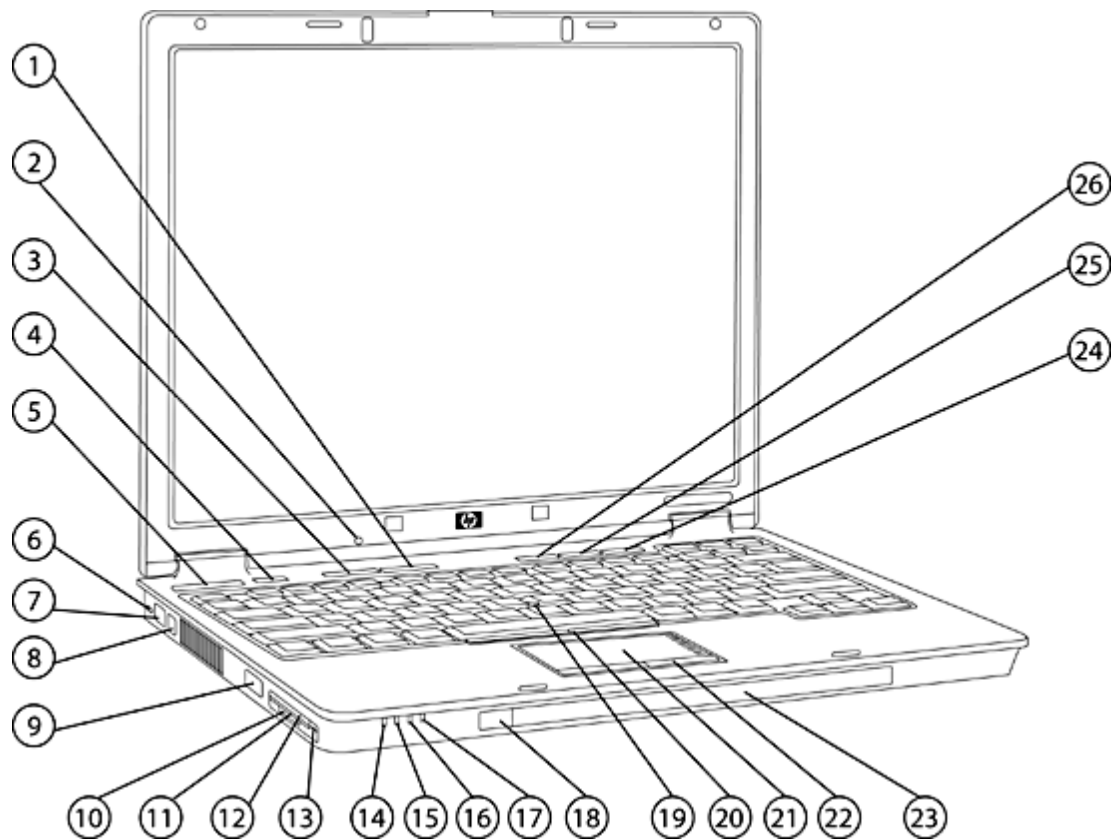


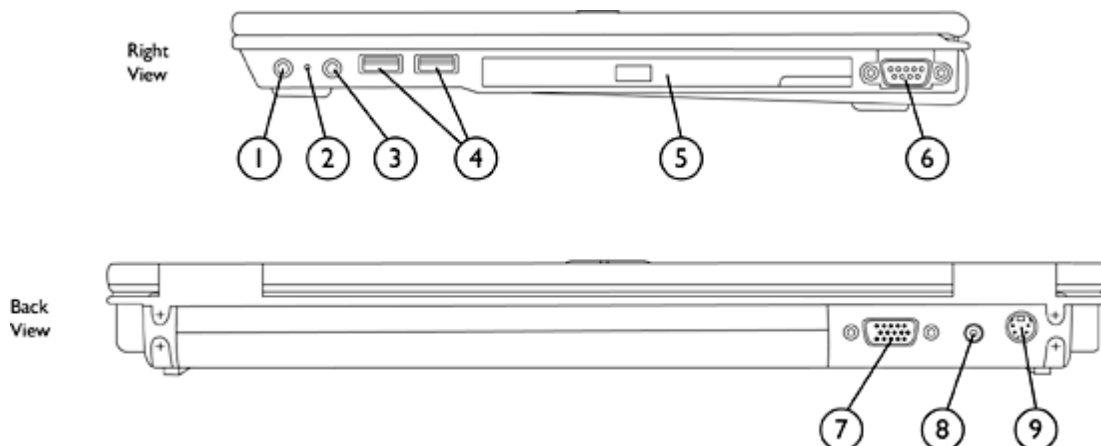
### Overview



1. Presentation Mode Button
2. Ambient Light Sensor
3. Wireless On/Off Button with LED
4. HP Info Center Button
5. Power Button with LED
6. Kensington Lock Slot
7. RJ-45 Port (NIC)
8. RJ-11 Port (Modem)
9. USB 2.0 Port
10. Integrated Secure Digital Slot
11. Integrated Smart Card Reader
12. PC Card Slot
13. PC Card Eject Button

14. Wireless On/Off LED
15. Power/Standby LED
16. Battery Charging LED
17. Hard Drive Activity LED
18. Fast Infrared Port
19. Pointstick
20. Left/Right Pointstick Buttons
21. Touchpad with Scroll Zone
22. Left/Right Touchpad Buttons
23. Stereo Speakers
24. Volume Up Button
25. Volume Down Button
26. Volume Mute Button with LED

### Overview



- |  |                                   |
|--|-----------------------------------|
| 1. Headphone Jack                      | 6. Serial Port                    |
| 2. Microphone                          | 7. VGA/External Monitor Connector |
| 3. Microphone Jack                     | 8. DC Power Connector             |
| 4. 2 USB 2.0 Ports                     | 9. S-Video TV Out                 |
| 5. MultiBay II Drive with Easy Release |                                   |

### At A Glance

- Genuine Windows XP Professional, Genuine Windows XP Home Edition (select countries only), or FreeDOS
- Certified for Novell Linux Desktop 9
- Intel® Pentium® M processors 740 to 780\*
- Sleek industrial design starting at 4.69 lb/2.13 kg and 1.04-inch/26.5-mm thin
- 14.1-inch display
- Mobile Intel 915PM Express Chipset on nc6230 model
- Mobile Intel 915GM Express Chipset on nc6220 model
- 256-MB DDR2 SDRAM, upgradeable to 2048-MB maximum
- Up to 80-GB 5400 rpm, user-removable hard drive
- ATI MOBILITY RADEON X300 graphics controller with 32 or 64 MB of video memory (on nc6230)
- Intel Graphics Media Accelerator 900 (on nc6220 model)
- 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®
- Integrated Secure Digital (SD) flash media slot
- Security features including 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 a three-year standard parts and labor warranty - certain restrictions and exclusions apply.

