards	IEEE 802.11b IEEE 802.11g
Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliant (details at http://www.hp.com/go/notebooks/wlan)
Frequency Band	2.4 GHz
Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM
Security¹	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 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).
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK

Technical Specifications

Network Architecture	Ad-hoc (Peer to Peer)	
Models	Infrastructure (Access Point Required)	
Roaming	IEEE 802.11 compliant roaming between access points.	
Output Power (for CKK) ²	16 dBm +/- 2 dB	
Output Power (for OFDM; power varies by data rate) ²	15 dBm +2/-5 dB	
Power Consumption	Transmit: 1.8 Watts (max) Receive: 1.4 Watts (max) Idle mode: 75 mW (nominal) Sleep mode: 60 mW	
Power Management	ACPI compliant power management 802.11 Compliant Power Saving Mode	
Receiver Sensitivity ³	54 Mbps: -72 dBm, 11 Mbps: -88 dBm , 1 Mbps: -97 dBm	
Antenna type	High efficiency dual band antenna with polarization diversity, mounted in the display enclosure	
Range	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
Form Factor	MiniPCI Type III B	
Weight	0.026 lb (11.75 g) (max)	
Dimensions	0.20 x 1.75 x 2.34 in (4.9 x 44.6 x 59.8 mm)	
Operating Voltage	3.3v	
Temperature	Operating	32° to 158° F (0° to 70° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
Altitude	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
Configuration Utility ⁴	Choice of Configuration Utility:	
	<ul style="list-style-type: none"> • Intel PROSet for Microsoft Windows 2000 or XP (required for Cisco Compatible Extensions support) • Microsoft Windows XP Wireless Network Connection Manager 	
	<ol style="list-style-type: none"> 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. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation). 4. WLAN supplier's client utility is required for Cisco Compatible Extensions support. WLAN may also be compatible with certain third-party software supplicants. 	

Intel PRO/Wireless
2915ABG 802.11a/b/g
WLAN

Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g
Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliant (details at http://www.hp.com/go/notebooks/WLAN)

Technical Specifications

Frequency Band	2.4 GHz and 5 GHz	
Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps	
Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM	
Security¹	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 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).	
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.	
Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK	
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)	
Roaming	IEEE 802.11 compliant roaming between access points	
Output Power (for CCK)²	16 dBm +/- 2 dB	
Output Power (for OFDM; power varies by data rate)²	15 dBm +2/-5 dB	
Power Consumption	Transmit: 1.8 Watts (max) Receive: 1.4 Watts (max) Idle mode: 100 mW (nominal) Sleep mode: 60 mW (max)	
Power Management	ACPI compliant power management 802.11 Compliant Power Saving Mode	
Receiver Sensitivity³	54 Mbps: -72 dBm, 11 Mbps: -89 dBm , 1 Mbps: -97 dBm	
Antenna type	High efficiency dual band antenna with polarization diversity, mounted in the display enclosure	
Range	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
Form Factor	MiniPCI Type IIIB	
Weight	0.026 lb (11.75 gm) (max)	
Dimensions	0.20 x 1.75 x 2.34 in (4.9 x 44.6 x 59.8 mm)	
Operating Voltage	3.3v +/- 10%	
Temperature	Operating	32° to 176° F (0° to 80° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
Altitude	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)

Technical Specifications

Configuration Utility⁴

Choice of Configuration Utility:

- Intel PROSet for Microsoft Windows 2000 or XP (required for Cisco Compatible Extensions support)
- Microsoft Windows XP Wireless Network Connection Manager

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. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
4. WLAN supplier's client utility is required for Cisco Compatible Extensions support. WLAN may also be compatible with certain third-party software suppliers.

Bluetooth by HP

Name	HP Integrated module with Bluetooth wireless technology
Bluetooth Specification	1.2 Compliant
Dimensions	1.02 x 0.55 x 0.22 in (26 x 14 x 5.7 mm)
Frequency Band	2402 to 2480 MHz
Number of available channels	79 (1 MHz) available channels
Data Rates and throughput	1 Mbps data rate; throughput up to 720 Kbps Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Asynchronous Connection Less links 723.2 kbps/57.6 kbps asymmetric or 433.9 kbps symmetric
Transmit Power	-6 dBm to 4 dBm (Bluetooth Class II)
Receiver Sensitivity	Better than -80 dBm at 0.1 % raw bit error rate
Power Consumption	Peak (Tx) 264 mW Peak (Rx) 231 mW Sleep <1 mW
Antenna	Internally integrated within module
Range	Up 33 ft (10 m)
Electrical Interface	USB 1.1 compliant Microsoft Windows Plug and Play compliant
OS Support	Microsoft Windows XP Professional Microsoft Windows 2000
Bluetooth Software Supported	Widcomm Bluetooth for Windows Microsoft Windows XP Bluetooth Software
Link Topology	Point to Point, Multipoint Pico Nets up to 7 slaves
Security	Full support of Bluetooth Security Provisions
Power Management	Microsoft Windows ACPI, and USB Bus Support Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff
Certifications	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

Technical Specifications

Temperature	Operating	-4° to 158° F (-20° to 70° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90%
	Non-operating	5% to 95%
Altitude	Operating	15,000 ft (4,572 m)
	Non-operating	40,000 ft (12,192 m)
Bluetooth Profiles Supported	(with Bluetooth for Windows 4.0 software)	
	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)	

* indicates the profile is also supported by Microsoft Windows XP SP2

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