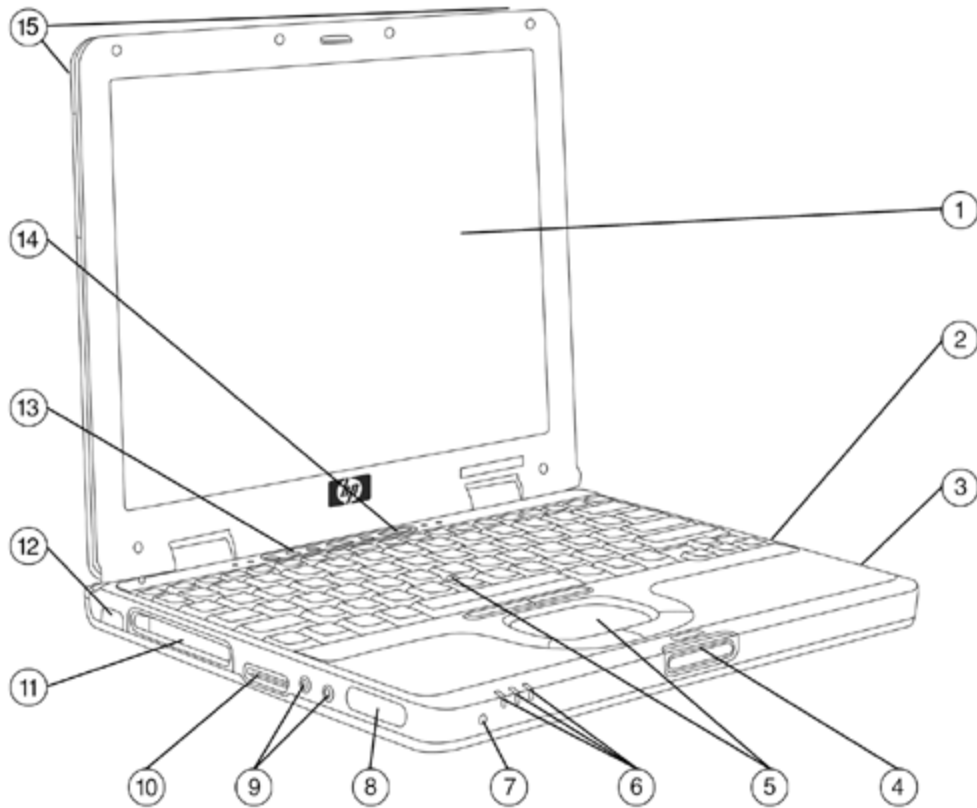
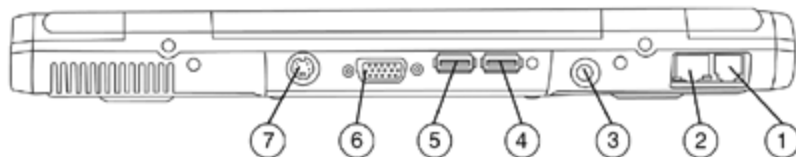


### Overview



- |  |                                 |
|--|---------------------------------|
| 1. Display                                     | 8. Speaker                      |
| 2. User Removable Hard Drive                   | 9. Headphone/Microphone Jacks   |
| 3. Cable Lock Slot                             | 10. Secure Digital (SD) Slot    |
| 4. Display Latch Release                       | 11. PC Card Slot                |
| 5. Dual Pointing Devices (Pointstick/Touchpad) | 12. Infrared Port               |
| 6. Wireless/Power/Charge LEDs                  | 13. Quick Launch Buttons        |
| 7. Microphone                                  | 14. Volume Down/Up/Mute Buttons |
|  | 15. Integrated Dual Antenna     |



- |                                      |                |
|--------------------------------------|----------------|
| 1. RJ-11 (Modem)                     | 5. USB         |
| 2. RJ-45 (NIC)                       | 6. VGA Out     |
| 3. DC In                             | 7. S-Video Out |
| 4. Powered USB for External Multibay |                |

### At A Glance

- Microsoft® Windows® XP Professional and limited localizations of Windows XP Home Edition, preinstalled
- Intel® Pentium® M Processors and Intel® Celeron® M Processor
- 12.1-inch XGA TFT display
- 256-MB DDR SDRAM upgradeable to 1024 MB
- Up to 80-GB 5400rpm, user-removable hard drives
- Magnesium alloy display enclosure
- Protected by a three-year, Worldwide Limited Warranty – and in select countries a One-year Worldwide Limited Warranty. In both cases, certain restrictions and exclusions apply. Consult the HP Customer Support Center for details.

### Overview

#### What's New

- Intel Pentium M Processors
- ATI Mobility Radeon graphics with user selectable 32 or 64-MB DDR SDRAM
- Optional Integrated Smart Card Reader (replaces current PC card slot)
- HP ProtectTools Embedded Security – Support for TCG compliant TPM security module
- Optional integrated 802.11b (Intel), 802.11b/g and 802.11a/b/g wireless LAN modules
- Optional integrated Bluetooth
- Integrated Secure Digital (SD) flash media slot
- Dual pointing devices
- Common Port Replicator and Advanced Port Replicator with Gigabit NIC pass-through
- Removed silver stripe around outer base and display

#### What's Special

- Ultra-light weight – 3.5 lb (1.59 kg)
- Full sized keyboard
- Support for up to two batteries
- Self powered external MultiBay, which provides a cost effective and travel friendly way to access MultiBay drives
- HP Mobile Printing driver makes on-the-go printing quick and easy