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

## Overview

### What's Special

- Latest PCI Express technology and DDR2 400-MHz & 533-MHz memory support
- 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 4.5 hours of battery life on the nc6220 model
  - Up to 4 hours of battery life on the nc6230 model
  - 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
- Support for new HP docking solutions and HP Travel Battery

### Standard Features

#### Processors

Intel Pentium M processor 780\* (2.26-GHz, 533-MHz FSB, 2-MB L2 cache)  
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's numbering is not a measurement of higher performance.

**NOTE:** Intel Pentium M processors support enhanced Intel SpeedStep™ technology. Processor speed denotes maximum performance mode; Intel Pentium M processors will run at approximately 800 MHz in battery optimization mode.

#### Operating System

##### Preinstalled

Genuine Windows XP Professional SP2  
Genuine Windows XP Home Edition SP2  
FreeDOS

##### Supported

Genuine Microsoft Windows 2000 (drivers downloadable from <http://www.hp.com>)

##### Certified

Novell Linux Desktop 9

##### Windows Vista Capable

Not all Windows Vista features are available for use on all Windows Vista Capable PCs. All Windows Vista Capable PCs will run the core experiences of Windows Vista, such as innovations in organizing and finding information, security, and reliability. Some features available in premium editions of Windows Vista -- like the new Windows Aero™ user interface -- require advanced or additional hardware. Check <http://www.windowsvista.com/getready> for details.

#### Chipset

nc6220 model: Mobile Intel 915GM Express Chipset  
nc6230 model: Mobile Intel 915PM Express Chipset

#### Graphics

nc6220 model: Intel Graphics Media Accelerator 900 with up to 128 MB of shared system memory  
nc6230 model: ATI MOBILITY RADEON X300 graphics controller (PCI Express) with 32 MB or 64 MB of video memory

#### Display

##### Internal

14.1-inch TFT XGA (1024 x 768 resolution and 16 M colors)  
14.1-inch TFT SXGA+ (1400 x 1050 resolution and 16 M colors)  
Ambient light sensor

##### External

Up to 32-bit per pixel color depth  
VGA port supports resolutions up to 2048 x 1536 at 75 Hz, and lower resolutions at up to 100 Hz  
DVI port in optional HP Docking Station (sold separately) supports resolutions up to 1600 x 1200 at both full and reduced blanking, and 1920 x 1200 at reduced blanking

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

### Standard Features

<b>Memory</b>	<b>Standard</b>	256-MB, 512-MB, or 1024-MB 400-MHz or 533-MHz DDR2 SDRAM; two SODIMM slots
	<b>Maximum</b>	Upgradeable to 2048-MB maximum (1024-MB SODIMM 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.

<b>Communications</b>	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/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.

<b>Wireless Devices</b>	Support for a broad range of secure, integrated wireless LAN options. Integrated Bluetooth is also an option (factory configurable only) and can be combined with any one of the supported wireless LAN options.	
	<b>All integrated wireless LAN options</b>	<ul style="list-style-type: none"> <li>Wi-Fi certified</li> <li>Cisco Compatible Extensions support (Version 3.0)</li> <li>Wired Equivalent Privacy (WEP) support up to 128-bit keys</li> <li>Wi-Fi Protected Access (WPA) and WPA2 support</li> <li>802.1x authentication support, including EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, and LEAP</li> <li>WiFi certified for WPA2, WMM</li> <li>Advanced Encryption Standard (AES) support</li> <li>Dual antennas integrated in the display enclosure</li> </ul>
	<b>Broadcom 802.11 b/g WLAN</b>	<ul style="list-style-type: none"> <li>Integrated support for 802.11 b and g</li> <li>Up to 54-mbps data rate</li> </ul>
	<b>Broadcom 802.11 a/b/g WLAN</b>	<ul style="list-style-type: none"> <li>Integrated support for 802.11 a, b and g</li> <li>Up to 54-mbps data rate</li> </ul>
	<b>Intel PRO/Wireless 2200BG 802.11 b/g WLAN</b>	<ul style="list-style-type: none"> <li>Intel Centrino mobile technology</li> <li>Integrated support for 802.11 b and g</li> <li>Up to 54-mbps data rate</li> </ul>
	<b>Intel PRO/Wireless 2915ABG 802.11 a/b/g WLAN</b>	<ul style="list-style-type: none"> <li>Intel Centrino mobile technology</li> <li>Integrated support for 802.11 a, b and g</li> <li>Up to 54-mbps data rate</li> </ul>
	<b>Integrated Bluetooth</b>	<ul style="list-style-type: none"> <li>Bluetooth Specification v1.2 compliant</li> <li>Works with a wide range of Bluetooth devices</li> </ul>

### Standard Features

<b>Keyboard</b>	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.	
<b>One-Touch Productivity Buttons</b>	Provide one-touch access to the following features: HP Info Center, Wireless On/Off, Presentation Mode, Volume Up, Volume Down, and Volume Mute	
<b>Pointing Devices</b>	Dual Pointing devices – Touchpad with scroll zone and Pointstick Both devices have two soft-touch buttons.	
<b>Expansion Card Slots</b>	<b>One Type I/II PC Card Slot</b>	Supports 32-bit CardBus and 16-bit PC Cards
	<b>One Integrated Smart Card Reader</b>	Compatible with ISO 7816 compliant Smart Cards PC/SC interface support
<b>Media Slots</b>	<b>One Integrated Secure Digital Slot</b>	Supports SD (Secure Digital) and MMC (MultiMedia Card) media
<b>Storage</b>	<b>Hard Drives</b>	40-, 60-, 80-GB 5400 rpm SMART 60-GB 7200 rpm SMART
	<b>NOTE:</b> These hard drives are customer removable and will withstand multiple insertion/removal cycles.	
	<b>Optical Drives</b>	MultiBay II (9.5-mm) DVD-ROM MultiBay II Drive DVD/CD-RW Combo MultiBay II Drive DVD+/-RW MultiBay II Drive
	<b>Second Hard Drive</b>	MultiBay II (9.5-mm) 80-GB 5400 rpm MultiBay II Hard Drive
<b>Interfaces</b>	<b>PC Card Slot</b>	One – Type I/II
	<b>Smart Card Reader</b>	One
	<b>External Monitor</b>	One – VGA
	<b>External Microphone</b>	One
	<b>Headphone/Line out</b>	One
	<b>Power Connector</b>	One
	<b>RJ-11 (Modem)</b>	One
	<b>RJ-45 (NIC)</b>	One
	<b>Ambient Light Sensor</b>	One
	<b>Fast Infrared Port</b>	One (4-Mb/s support) IrDA 4-MB compliant; IR performance will vary depending on performance of IR peripherals and application used.
	<b>Serial Port</b>	One
	<b>S-Video TV Out</b>	One (Support for NTSC/PAL)
	<b>USB 2.0</b>	Three

### Standard Features

Docking Connector	One
Travel Battery Connector	One
LED Status Indicators	Eleven

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Audio	ADI AC '97 CODEC Integrated 16-bit Sound Blaster Pro compatible audio Integrated stereo speakers Integrated microphone External volume up, volume down, and mute buttons Stereo headphone/line out Stereo microphone in
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Software	<b>Preloaded Software for Microsoft Windows XP</b> 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 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)*
	<b>Software on CD</b> Intervideo WinDVD Creator – DVD Authoring (for optional DVD+/-RW drives)
	<b>Additional software available from the Web</b> HP Client Manager Software HP ProtectTools Security Manager: Credential Manager for HP ProtectTools Embedded Security for HP ProtectTools Smart Card Security for HP ProtectTools

\* Software is loaded on the hard drive and must be installed by running the Software Setup utility.

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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.
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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 <a href="http://www.hp.com/go/easydeploy">http://www.hp.com/go/easydeploy</a> .
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SMBIOS Version 2.3.4	System Management BIOS, previously known as DMI BIOS, is used to store system management information.
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### Standard Features

#### 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 are:

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

### 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

#### Integrated Smart Card Reader

Compatible with ISO 7816 compliant Smart Cards  
PC/SC interface support

#### Optional Features

#### 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 65-watt slim 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

### Battery

#### Primary Battery

6-cell high capacity Lithium-Ion (52Wh) – one-year warranty

#### Optional Extended Life Battery

8-cell high capacity Lithium-Ion (52Wh)



### Standard Features

#### Battery Life

**Primary Battery** nc6220: Up to 4 hours and 30 minutes  
nc6230: Up to 4 hours

**Primary Battery and optional HP Extended Life** nc6220: Up to 9 hours and 15 minutes  
nc6230: 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

#### Power Conservation

Supports enhanced Intel SpeedStep technology with Intel Pentium M processors (allows Battery Optimized Mode, Maximum Performance Mode, or Automatic mode)

Intel Display Power Saving technology on nc6220

ATI PowerPlay technology on nc6230

HP power down NIC technology

Hibernation

Standby

ACPI compliance

#### MultiBay II Devices

MultiBay II devices may be swapped with the system powered on (hot) under Microsoft Windows XP Professional, Windows XP Home, or Windows 2000 (except MultiBay II secondary hard drive).

#### Docking

HP Docking Station  
HP Advanced Docking Station

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.

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

\*\* HP Advanced Docking Station only

#### Service and Support

HP Services includes a three-year standard parts and labor warranty, pick-up or carry-in, and toll-free 7 x 24 hardware technical phone support. On-site service and warranty upgrades are also available.

**NOTE:** Certain restrictions and exclusions apply. Consult the HP Customer Support Center for details.

<http://h20000.www2.hp.com/bizsupport/TechSupport/ProductRoot.jsp>.

#### Select Model(s)

### Standard Features

nc6220 PU982AW#ABA	<b>Processor</b>	Intel Pentium M processor 740* (1.73-GHz, 533-MHz FSB, 2-MB L2 cache)
	<b>Operating System</b>	Genuine Windows XP Professional
	<b>System Memory</b>	512-MB 400-MHz DDR2 SDRAM (512-MB SODIMM in slot 1)
	<b>Hard Drive</b>	40-GB 5400 rpm
	<b>Display</b>	14.1-inch color TFT XGA (1024 x 768 resolution and 16 M colors)
	<b>Graphics</b>	Intel Graphics Media Accelerator 900 with up to 128 MB of shared system memory
	<b>Audio</b>	ADI AC '97 CODEC, Line out/headphone and microphone jacks
	<b>Optical Drive</b>	9.5-mm DVD/CD-RW Combo
	<b>Communications</b>	56K Fax/Modem, Integrated NetXtreme Gigabit PCI Express Ethernet Controller (10/100/1000 NIC)
	<b>Integrated Wireless</b>	Intel PRO/Wireless 2200BG 802.11b/g WLAN Bluetooth
	<b>TPM Embedded Security Chip</b>	Yes
	<b>Integrated Smart Card Reader</b>	Yes
	<b>Pointing Device</b>	Dual pointing devices (both Pointstick and Touchpad)
	<b>Battery</b>	6-cell high capacity Lithium-Ion (52Wh)
<b>Power</b>	External 65W adapter	
<b>Warranty</b>	3/3/0	

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nc6220 PZ510UA#ABA	<b>Processor</b>	Intel Pentium M processor 740* (1.73-GHz, 533-MHz FSB, 2-MB L2 cache)
	<b>Operating System</b>	Genuine Windows XP Professional
	<b>System Memory</b>	512-MB 400-MHz DDR2 SDRAM (512-MB SODIMM in slot 1 )
	<b>Hard Drive</b>	40-GB 5400 rpm
	<b>Display</b>	14.1-inch color TFT XGA (1024 x 768 resolution and 16 M colors)
	<b>Graphics</b>	Intel Graphics Media Accelerator 900 with up to 128 MB of shared system memory
	<b>Audio</b>	ADI AC '97 CODEC, Line out/headphone and microphone jacks
	<b>Optical Drive</b>	9.5-mm DVD/CD-RW Combo
	<b>Communications</b>	56K Fax/Modem, Integrated NetXtreme Gigabit PCI Express Ethernet Controller (10/100/1000 NIC)
	<b>Integrated Wireless</b>	Intel PRO/Wireless 2915ABG 802.11a/b/g WLAN Bluetooth
	<b>TPM Embedded Security Chip</b>	Yes
	<b>Integrated Smart Card Reader</b>	Yes
	<b>Pointing Device</b>	Dual pointing devices (both Pointstick and Touchpad)
	<b>Battery</b>	6-cell high capacity Lithium-Ion (52Wh)
<b>Power</b>	External 65W adapter	
<b>Warranty</b>	3/3/0	