## Standard Features

### Processors

Intel Pentium M Processor 755 \* – 2.0GHz, 2MB L2 cache, 400MHz Front Side Bus (FSB)

Intel Pentium M Processor 745 – 1.8GHz, 2MB L2 cache, 400MHz Front Side Bus (FSB)

Intel Pentium M Processor 735 – 1.7GHz, 2MB L2 cache, 400 MHz Front Side Bus (FSB)

Intel Pentium M Processor 725 – 1.6GHz, 2MB L2 cache, 400 MHz Front Side Bus (FSB)

Intel Pentium M Processor 715 – 1.5GHz, 2MB L2 cache, 400 MHz Front Side Bus (FSB)

Also available: 1.4, 1.5, 1.6, and 1.7GHz Intel Pentium M processor with 1 MB cache available and enhanced Intel SpeedStep technology

Intel Celeron M Processor 330 – 1.4GHz, 512KB L2 cache, 400 MHz Front Side Bus (FSB)

Intel Celeron M Processor 320 – 1.3GHz, 512KB L2 cache, 400 MHz Front Side Bus (FSB)

Chipset: ATI RADEON IGP 350M with 400 MHz processor side bus

**NOTE:** Intel Pentium-M Processors support enhanced Intel SpeedStep™ technology. Processor speed denotes maximum performance mode; processors will run at approximately 600-MHz in battery optimization mode.

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

### Operating System

One of the following

Microsoft Windows XP Professional

Microsoft Windows XP Home (limited localizations)

**NOTE:** Driver support available for Microsoft Windows 98 SE, Microsoft Windows 2000 and Microsoft Windows NT® 4.0.

### Display

#### Internal

12.1-inch TFT XGA display with 1024 x 768 resolution up to 16.7 M colors

#### 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

Standard

256-MB 266-MHz SDRAM DDR SDRAM (256-MB SODIMM in slot 1)

Maximum

1024-MB 266-MHz SDRAM DDR SDRAM (512-MB SODIMMs in slots 1 and 2)

**NOTE:** 256MB of DDR standard with 32MB of system memory shared as video memory.

**NOTE:** Shared video memory (UMA) uses part of the total system memory for video performance. For example, if there is 256MB of system memory, 32MB will be shared with the video graphics sub-system. The system will have 224MB of available system memory for other computing activities.

**NOTE:** Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility.

### Communications

10/100/1000 NIC is integrated on the system board

High speed 56K Modem with digital line guard is integrated on the system board

**NOTE:** Designed only to allow faster downloads from V.90 compliant sources. Maximum achievable download transmission rates currently do not reach 56 KB/s, and will vary with line conditions.

**NOTE:** Modem availability is subject to country regulatory approval.

### Keyboard

The 101/102-key desktop compatible keyboard features full size keys, isolated inverted-T cursor control keys, 6 editing keys, both left and right control and alt keys, and 11 function keys. The US layout has 84 keys and the International layout 85 keys. Other features include 19 mm x 19 mm standard key pitch (center-to-center spacing), 2.5 mm key stroke, 2 Windows keys, comfort-dished keycaps, bright key legends for improved visibility in low light conditions, an integrated numeric keypad, and hotkeys providing instant access to power conservation, display brightness, and other controls.

### Standard Features

**Quick Launch Buttons** The HP Compaq Business Notebook nc4010 has three Quick Launch buttons designed to provide one-touch access to commonly used features including QuickLock, Wireless on/off, and presentation mode.

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**Pointing Device** Dual pointing devices (both Pointstick and Touchpad)

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**Optional Smart Card Reader** Optional integrated Smart Card reader (replaces current PC Card slot)

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**Flash Media Slots** One integrated Secure Digital (SD) slot

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**Storage**

<b>Diskette Drives</b>	Optional Diskette Drive*
<b>Hard Drives</b>	80-GB 5400 rpm SMART 60-GB 5400 rpm SMART 40-GB 5400 rpm SMART
<b>Optical Drives</b>	24X/10X/24X/8X DVD/CD-RW combo Drive* 24X CD-RW Drive* 24X CD-ROM Drive* 8X DVD-ROM Drive* 2X DVD+RW Drive*
<b>Flash Media Storage</b>	One integrated Secure Digital (SD) slot

**NOTE:** \* Requires optional external MultiBay or Advanced Port Replicator.

**NOTE:** The HP nc4010 hard drives are customer removable and will withstand multiple insertion/removal cycles.

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**Multimedia**

- Premier Sound™ audio
- Integrated 16-bit Sound Blaster Pro-compatible audio
- Integrated mono speaker and microphone
- External volume controls
- Stereo Headphone-out
- Microphone in
- Software MPEG1 support
- DVD movie playback software
- DVD+RW\*
- 8X DVD-ROM Drive with DVD movie playback\*
- 24X DVD/CD-RW Combo Drive\*
- 24X CD-ROM Drive\*
- 4X AGP graphics

**NOTE:** \* Requires optional external MultiBay or Advanced Port Replicator.

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## Standard Features

<b>Interfaces</b>	PC Card Slot	1 Type II
	External Monitor	1
	Microphone in	1
	DC Power	1
	RJ-11 (modem)	1
	RJ-45 (NIC)	1
	Infrared Port	1 (IrDA 4-MB compliant. IR performance will vary depending on performance of IR peripherals and application used.)
	S-video out connector	1
	USB version 2.0 Port	2
	Docking Connector	1
	Travel Battery Connector	1
	LED Status Indicators	7

**Graphics** ATI Mobility Radeon graphics controller with user selectable 32- or 64-MB DDR SDRAM  
4X AGP  
Hardware support for DirectX 7.0

**NOTE:** Shared video memory (UMA) uses part of the total system memory for video performance. For example, if there is 256MB of system memory, 32MB will be shared with the video graphics sub-system. The system will have 224MB of available system memory for other computing activities.