### Standard Features

<b>nc6220</b> EK256AW#ABA	<b>Processor</b>	Intel Pentium M processor 750* (1.86-GHz, 533-MHz FSB, 2-MB L2 cache)
	<b>Operating System</b>	Genuine Windows XP Professional
	<b>System Memory</b>	512-MB 533-MHz DDR2 SDRAM (512-MB SODIMM in slot 1 )
	<b>Hard Drive</b>	40-GB 5400 rpm
	<b>Display</b>	14.1-inch color TFT XGA (1024 x 768 resolution and 16 M colors)
	<b>Graphics</b>	Intel Graphics Media Accelerator 900 with up to 128 MB of shared system memory
	<b>Audio</b>	ADI AC '97 CODEC, Line out/headphone and microphone jacks
	<b>Optical Drive</b>	9.5-mm DVD/CD-RW Combo
	<b>Communications</b>	56K Fax/Modem, Integrated NetXtreme Gigabit PCI Express Ethernet Controller (10/100/1000 NIC)
	<b>Integrated Wireless</b>	Intel PRO/Wireless 2200BG 802.11b/g WLAN Bluetooth
	<b>TPM Embedded Security Chip</b>	Yes
	<b>Integrated Smart Card Reader</b>	Yes
	<b>Pointing Device</b>	Dual pointing devices (both Pointstick and Touchpad)
	<b>Battery</b>	6-cell high capacity Lithium-Ion (52Wh)
	<b>Power</b>	External 65W adapter
<b>Warranty</b>	3/3/0	

<b>nc6220</b> PZ064UA#ABA Smart Buy	<b>Processor</b>	Intel Pentium M processor 750* (1.86-GHz, 533-MHz FSB, 2-MB L2 cache)
	<b>Operating System</b>	Genuine Windows XP Professional
	<b>System Memory</b>	512-MB 400-MHz DDR2 SDRAM (512-MB SODIMM in slot 1 )
	<b>Hard Drive</b>	40-GB 5400 rpm
	<b>Display</b>	14.1-inch color TFT XGA (1024 x 768 resolution and 16 M colors)
	<b>Graphics</b>	Intel Graphics Media Accelerator 900 with up to 128 MB of shared system memory
	<b>Audio</b>	ADI AC '97 CODEC, Line out/headphone and microphone jacks
	<b>Optical Drive</b>	9.5-mm DVD/CD-RW Combo
	<b>Communications</b>	56K Fax/Modem, Integrated NetXtreme Gigabit PCI Express Ethernet Controller (10/100/1000 NIC)
	<b>Integrated Wireless</b>	Intel PRO/Wireless 2915ABG 802.11a/b/g WLAN
	<b>TPM Embedded Security Chip</b>	Yes
	<b>Integrated Smart Card Reader</b>	Yes
	<b>Pointing Device</b>	Dual pointing devices (both Pointstick and Touchpad)
	<b>Battery</b>	6-cell high capacity Lithium-Ion (52Wh)
	<b>Power</b>	External 65W adapter
<b>Warranty</b>	3/3/0	

### Standard Features

<b>nc6220</b> PZ122UA#ABA Smart Buy	<b>Processor</b>	Intel Pentium M processor 750* (1.86-GHz, 533-MHz FSB, 2-MB L2 cache)
	<b>Operating System</b>	Genuine Windows XP Professional
	<b>System Memory</b>	1024-MB 400-MHz DDR2 SDRAM (512-MB SODIMM in slot 1 and slot 2)
	<b>Hard Drive</b>	60-GB 5400 rpm
	<b>Display</b>	14.1-inch color TFT XGA (1024 x 768 resolution and 16 M colors)
	<b>Graphics</b>	Intel Graphics Media Accelerator 900 with up to 128 MB of shared system memory
	<b>Audio</b>	ADI AC '97 CODEC, Line out/headphone and microphone jacks
	<b>Optical Drive</b>	9.5-mm 2X DVD+/-RW
	<b>Communications</b>	56K Fax/Modem, Integrated NetXtreme Gigabit PCI Express Ethernet Controller (10/100/1000 NIC)
	<b>Integrated Wireless</b>	Intel PRO/Wireless 2915ABG 802.11a/b/g WLAN Bluetooth
	<b>TPM Embedded Security Chip</b>	Yes
	<b>Integrated Smart Card Reader</b>	Yes
	<b>Pointing Device</b>	Dual pointing devices (both Pointstick and Touchpad)
	<b>Battery</b>	6-cell high capacity Lithium-Ion (52Wh)
<b>Power</b>	External 65W adapter	
<b>Warranty</b>	3/3/0	

<b>nc6220</b> EK257AW#ABA	<b>Processor</b>	Intel Pentium M processor 760* (2.0-GHz, 533-MHz FSB, 2-MB L2 cache)
	<b>Operating System</b>	Genuine Windows XP Professional
	<b>System Memory</b>	512-MB 533-MHz DDR2 SDRAM (512-MB SODIMM in slot 1 )
	<b>Hard Drive</b>	60-GB 5400 rpm
	<b>Display</b>	14.1-inch color TFT SXGA+ (1400 x 1050 resolution and 16 M colors)
	<b>Graphics</b>	Intel Graphics Media Accelerator 900 with up to 128 MB of shared system memory
	<b>Audio</b>	ADI AC '97 CODEC, Line out/headphone and microphone jacks
	<b>Optical Drive</b>	9.5-mm DVD/CD-RW Combo
	<b>Communications</b>	56K Fax/Modem, Integrated NetXtreme Gigabit PCI Express Ethernet Controller (10/100/1000 NIC)
	<b>Integrated Wireless</b>	Intel PRO/Wireless 2200BG 802.11b/g WLAN Bluetooth
	<b>TPM Embedded Security Chip</b>	Yes
	<b>Integrated Smart Card Reader</b>	Yes
	<b>Pointing Device</b>	Dual pointing devices (both Pointstick and Touchpad)
	<b>Battery</b>	6-cell high capacity Lithium-Ion (52Wh)
<b>Power</b>	External 65W adapter	

### Standard Features

Warranty 3/3/0

<p><b>nc6230</b> PU984AW#ABA</p>	<p><b>Processor</b> Intel Pentium M processor 750* (1.86-GHz, 533-MHz FSB, 2-MB L2 cache)  <b>Operating System</b> Genuine Windows XP Professional  <b>System Memory</b> 512-MB 400-MHz DDR2 SDRAM (512-MB SODIMM in slot 1)  <b>Hard Drive</b> 60-GB 5400 rpm  <b>Display</b> 14.1-inch color TFT XGA (1024 x 768 resolution and 16 M colors)  <b>Graphics</b> ATI MOBILITY RADEON X300  <b>Video Memory</b> 64 MB  <b>Audio</b> ADI AC '97 CODEC, Line out/headphone and microphone jacks  <b>Optical Drive</b> 9.5-mm DVD/CD-RW Combo  <b>Communications</b> 56K Fax/Modem, Integrated NetXtreme Gigabit PCI Express Ethernet Controller (10/100/1000 NIC)  <b>Integrated Wireless</b> Intel PRO/Wireless 2200BG 802.11b/g WLAN Bluetooth  <b>TPM Embedded Security Chip</b> Yes  <b>Integrated Smart Card Reader</b> Yes  <b>Pointing Device</b> Dual pointing devices (both Pointstick and Touchpad)  <b>Battery</b> 6-cell high capacity Lithium-Ion (52Wh)  <b>Power</b> External 65W adapter  <b>Warranty</b> 3/3/0</p>
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<p><b>nc6230</b> PU985AA#ABA Smart Buy</p>	<p><b>Processor</b> Intel Pentium M processor 750* (1.86-GHz, 533-MHz FSB, 2-MB L2 cache)  <b>Operating System</b> Genuine Windows XP Professional  <b>System Memory</b> 512-MB 400-MHz DDR2 SDRAM (512-MB SODIMM in slot 1)  <b>Hard Drive</b> 60-GB 5400 rpm  <b>Display</b> 14.1-inch color TFT XGA (1024 x 768 resolution and 16 M colors)  <b>Graphics</b> ATI MOBILITY RADEON X300  <b>Video Memory</b> 64 MB  <b>Audio</b> ADI AC '97 CODEC, Line out/headphone and microphone jacks  <b>Optical Drive</b> 9.5-mm DVD/CD-RW Combo  <b>Communications</b> 56K Fax/Modem, Integrated NetXtreme Gigabit PCI Express Ethernet Controller (10/100/1000 NIC)  <b>Integrated Wireless</b> Intel PRO/Wireless 2200BG 802.11b/g WLAN  <b>TPM Embedded Security Chip</b> Yes  <b>Integrated Smart Card Reader</b> Yes  <b>Pointing Device</b> Dual pointing devices (both Pointstick and Touchpad)  <b>Battery</b> 6-cell high capacity Lithium-Ion (52Wh)</p>
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### Standard Features

<b>Power</b>	External 65W adapter
<b>Warranty</b>	3/3/0

<b>nc6230</b> PZ511UA#ABA	<b>Processor</b>	Intel Pentium M processor 750* (1.86-GHz, 533-MHz FSB, 2-MB L2 cache)
	<b>Operating System</b>	Genuine Windows XP Professional
	<b>System Memory</b>	512-MB 400-MHz DDR2 SDRAM (512-MB SODIMM in slot 1 )
	<b>Hard Drive</b>	60-GB 5400 rpm
	<b>Display</b>	14.1-inch color TFT XGA (1024 x 768 resolution and 16 M colors)
	<b>Graphics</b>	ATI MOBILITY RADEON X300
	<b>Video Memory</b>	64 MB
	<b>Audio</b>	ADI AC '97 CODEC, Line out/headphone and microphone jacks
	<b>Optical Drive</b>	9.5-mm DVD/CD-RW Combo
	<b>Communications</b>	56K Fax/Modem, Integrated NetXtreme Gigabit PCI Express Ethernet Controller (10/100/1000 NIC)
	<b>Integrated Wireless</b>	Intel PRO/Wireless 2915ABG 802.11a/b/g WLAN Bluetooth
	<b>TPM Embedded Security Chip</b>	Yes
	<b>Integrated Smart Card Reader</b>	Yes
	<b>Pointing Device</b>	Dual pointing devices (both Pointstick and Touchpad)
	<b>Battery</b>	6-cell high capacity Lithium-Ion (52Wh)
	<b>Power</b>	External 65W adapter
<b>Warranty</b>	3/3/0	

<b>nc6230</b> PZ517UA#ABA Smart Buy	<b>Processor</b>	Intel Pentium M processor 750* (1.86-GHz, 533-MHz FSB, 2-MB L2 cache)
	<b>Operating System</b>	Genuine Windows XP Professional
	<b>System Memory</b>	1024-MB 400-MHz DDR2 SDRAM (512-MB SODIMM in slot 1 and slot 2)
	<b>Hard Drive</b>	60-GB 5400 rpm
	<b>Display</b>	14.1-inch color TFT SXGA+ (1400 x 1050 resolution and 16 M colors)
	<b>Graphics</b>	ATI MOBILITY RADEON X300
	<b>Video Memory</b>	64 MB
	<b>Audio</b>	ADI AC '97 CODEC, Line out/headphone and microphone jacks
	<b>Optical Drive</b>	9.5-mm DVD/CD-RW Combo
	<b>Communications</b>	56K Fax/Modem, Integrated NetXtreme Gigabit PCI Express Ethernet Controller (10/100/1000 NIC)
	<b>Integrated Wireless</b>	Intel PRO/Wireless 2200BG 802.11b/g WLAN Bluetooth
	<b>TPM Embedded Security Chip</b>	Yes
	<b>Integrated Smart Card Reader</b>	Yes

### Standard Features

Pointing Device	Dual pointing devices (both Pointstick and Touchpad)
Battery	6-cell high capacity Lithium-Ion (52Wh)
Power	External 65W adapter
Warranty	3/3/0

nc6230 PZ123UA#ABA	Processor	Intel Pentium M processor 760* (2.0-GHz, 533-MHz FSB, 2-MB L2 cache)
	Operating System	Genuine Windows XP Professional
	System Memory	1024-MB 400-MHz DDR2 SDRAM (512-MB SODIMM in slot 1 and slot 2)
	Hard Drive	60-GB 5400 rpm
	Display	14.1-inch color TFT XGA (1024 x 768 resolution and 16 M colors)
	Graphics	ATI MOBILITY RADEON X300
	Video Memory	64 MB
	Audio	ADI AC '97 CODEC, Line out/headphone and microphone jacks
	Optical Drive	9.5-mm 2X 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	Yes
	Integrated Smart Card Reader	Yes
	Pointing Device	Dual pointing devices (both Pointstick and Touchpad)
	Battery	6-cell high capacity Lithium-Ion (52Wh)
	Power	External 65W adapter
Warranty	3/3/0	

nc6230 EK258AW#ABA	Processor	Intel Pentium M processor 760* (2.0-GHz, 533-MHz FSB, 2-MB L2 cache)
	Operating System	Genuine Windows XP Professional
	System Memory	512-MB 533-MHz DDR2 SDRAM (512-MB SODIMM in slot 1 )
	Hard Drive	60-GB 5400 rpm
	Display	14.1-inch color TFT SXGA+ (1400 x 1050 resolution and 16 M colors)
	Graphics	ATI MOBILITY RADEON X300
	Video Memory	64 MB
	Audio	ADI AC '97 CODEC, Line out/headphone and microphone jacks
	Optical Drive	9.5-mm DVD/CD-RW Combo
	Communications	56K Fax/Modem, Integrated NetXtreme Gigabit PCI Express Ethernet Controller (10/100/1000 NIC)
	Integrated Wireless	Intel PRO/Wireless 2200BG 802.11b/g WLAN Bluetooth
	TPM Embedded Security Chip	Yes