**Audio** HP Premier Sound 16-bit sound, Line out/headphone and microphone jacks

### Software

#### Preloaded Software

Adobe Acrobat Reader 5.10

Altiris eXpress™ Client Win32

HP Management Agents

HP Quick Launch Button Software

HP Mobile Printing Driver

Intel SpeedStep Technology Applet (Windows 2000 only, built into Windows XP)

HP Help and Support (XP Only)

Synaptics Touchpad Driver

interVideo WinDVD DVD Player\* (for optional DVD and DVD/CDRW drives) Roxio Easy CD Creator\* (for optional CDRW and DVD/CDRW drives)

interVideo WinDVD Creator\* (for optional DVD+RW drive)

**NOTE:** \*For optional CD-RW and DVD/CD-RW drives which are supported in the optional External MultiBay or Advanced Port Replicator.

### System Recovery

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

**(NOTE:** This option erases the hard disk and restores the base operating system. Drivers and applications are installed using the other CDs provided with the kit.)

### Intelligent Manageability

In December 2003, Insight Manager was replaced by HP Systems Insight Manager Software (SIM). HP SIM will use WMI to retrieve client system information. A HP SIM connector will be available for the HP Client Manager Software beginning in 2Q/2004. For more information on HP SIM, please refer to the HP website at <http://www.hp.com/go/hpsim/>.

## Standard Features

### Security

The HP nc4010 supports a range of standard, as well as optional, security features including the optional Embedded Security chip and Optional integrated Smart Card reader.

**Standard Security Features** Configuration Control Hardware  
Memory Change Alert  
Ownership Tag  
Setup Password  
Power-On Password  
DriveLock  
Enabled for PC SmartCard options  
Kensington Lock Slot

### Optional Security Features

#### 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

#### Integrated Smart Card reader

Compatible with ISO 7816 compliant Smart Cards  
EMV level 1 certification  
PC/SC interface support

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

### Power Supply

External 65 watt AC adapter, 6-foot (1.8-meter) power cord included.  
Total length including External AC adapter is 12 ft (3.66 m).

### Battery

The HP Compaq Business Notebook nc4010 6-cell internal main Lithium-Ion battery (one year warranty) provides up to 3 ½ hours of battery life; up to 7 ½ hours can be achieved using the optional travel battery.

<b>Battery Re-Charge Time</b>	System in OFF mode or Standby	2 hours
	System ON (depending on system power consumption)	2-5 hours

#### Quick Specs disclaimer:

**NOTE:** Actual results may vary with product model, configuration, and individual usage. Hewlett-Packard testing of a HP Compaq nc4010 with an Intel Pentium M 1.4GHz CPU, Windows XP Pro, 12.1-inch XGA LCD, 512-MB RAM, 40-GB HDD, 11.1V Lithium-Ion battery, and NIC/modem, achieved an overall **MobileMark 2002** score of 3h 12m (6h 21m with dual battery). BAPCO, MobileMark, and SYSmark are trademarks of Business Applications Performance Corporation. System parameters followed test recommendations: panel brightness set to half, but no less than 60 nits, power management scheme - Laptop/Portable, hard drive timer set to 3 minutes, standby and video timers set to never. Wireless turned off.

#### Quick Specs disclaimer:

**NOTE:** Actual results may vary with product model, configuration, and individual usage. Hewlett-Packard testing of a nc4010 with an Intel Pentium M 1.4 GHz CPU, Windows XP Pro, 12.1-inch XGA LCD, 512-MB RAM, 60-GB HDD, Lithium-Ion battery, and NIC/modem, achieved an overall **Business Winstone 2002 BatteryMark** score of 3h 52m Business Winstone® 2002 BatteryMark™ Version 1.0 units. Winstone® is a registered trademark and BatteryMark™ is a trademark of Ziff Davis Publishing Holdings Inc. in the U.S. and other countries. Copyright 2002 Ziff Davis Media Inc. All Rights Reserved. System parameters followed test recommendations: panel brightness 50%, wireless off, power management scheme - Laptop/Portable, hard drive, standby and video timers set to never.

### Power Conservation

Supports enhanced Intel SpeedStep Technology (allows a Battery Optimized Mode, Maximum Performance Mode, or Automatic mode)  
Hibernation  
Instant-on via Standby  
ACPI compliant

### Standard Features

#### MultiBay Devices

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

**NOTE:** MultiBay devices can only be utilized with the optional External MultiBay or Advanced Port Replicator.

#### Wireless Devices

The HP nc4010 notebook supports a broad range of secure, integrated wireless LAN options featuring support for the latest industry standards. Integrated Bluetooth is also an option and can be combined with any one of the supported wireless LAN options.

<b>All integrated wireless LAN options</b>	Wi-Fi certified Cisco Compatible Extensions support Wired Equivalent Privacy (WEP) support up to 128bit keys Wi-Fi Protected Access (WPA) support 802.1x standards support including EAP-TLS, Protected EAP (PEAP) and Cisco-EAP (LEAP) Dual antennas integrated in the display enclosure
<b>HP W500 802.11a/b/g</b>	Integrated support for 802.11a, b and g Up to 54mbps throughput performance Advanced Encryption Standard (AES) support
<b>HP W400 802.11b/g</b>	Integrated support for 802.11b and g Up to 54mbps throughput performance Advanced Encryption Standard (AES) support
<b>Intel PRO 2100/Wireless 802.11b wireless LAN</b>	Integrated support for 802.11b Up to 11mbps throughput performance
<b>Intel PRO 2200/Wireless 802.11 b/g wireless LAN</b>	Intel® Centrino™ mobile technology Integrated support for 802.11b and g Up to 11mbps throughput performance
<b>Integrated Bluetooth</b>	Designed to the Bluetooth v1.1 specification

#### Docking

Port Replicator and Advanced Port Replicator. HP's common port replicator and advanced port replicator provide simple and convenient port management. Features include Gigabit NIC pass through, DVI, USB, and 1394 port. These docking solutions are compatible across multiple Business Notebook platforms enabling a lower total cost of ownership.

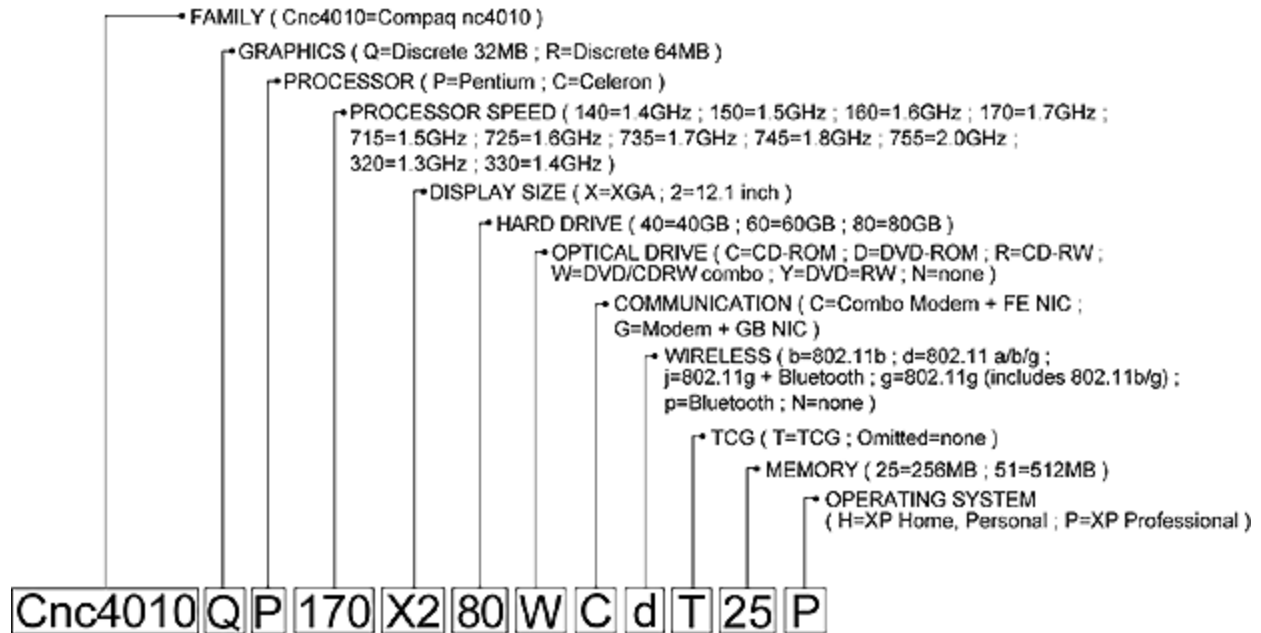
#### Service and Support

HP Services includes a Three-year and in select countries a One-year, Worldwide Limited Warranty, pick-up or carry-in and toll-free 7 x 24 hardware technical phone support (one-year warranty on battery), on-site service or a One-year warranty 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>

## Standard Features

The Etymology of a Model name:



## Models

### Global Wireless

Cnc4010UP735X240NGjT51P  
PF672AA#ABA

<b>Processor</b>	1.7-GHz Intel Pentium-M processor with 400-MHz Front Side Bus
<b>Operating System</b>	Microsoft Windows XP Professional
<b>Display</b>	12.1-inch color TFT XGA with 1024 x 768 resolution (up to 16.7M colors internal)
<b>Cache Memory</b>	2048-KB L2 cache
<b>Memory</b>	Standard 512-MB 266-MHz DDR SDRAM (512-MB SODIMM in slot 1) Maximum 1-GB 266-MHz DDR SDRAM (512-MB SODIMM in slots 1 and 2)
<b>Hard Drive</b>	40-GB 5400 rpm SMART Hard Drive
<b>Video Memory</b>	32 MB standard w/256MB or more main memory, configurable up to 64MB
<b>Optical Drive</b>	With optional External MultiBay or Advanced Port Replicator
<b>Graphics</b>	ATI Mobility Radeon graphics controller with user selectable 32- or 64-MB DDR SDRAM Hardware support for DirectX 7.0 4X AGP
<b>Audio</b>	HP Premier Sound 16-bit sound, Line out/headphone and microphone jacks
<b>Communications</b>	High speed 56K Modem, Integrated 10/100/1000 NIC, Intel 802.11 b/g, Bluetooth
<b>Security</b>	TCG compliant TPM security module
<b>Pointing Device</b>	Dual pointing devices (both Pointstick and Touchpad)
<b>Battery</b>	6-cell Lithium-Ion battery Dual battery capability with optional travel battery External 65W adapter
<b>Warranty</b>	3/3/0