### Standard Features

<b>Integrated Smart Card Reader</b>	Yes
<b>Pointing Device</b>	Dual pointing devices (both Pointstick and Touchpad)
<b>Battery</b>	6-cell high capacity Lithium-Ion (52Wh)
<b>Power</b>	External 65W adapter
<b>Warranty</b>	3/3/0

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



### Options

<b>Memory</b>	256-MB 533-MHz DDR2 SDRAM	PE830A
	512-MB 533-MHz DDR2 SDRAM	PE831A
	1024-MB 533-MHz DDR2 SDRAM	PE832A
<b>MultiBay II Storage</b> (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
<b>Other Storage</b>	60-GB 5400 rpm Primary Hard Drive	PA852A
	80-GB 5400 rpm Primary Hard Drive	EH424AA
	HP USB Diskette Drive	DC361B
	HP USB Digital Drive + 256MB Secure Digital Card	DL702AA
<b>Communications</b>	Intel PRO/Wireless 2200BG 802.11 b/g WLAN option kit	PF952AA#ABA
	Intel PRO/Wireless 2915ABG 802.11 a/b/g WLAN option kit	PN302AA#ABA
<b>Expansion Solutions</b>	HP Docking Station	PA286A#ABA
	HP Advanced Docking Station	PA287A#ABA
	HP 3-in-1 NAS Docking Station	EM537AA#ABA
	HP Monitor Stand	PA507A
	HP Adjustable Notebook Stand	PA508A
	HP External MultiBay II (9.5-mm)	PA509A#ABA
	HP 4-port USB 2.0 Hub	DG954A
<b>Power</b>	HP 2-bay Battery Charging Station	DT533A#ABA
	HP 10-bay Battery Charging Station	DT534A#ABA
	Battery Adapter kit #1	PK402A
	65W AC Adapter	DC359A#ABA
	90W AC Adapter	DC895B#ABA
	90W Auto Adapter	DC303B
	90W Air/Auto/AC Combo Adapter	DV574A#ABA
	90W Aircraft Cables	DC899A
	Primary 6-cell Battery	PB994A
	HP Extended Life Battery	PB993A

### Options

<b>Carrying Cases</b>	HP Entry Value Case	DL617A
	HP Top Load Nylon	DC915A
	HP Executive Leather Case	PA847A
	HP Sport Backpack	DG102A
<b>Security</b>	PC Card Smart Card Reader	DC350B
	Smart Card Bulk Pack (1-100)	DR032A
	HP/Kensington Cable Lock	PC766A
<b>Input/Output Devices</b>	USB/PS2 Keyboard	DC852A#ABA
	USB/PS2 Optical Mouse	DC369A
	HP USB Optical Travel Mouse	F2100A
<b>HP Care Pack Services</b>	9x5 Pick-up and Return – 4 Years	U7868E
	9x5 Pick-up and Return – 5 Years	U7869E
	9x5 Pick-up and Return – 1 Year Post Warranty	U4426PE
	9x5 Next-Business-Day On-Site Coverage – 3 Years	U4414E
	9x5 Next-Business-Day On-Site Coverage – 4 Years	U7860E
	9x5 Next-Business-Day On-Site Coverage – 5 Years	U7861E
	9x5 Next-Business-Day On-Site Coverage – 1 Year Post Warranty	U4416PE
	9x5 Next-Business-Day On-Site Coverage for Notebook with Off-Site Accidental Damage Protection Service – 3 Years	365711-001
	9x5 Next-Business-Day On-Site Coverage for Notebook with Off-Site Accidental Damage Protection Service – 4 Years	365712-001
	9x5 Pick-up and Return Coverage with Off-Site Accidental Damage Protection Service – 3 Years	U4428E
	9x5 Pick-up and Return Coverage with Off-Site Accidental Damage Protection Service – 4 Years	U9586E

### 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

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	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

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### Hard Drive Support

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	Quantity Supported	Drive Bay
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

<b>System Unit</b>	<b>Dimensions</b> (H x W x D)	1.04 (at front) x 12.4 x 10.1 in (26.5 (at front) x 315 x 257 mm)	
	<b>Weight</b>	nc6220 with MultiBay II weight saver	4.69 lb (2.13 kg)
		nc6220 with MultiBay II DVD optical drive	4.99 lb (2.26 kg)
		nc6230 with MultiBay II weight saver	4.82 lb (2.19 kg)
		nc6230 with MultiBay II DVD optical drive	5.12 lb (2.32 kg)
<b>NOTE:</b> Height varies depending upon where on the notebook the measurement is made. Weight includes 6-cell battery, 40-GB hard drive, 256-MB memory, 14.1-inch XGA display, 802.11 wireless communications module, and TPM Embedded Security Chip. Weight varies by configuration and components.			
<b>Stand-Alone Power Requirements</b>	Nominal Operating Voltage	18.5 V	
	Average Operating Power	nc6220:	22 W
		nc6230:	24.5 W
<b>Temperature</b>	Max Operating Power	< 65 W	
	Operating	32° to 95° F (0° to 35° C) (not writing optical)	
		41° to 95° F (5° to 35° C) (writing optical)	
<b>Relative Humidity</b>	Non-operating	-4° to 140° F (-20° to 60° C)	
	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</b> (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)	
<b>Industry Standard Certifications</b>	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	

### Technical Specifications

SABS	Yes
UKRSERTCOMPUTER	Yes

<b>65W External AC Adapter</b>	<b>Weight</b>	0.62 lb (0.28 kg) (adapter) 0.29 lb (0.13 kg) (power cord)	
	<b>Dimensions</b>	4.17 x 1.85 x 1.1 in (10.6 x 4.7 x 2.8 cm)	
	<b>Input</b>	Operating Input Voltage	100 to 240 VAC
		Operating Input Current	1.7A at 90 VAC 0.85A at 180 VAC
		Operating Frequency Range	47 to 63 Hz AC
	<b>Output</b>	Efficiency	83% minimum at 115 VAC
		Output Power	65 W
		DC Output Current	18.5 V
	<b>Environmental</b>	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%
	<b>EMI and Safety Certifications</b>	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	
		<b>MTBF</b>	Over 200,000 hours at 25°C ambient condition