## Standard Features

**Global**  
Cnc4010UP725X240NGN51P  
PF673AA#ABA

<b>Processor</b>	1.6-GHz Intel Pentium-M processor with 400-MHz Front Side Bus
<b>Operating System</b>	Microsoft Windows XP Professional
<b>Display</b>	12.1-inch color TFT XGA with 1024 x 768 resolution (up to 16.7M colors internal)
<b>Cache Memory</b>	2048-KB L2 cache
<b>Memory</b>	Standard 512-MB 266-MHz DDR SDRAM (512-MB SODIMM in slot 1) Maximum 1-GB 266-MHz DDR SDRAM (512-MB SODIMM in slots 1 and 2)
<b>Hard Drive</b>	40-GB 5400 rpm SMART Hard Drive
<b>Video Memory</b>	32 MB standard w/256MB or more main memory, configurable up to 64MB
<b>Optical Drive</b>	With optional External MultiBay or Advanced Port Replicator
<b>Graphics</b>	ATI Mobility Radeon graphics controller with user selectable 32- or 64-MB DDR SDRAM Hardware support for DirectX 7.0 4X AGP
<b>Audio</b>	HP Premier Sound 16-bit sound, Line out/headphone and microphone jacks
<b>Communications</b>	High speed 56K Modem, Integrated 10/100/1000 NIC
<b>Pointing Device</b>	Dual pointing devices (both Pointstick and Touchpad)
<b>Battery</b>	6-cell Lithium-Ion battery Dual battery capability with optional travel battery External 65W adapter
<b>Warranty</b>	3/3/0

**Cnc4010UP170X260NGmT51P**  
PA741AA#ABA

<b>Processor</b>	1.7-GHz Intel Pentium-M processor with 400-MHz Processor Side Bus
<b>Operating System</b>	Microsoft Windows XP Professional
<b>Display</b>	12.1-inch color TFT XGA with 1024 x 768 resolution (up to 16.7M colors internal)
<b>Cache Memory</b>	1024-KB L2 cache
<b>Memory</b>	Standard 512-MB 266-MHz DDR SDRAM (256-MB SODIMM in slots 1 and 2) Maximum 1-GB 266-MHz DDR SDRAM (512-MB SODIMM in slots 1 and 2)
<b>Hard Drive</b>	60-GB 5400 rpm SMART Hard Drive
<b>Video Memory</b>	32 MB standard w/256MB or more main memory, configurable up to 64MB
<b>Optical Drive</b>	With optional External MultiBay or Advanced Port Replicator
<b>Graphics</b>	ATI Mobility Radeon graphics controller with user selectable 32- or 64-MB DDR SDRAM Hardware support for DirectX 7.0 4X AGP
<b>Audio</b>	HP Premier Sound 16-bit sound, Line out/headphone and microphone jacks
<b>Communications</b>	High speed 56K Modem, Integrated 10/100/1000 NIC
<b>Wireless</b>	802.11a/b/g WLAN, Bluetooth
<b>Security</b>	HP Protect Tools Embedded Security
<b>Pointing Device</b>	Dual pointing devices (both Point stick and Touchpad)
<b>Battery</b>	6-cell Lithium-Ion battery Dual battery capability with optional travel battery External 65W adapter
<b>Warranty</b>	3/3/0

### Standard Features

Cnc4010UP160X240NGN51P  
DY881AA#ABA

<b>Processor</b>	1.6-GHz Intel Pentium-M processor with 400-MHz Processor Side Bus
<b>Operating System</b>	Microsoft Windows XP Professional
<b>Display</b>	12.1-inch color TFT XGA with 1024 x 768 resolution (up to 16.7M colors internal)
<b>Cache Memory</b>	1024-KB L2 cache
<b>Memory</b>	Standard 512-MB 266-MHz DDR SDRAM (512-MB SODIMM in slot 1) Maximum 1-GB 266-MHz DDR SDRAM (512-MB SODIMM in slots 1 and 2)
<b>Hard Drive</b>	40-GB 5400 rpm SMART Hard Drive
<b>Video Memory</b>	32 MB standard w/256MB or more main memory, configurable up to 64MB
<b>Optical Drive</b>	With optional External MultiBay or Advanced Port Replicator
<b>Graphics</b>	ATI Mobility Radeon graphics controller with user selectable 32- or 64-MB DDR SDRAM Hardware support for DirectX 7.0 4X AGP
<b>Audio</b>	HP Premier Sound 16-bit sound, Line out/headphone and microphone jacks
<b>Communications</b>	High speed 56K Modem, Integrated 10/100/1000 NIC
<b>Pointing Device</b>	Dual pointing devices (both Point stick and Touchpad)
<b>Battery</b>	6-cell Lithium-Ion battery Dual battery capability with optional travel battery External 65W adapter
<b>Warranty</b>	3/3/0

### Options

		HP PN
<b>Memory</b>	512-MB 266-MHz DDR Memory Upgrade	DC390A
	256-MB 266-MHz DDR Memory Upgrade	DC389A
<b>MultiBay Hard Drives</b>	80-GB 5400 rpm SMART Hard Drive	DC920A
	60-GB 5400 rpm SMART Hard Drive	DC894A
<b>MultiBay Storage Devices</b>	DVD+RW Drive	DG198A
	24X Combo DVD/CD-RW	DC364A
	8X DVD Drive	DC352A
	24X Max CD-ROM	DC351A
	Diskette Drive	DC362A
<b>Other Storage Devices</b>	External MultiBay	DC373A#ABA
	HP USB Digital Drive	DL702A
	HP 5GB PCMCIA Hard Drive	DF928A
	40GB External USB 2.0 Hard Drive	DQ549A
	USB Diskette Drive	DC361A
<b>Expansion Bases</b>	Port Replicator	DC367B#ABA
	Advanced Port Replicator	DC366B#ABA
	Monitor Stand	DC377A
	4-Port USB Hub	DG954A
<b>Power</b>	Battery Kit with Travel Adapter	DD880A
<b>Common Power Solutions</b>	Common Battery Charger (Single)	DF933A#ABA
	Common Battery Charger (Multiple)	DF932A#ABA
	AC Adapter 65W	DC359A#ABA
	Auto Power Adapter/Charger	DC303B
	Aircraft Power Cables	DC899A
	AC Line Cord (10 ft/3.1 m)	DC851B#ABA
<b>Input Devices</b>	External Enhanced III Keyboard (carbon) USB/PS2 Keyboard	DC852A
	HP 2 Button Mouse (carbon) USB/PS2 Keyboard 2-button scroll	DC369A
<b>Security</b>	Security Cable Lock	DC368A
	HP Smart Card PC Card Reader	DC350A