<b>52Wh Primary 6-Cell Battery</b>	<b>Dimensions (H x W x L)</b>	0.8 x 2.1 x 8.0 in (2.0 x 5.3 x 20.3 cm)	
	<b>Weight</b>	0.737 lb (0.335 kg)	
	<b>Cells/Type</b>	6-cell Lithium-Ion	
	<b>Energy</b>	Voltage	10.8V
		Watt-hour Capacity	52Wh
		Amp-hour Capacity	4.8Ah
	<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	

### Technical Specifications

Optional 52Wh Extended Life 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			

14.1-Inch Color TFT XGA Display	Active Area (W x H)	11.2 x 8.4 in (28.6 x 21.4 cm)		
	Diagonal Size	14.1 in (35.7 cm)		
	Surface Treatment	Anti-glare		
	Number of Colors	Up to 16M		
	Contrast Ratio	300:1 (typical)		
	Refresh Rate	60 Hz		
	Brightness	170 nit (typical)		
	Pixel Resolution	Pitch	0.279 mm	
		Format	1024 x 768	
		Configuration	RGB Stripe	
Backlight	CCFL			
PPI	91			
Viewing Angle	±45° Horizontal, ±25° Vertical (typical)			

### Technical Specifications

14.1-Inch Color TFT SXGA+ Display	Active Area (W x H)	11.2 x 8.4 in (28.6 x 21.4 cm)		
	Diagonal Size	14.1 in (35.7 cm)		
	Surface Treatment	Anti-glare		
	Number of Colors	Up to 16M		
	Contrast Ratio	300:1 (typical)		
	Refresh Rate	60 Hz		
	Brightness	180 nit (typical)		
	Pixel Resolution	Pitch	0.204 mm	
		Format	1400 x 1050	
		Configuration	RGB Stripe	
	Backlight	CCFL		
	PPI	125		
	Viewing Angle	±40° Horizontal, +20°/-40° Vertical (typical)		

### Hard Drives

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-7		
	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			



### Technical Specifications

80-GB 5400 rpm	Drive Weight	0.22 lb (101 g)	
	Capacity	80 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-7	
	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 (101 g)	
	Capacity	60 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-7	
	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	

40-GB 5400 rpm	Drive Weight	0.22 lb (101 g)	
	Capacity	40 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-7	
	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	

### Technical Specifications

#### Removable Storage Drives - MultiBay II

DVD-ROM MultiBay II Drive	<b>Dimensions</b>	0.37 x 5.51 x 5.04 in (0.95 x 14.0 x 12.8 cm)	
	<b>Weight</b>	0.34 lb (155 g)	
	<b>Access Times</b>	Random	<120 ms CD <200 ms DVD
	<b>Max Data Transfer Rate</b>	24X-CD-ROM	3,600 KB/s
		8X-DVD	10,800 KB/s
	<b>Transfer Mode</b>	Multiword DMA Mode 2	
	<b>Interface</b>	EIDE	
	<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	
	<b>Supported Media (write)</b>	None	
	<b>Max Media Capacity (read)</b>	8.5 GB	
	<b>Transport</b>	Tray Loading	

DVD/CD-RW Combo MultiBay II Drive	<b>Dimensions</b>	0.37 x 5.51 x 5.04 in (0.95 x 14.0 x 12.8 cm)	
	<b>Weight</b>	0.45 lb (205 g)	
	<b>Access Times</b>	Random	<120 ms CD <155 ms DVD
	<b>Max Data Transfer Rate</b>	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
	<b>Transfer Mode</b>	Multiword DMA Mode 2	
	<b>Interface</b>	EIDE	
	<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	
	<b>Supported Media (write)</b>	CD-R, CD-RW	
<b>Max Media Capacity (read)</b>	8.5 GB		
<b>Max Media Capacity (write)</b>	700 MB		
<b>Transport</b>	Tray loading		

### Technical Specifications

<b>DVD+/-RW MultiBay II Drive</b>	<b>Dimensions</b>	0.37 x 5.51 x 5.04 in (0.95 x 14.0 x 12.8 cm)	
	<b>Weight</b>	0.45 lb (205 g)	
	<b>Access Times</b>	Random	<150 ms CD
			<125 ms DVD
	<b>Max Data Transfer Rate</b>	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
	<b>Transfer Mode</b>	Multiword DMA Mode 2	
	<b>Interface</b>	EIDE	
	<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	
<b>Supported Media (write)</b>	CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW		
<b>Max Media Capacity (read)</b>	4.7 GB		
<b>Max Media Capacity (write)</b>	4.7 GB		
<b>Transport</b>	Tray Loading		

<b>80-GB 5400 rpm MultiBay II Hard Drive</b>	<b>MultiBay II Drive Adapter</b>	<b>Dimensions (H x W x D)</b>	0.37 x 5.51 x 5.04 in (0.95 x 14.0 x 12.8 cm)
		<b>Weight</b>	0.16 lb (72 g)
	<b>Drive Weight</b>	0.22 lb (101 g)	
	<b>Capacity</b>	80 GB	
	<b>Height</b>	0.37 in (9.5 mm)	
	<b>Width</b>	2.75 in (70 mm)	
	<b>Interface</b>	ATA-6	
	<b>Transfer Rate</b>	Synchronous (maximum)	100 MB/s (Drive Capability)
	<b>Seek Time</b>	Single Track	3 ms
	(typical reads, including settling)	Average	13 ms
		Maximum	24 ms
	<b>Rotational Speed</b>	5400 rpm	
	<b>Logical Blocks</b>	156,301,488	
	<b>Operating Temperature</b>	41° to 131° F (5° to 55° C)	
	<b>Features</b>	ATA Security	

### Technical Specifications

#### Audio

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

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<b>Audio Output Quality</b>	<b>Frequency Response</b>	20 Hz - 20 kHz
	<b>Signal to Noise Ratio</b>	>85 dB
	<b>Total Harmonic Distortion</b>	0.01%
	<b>Noise Floor</b>	-110 dB
	<b>Play/Record Sampling Rate(s)</b>	7 kHz - 48 kHz
	<b>AD/DA Resolution</b>	16 bit

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<b>Internal Speakers</b>	<b>Power Rating</b>	2 Watts
	<b>Impedance</b>	4 Ohms