### Options

#### Carrying Cases

HP Entry Value Carrying Case	DL617A
HP Top Load Nylon Case	DC915A
HP Top Load Leather	DC917A
HP Executive Nylon Case	DC916A
HP Sport Backpack	DG102A

## Memory

### HP Compaq nc4010 Ultraportable Business Notebook

#### Standard Memory Plus Optional Memory

Support for up to 1024 MB of DDR SDRAM memory is available with the installation of optional DDR SDRAM Memory Kits.

0-MB of memory on system board

2 Slots total

1-256-MB DIMM installed in Slot 1

1-Additional open Memory Slot

Memory	Slot 1	Slot 2
	256 MB	Empty

#### Standard Memory with Optional Memory Upgrades

Support for up to 1024-MB of SDRAM is available with the installation of optional SDRAM Memory Upgrades.

Up to	Slot 1	Slot 2
512 MB	512 MB	Empty
512 MB	256 MB	256 MB
768 MB	256 MB	512 MB
1024 MB	512 MB	512 MB

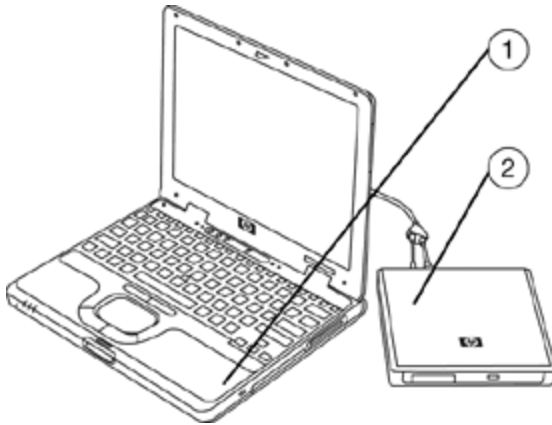
**NOTE:** This chart does not represent all possible memory configurations. Due to the non industry standard nature of some third-party memory modules, we strongly recommend using only HP branded memory modules to ensure compatibility.

Following are memory options available from HP:

	Compaq PN	HP PN
512-MB 266-MHz DDR Memory Upgrade	269087-B25	DC390A
256-MB 266-MHz DDR Memory Upgrade	269086-B25	DC389A

**NOTE:** 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.

## Storage



1. Hard Drive
2. Optional External MultiBay

## Drive Support

### System Drive Support

#### Hard Drives

80-GB 5400 rpm SMART Hard Drive	Up to 1	Hard Drive Bay
60-GB 5400 rpm SMART Hard Drive	Up to 1	Hard Drive Bay
40-GB 5400 rpm SMART Hard Drive	Up to 1	Hard Drive Bay

### External MultiBay Drive Support

Removable Media	Quantity Supported	Drive Bay Supported
CD-RW Drive	Up to 1	External MultiBay
CD-ROM Drive	Up to 1	External MultiBay
DVD-ROM Drive	Up to 1	External MultiBay
DVD/CD-RW Combo Drive	Up to 1	External MultiBay
DVD+RW MultiBay	Up to 1	External MultiBay
1.44-MB Diskette Drive	Up to 1	External MultiBay
<b>Secondary Hard Drives</b>		
80-GB 5400 rpm SMART Hard Drive	Up to 1	External MultiBay
60-GB 5400 rpm SMART Hard Drive	Up to 1	External MultiBay
40-GB 5400 rpm SMART Hard Drive	Up to 1	External MultiBay

## Technical Specifications

<b>System Unit</b>	<b>Dimensions (HxWxD)</b>	12.1-inch TFT panel display	1.1 x 11 x 9.2 in (2.79 x 27.94 x 23.37cm)	
	<b>Weight</b>		3.5 lb (1.58 kg)	
	<b>NOTE: * Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components.</b>			
<b>Stand-Alone Power Requirements</b>	Nominal Operating Voltage (Li-Ion)		14.8 VDC	
	Max Operating Power		40W	
	Peak Operating Power		50W	
<b>Temperature</b>	Operating		50° to 95° F (10° to 35° C)	
	Non-operating		4° to 140° F (-20° to 60° C)	
<b>Relative Humidity</b>	Operating		10% to 90% relative humidity, non-condensing	
	Non-operating		5% to 90% relative humidity, 101.6° F (38.7° C) Maximum wetbulb temperature	
<b>Shock</b>	Operating		50g, 2ms, half-sine	
	Non-operating		175g, 2ms, half-sine	
<b>Vibration</b>	Operating		0.5 G zero-to-peak, 10 to 500 Hz, 0.25 Oct/min sweep rate	
	Non-operating		1.0 G, zero-to-peak, 10 to 500 Hz, 0.5 Oct/min sweep rate	
<b>Random Vibration</b>	Operating		0.75 grms	
	Non-operating		1.50 grms	
<b>Altitude</b>	Operating		-50 to 10,000 ft (-15.24 to 3,048 m)	
	Non-operating		-50 to 40,000 ft (-15.24 to 12,192 m)	
<b>Maximum Altitude (unpressurized)</b>	Operating		0 to 10,000 ft (0 to 3,048 m)	
	Non-operating		0 to 30,000 ft (0 to 9,144 m)	
<b>Industry Standard Certifications</b>	Blue Angel		No	
	Energy Star Compliant		Yes	
	UL		Yes	
	CSA		Yes	
	VDE/TUV		Yes	
	Nordic Safety		Yes	
	Mexican Safety		Yes	
	Poland Compliance		Yes	
<b>External AC Adapter</b>	<b>Weight</b>		0.65 lb (0.29 kg) (adapter)	
			0.29 lb (0.13 kg) (power cord)	
	<b>Power Supply (Input)</b>	Operating Voltage		90 to 264 VAC RMS
		Operating Current		1.6 A RMS
Operating Frequency Range			47 to 63 Hz AC	

## Technical Specifications

<b>Primary Lithium-Ion Battery Pack</b>	<b>Dimensions (H x W x L)</b>	0.9 x 2.48 x 8.15 in (2.3 x 6.3 x 20.7 cm)		
	<b>Weight</b>	0.62 lb (.28 kg)		
	<b>Cells/Type</b>	6-cell Lithium-Ion		
	<b>Energy</b>	Voltage	11.1 V	
		Amp-hour capacity	3.96 Ah	
		Watt-hour capacity	40Wh	
	<b>Temperature</b>	Operating	41° to 113° F (5° to 45° C)	
		Non-operating	-4° to 140° F (-20° to 60° C)	
	<b>Battery Re-Charge Time</b>	System in OFF mode or Standby	2-3 hours	
		System ON (depending on system power consumption)	2-5 hours	

<b>Lithium-Ion Travel Battery Pack</b>	<b>Dimensions (H x W x L)</b>	0.9 x 2.48 x 8.15 in (2.3 x 6.3 x 20.7 cm)		
	<b>Weight (includes caddy)</b>	0.86 lb (0.39 kg)		
	<b>Cells/Type</b>	6-cell Lithium-Ion		
	<b>Energy</b>	Voltage	11.1 V	
		Amp-hour capacity	3.96 Ah	
		Watt-hour capacity	40Wh	
	<b>Temperature</b>	Operating	41° to 113° F (5° to 45° C)	
		Non-operating	-4° to 140° F (-20° to 60° C)	
	<b>Battery Re-Charge Time</b>	System in OFF mode or Standby	2-3 hours	
		System ON (depending on system power consumption)	2-5 hours	

<b>12.1-Inch Color TFT XGA Display</b>	<b>Dimensions (H x W x L)</b>	10.3 x 7.8 in (26.1 x 19.9 cm)		
	<b>Diagonal Size</b>	12.1 in (30.7 cm)		
	<b>Mounting</b>	Internal		
	<b>Number of Colors</b>	16 M		
	<b>Contrast Ratio</b>	125:1		
	<b>Refresh Rate</b>	60 Hz		
	<b>Brightness</b>	130 nit typical		
	<b>Pixel Resolution</b>	Pitch	0.264 x 0.264 mm	
		Format	1024 x 768	
		Configuration	RGB Stripe	
	<b>Backlight</b>	CCFT		
	<b>Character Display</b>	80 x 25		
	<b>Total Power Consumption</b>	4 W		
<b>Viewing Angle</b>	±35° degrees Horizontal, +15°/-35° Vertical (typical)			



## Technical Specifications

### Hard Drives

<b>80-GB 5400 rpm</b>	<b>MultiBay Drive Adapter</b>	Dimensions (H x W x D)	1.27 x 13.25 x 12.61 cm (0.5 x 5.21 x 4.97 in)
		Weight	0.15 lb (68 g)
	<b>Drive Weight</b>	0.22 lb (98 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> (typical reads, including settling)	Single Track	3 ms
		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>	Security	ATA Security	
<b>60-GB 5400 rpm</b>	<b>MultiBay Drive Adapter</b>	Dimensions (H x W x D)	1.27 x 13.25 x 12.61 cm (0.5 x 5.21 x 4.97 in)
		Weight	0.15 lb (68 g)
	<b>Drive Weight</b>	0.22 lb (98 g)	
	<b>Capacity</b>	60 GB	
	<b>Height</b>	0.37 in (9.5 mm)	
	<b>Width</b>	2.75 in (70 mm)	
	<b>Interface</b>	ATA-5	
	<b>Transfer Rate</b>	Synchronous (maximum)	100 MB/s (Drive Capability)
	<b>Seek Time</b> (typical reads, including settling)	Single Track	3 ms
		Average	13 ms
		Maximum	24 ms
	<b>Rotational Speed</b>	5400 rpm	
	<b>Logical Blocks</b>	117,210,240	
	<b>Operating Temperature</b>	41° to 131° F (5° to 55° C)	
<b>Features</b>	Security	ATA Security	

### Technical Specifications

<b>40-GB 5400 rpm</b>	<b>MultiBay Drive Adapter</b>	Dimensions (H x W x D)	1.27 x 13.25 x 12.61 cm (0.5 x 5.21 x 4.97 in)
		Weight	0.15 lb (68 g)
	<b>Drive Weight</b>	0.22 lb (99 g)	
	<b>Capacity</b>	40 GB	
	<b>Height</b>	0.37 in (9.5 mm)	
	<b>Width</b>	2.75 in (70 mm)	
	<b>Interface</b>	ATA-5	
	<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>	78,140,160	
	<b>Operating Temperature</b>	41° to 131° F (5° to 55° C)	
<b>Features</b>	Security	ATA Security	