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#### Communications

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<b>Integrated Broadcom NetXtreme Gigabit PCI Express Ethernet Controller (10/100/1000 NIC)</b>	<b>Ethernet Features</b>	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)
	<b>Power Management</b>	ACPI 1.1a compliant -- multiple power modes Situation-sensitive features reduce power consumption NIC Battery Saving Mode (enabled by default)
	<b>Performance Features</b>	TCP/IP/UDP Checksum Offload (configurable) Microsoft Large Send Offload (configurable) TCP Segmentation Offload CPU Task Offload Adaptive Interrupts

### Technical Specifications

<b>Manageability</b>	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
<b>NIC Device Driver Name</b>	Broadcom NetXtreme Gigabit Ethernet
<b>Drivers Available</b>	Microsoft Windows XP Microsoft Windows 2000

### Agere Systems AC'97 Modem

<b>Form Factor</b>	MDC Daughtercard
<b>Power Management Support</b>	APM Revision 1.2, ACPI
<b>Approvals/Certifications</b>	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
<b>Data Mode Capabilities</b>	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) <b>Optional symbol rates:</b> 2800, 3429 Asymmetric Symbol rates <b>Synchronous primary channel data signaling rates:</b> 3600, 31200 Automatic rate re-negotiation V.32bis V.32 V.23 V.22bis V.22 V.21 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



### Technical Specifications

<b>Form Factor</b>	MiniPCI Type III B	
<b>Weight</b>	0.026 lb (12 g)	
<b>Dimensions</b>	0.20 x 1.75 x 2.34 in (4.9 x 44.6 x 59.8 mm)	
<b>Operating Voltage</b>	3.3v	
<b>Temperature</b>	Operating	32° to 122° F (0° to 50° C)
	Non-operating	-14° to 158° F (-10° to 70° C)
<b>Humidity</b>	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
<b>Altitude</b>	Operating	0 to 15,000 ft (4,572 m)
	Non-operating	0 to 40,000 ft (12,192 m)
<b>Configuration Utility<sup>4</sup></b>	Choice of Configuration Utility:	
	<ul style="list-style-type: none"> <li>• Microsoft Windows XP Wireless Network Connection Manager</li> <li>• Broadcom Wireless Configuration Utility (required for Cisco Compatible Extensions support)</li> </ul>	
	<ol style="list-style-type: none"> <li>1. Check latest software/driver release for updates on supported security features.</li> <li>2. Maximum output power may vary by country according to local regulations.</li> <li>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).</li> <li>4. WLAN supplier's client utility is required for Cisco Compatible Extensions support. WLAN may also be compatible with certain third-party software supplicants.</li> </ol>	

### Broadcom 4311AG 802.11a/b/g WiFi Adapter

<b>Wireless LAN Standards</b>	IEEE 802.11a IEEE 802.11b IEEE 802.11g
<b>Interoperability</b>	Wi-Fi certified Cisco Compatible Extensions Program compliant ( <a href="http://www.hp.com/go/notebooks/WLAN">details at www.hp.com/go/notebooks/WLAN</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
<b>Modulation</b>	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM
<b>Security<sup>1</sup></b>	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, EAP-SIM.  Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4).
<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</b>	Ad-hoc (Peer to Peer)
<b>Models</b>	Infrastructure (Access Point Required)
<b>Roaming</b>	IEEE 802.11 compliant roaming between access points
<b>Output Power (for CCK)<sup>2</sup></b>	17.5 dBm





### Technical Specifications

<b>Modulation</b>	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM	
<b>Security<sup>1</sup></b>	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).	
<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.	
<b>Output Power (for CCK)<sup>2</sup></b>	16 dBm +/- 2 dB	
<b>Output Power (for OFDM; power varies by data rate)<sup>2</sup></b>	15 dBm +2/-5 dB	
<b>Power Consumption</b>	Transmit: 1.8 Watts (max) Receive: 1.4 Watts (max) Idle mode: 75 mW (nominal) Sleep mode: 60 mW	
<b>Power Management</b>	ACPI compliant power management 802.11 Compliant Power Saving Mode	
<b>Receiver Sensitivity<sup>3</sup></b>	54 Mbps: -72 dBm, 11 Mbps: -88 dBm , 1 Mbps: -97 dBm	
<b>Antenna type</b>	High efficiency dual band antenna with polarization diversity, mounted in the display enclosure	
<b>Range</b>	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>	MiniPCI Type IIIB	
<b>Weight</b>	0.026 lb (11.75 g) (max)	
<b>Dimensions</b>	0.20 x 1.75 x 2.34 in (4.9 x 44.6 x 59.8 mm)	
<b>Operating Voltage</b>	3.3v	
<b>Temperature</b>	Operating	32° to 158° F (0° to 70° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
<b>Humidity</b>	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
<b>Altitude</b>	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)

### Technical Specifications

#### Configuration Utility<sup>4</sup>

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.

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>)

#### 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

#### Security<sup>1</sup>

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

Ad-hoc (Peer to Peer)

#### Models

Infrastructure (Access Point Required)

#### Roaming

IEEE 802.11 compliant roaming between access points

#### Output Power (for CKK)<sup>2</sup>

16 dBm +/- 2 dB

#### Output Power (for OFDM; 15 dBm +/- 5 dB

power varies by data rate)<sup>2</sup>

#### 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 Sensitivity<sup>3</sup>

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

### Technical Specifications

<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>	MiniPCI Type IIIB	
<b>Weight</b>	0.026 lb (11.75 gm) (max)	
<b>Dimensions</b>	0.20 x 1.75 x 2.34 in (4.9 x 44.6 x 59.8 mm)	
<b>Operating Voltage</b>	3.3v +/- 10%	
<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 95% (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<sup>4</sup></b>	Choice of Configuration Utility: <ul style="list-style-type: none"><li>• Intel PROSet for Microsoft Windows 2000 or XP (required for Cisco Compatible Extensions support)</li><li>• Microsoft Windows XP Wireless Network Connection Manager</li></ul> <ol style="list-style-type: none"><li>1. Check latest software/driver release for updates on supported security features.</li><li>2. Maximum output power may vary by country according to local regulations.</li><li>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).</li><li>4. WLAN supplier's client utility is required for Cisco Compatible Extensions support. WLAN may also be compatible with certain third-party software suppliers.</li></ol>	

### Bluetooth by HP

<b>Name</b>	HP Integrated module with Bluetooth wireless technology
<b>Bluetooth Specification</b>	1.2 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>	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
<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 1.1 compliant

### Technical Specifications

<b>OS Support</b>	Microsoft Windows Plug and Play compliant Microsoft Windows XP Professional and Home Microsoft Windows 2000
<b>Bluetooth Software Supported</b>	Widcomm 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 Supported</b>	(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) Basic Imaging Profile (BIP) Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP)

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

### *Technical Specifications*

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