<b>24X/24X/24X/8X DVD/CD- RW Combo Drive</b>		Dimensions (H x W x D)	0.5 x 5.21 x 4.97 in (1.27 x 13.25 x 12.61 cm)
		Weight	0.74 lb (0.33 kg)
	<b>Center Hole Diameter</b>	39 cm	
	<b>Disk Diameter</b>	12 cm/8 cm	
	<b>Disk Thickness</b>	1.2 mm	
	<b>Track Pitch</b>	0.74 $\mu$ m	
	<b>Access Times</b>	Random CD	< 150 ms
	(typical reads, including settling)	Full-Stroke CD	< 225 ms
	<b>Audio Output Level</b>	Line-out	0.7 Vrms
	<b>Cache Buffer</b>	128 KB/s (minimum)	
	<b>Data Transfer Rate</b>	CD-R (24X)	3600 KB/s (150 KB/s at 1X CD rate)
	(typical, including settling)	CD-RW (24X)	3600 KB/s (150 KB/s at 1X CD rate)
		CD-ROM (24X)	3600 KB/s (150 KB/s at 1X CD rate)
		DVD (8X)	10,800 KB/s (1352 KB/s at 1X DVD rate)
		Normal PIO Mode 4 (single burst)	16.6 MB/s
	<b>Start-up Time</b>	< 15 seconds	
<b>Stop Time</b>	< 6 seconds		

## Technical Specifications

<b>24X CD-RW Drive</b>	<b>MultiBay Drive</b>	Dimensions (H x W x D)	0.5 x 5.21 x 4.97 in (1.27 x 13.25 x 12.61 cm)
		Weight	0.74 lb (0.33 kg)
	<b>Center Hole Diameter</b>	1.5 cm	
	<b>Disk Diameter</b>	12 cm/8 cm	
	<b>Disk Thickness</b>	1.2 mm	
	<b>Track Pitch</b>	0.74 $\mu$ m	
	<b>Access Times</b> (typical reads, including settling)	Random CD	< 150 ms
		Full-Stroke CD	< 225 ms
	<b>Audio Output Level</b>	Line-out	0.7 Vrms
	<b>Cache Buffer</b>	128 KB/s (minimum)	
	<b>Data Transfer Rate</b> (typical, including settling)	CD-R (24X)	3600 KB/s
		CD-RW (10X)	1500 KB/s
		CD-ROM (24X)	3600 KB/s
		Normal PIO Mode 4 (single burst)	16.6 MB/s
	<b>Start-up Time</b>	< 15 seconds	
<b>Stop Time</b>	< 6 seconds		
<b>24X CD-ROM Drive</b>	<b>MultiBay Drive</b>	Dimensions (H x W x D)	0.5 x 5.21 x 4.97 in (1.27 x 13.25 x 12.61 cm)
		Weight	0.50 lb (0.22 kg)
	<b>Applicable Disk</b>	CD-ROM (Mode 1, 2 and 3), CD-XA ready (Mode 2, Form 1 and 2), CD-I ready (Mode 2, Form 1 and 2), CD-R (read only), CD Plus, Photo CD (Single and Multi-session), CD-Extra, Video CD, CD-WO (fixed packets only), CD-Bridge	
	<b>Center Hole Diameter</b>	15 mm	
	<b>Disk Diameter</b>	12 cm/8 cm	
	<b>Disk Thickness</b>	1.2 mm	
	<b>Track Pitch</b>	1.6 $\mu$ m	
	<b>Access Times</b> (typical reads, including settling)	Random	< 150 ms
		Full-Stroke	< 300 ms
	<b>Audio Output Level</b>	Line-out	0.7 Vrms
	<b>Cache Buffer</b>	128 KB	
	<b>Data Transfer Rate</b> (typical, including settling)	Sustained (16X)	2400 KB/s
		Variable	1500 to 3600 KB/s (10X to 24X)
		Normal PIO Mode 4 (single burst)	16.66 MB/s
	<b>Start-up Time</b>	< 8 seconds	
<b>Stop Time</b>	< 4 seconds		

### Technical Specifications

<b>8X DVD-ROM Drive</b>	<b>MultiBay Drive</b>	Dimensions (H x W x D)	0.5 x 5.21 x 4.97 in (1.27 x 13.25 x 12.61 cm)
		Weight	0.66 lb (0.3 kg)
	<b>Center Hole Diameter</b>	1.5 cm	
	<b>Disk Diameter</b>	12 cm/8 cm	
	<b>Disk Thickness</b>	1.2 mm	
	<b>Track Pitch</b>	0.74 $\mu$ m	
	<b>Access Times</b> (typical reads, including settling)	Random (typical)	< 150 ms DVD Media
		Full-Stroke (typical)	< 225 ms DVD Media
		Random (typical)	< 110 ms CD Media
		Full-Stroke (typical)	< 200 ms CD Media
	<b>Cache Buffer</b>	512 KB/s (minimum)	
	<b>Data Transfer Rate</b> (typical, including settling)	Max 24X CD	3600 KB/s (150 KB/s at 1X CD rate)
		Max 8X DVD	10,800 KB/s (1352 KB/s at 1X DVD rate)
Normal PIO Mode 4 (single burst)		16.6 MB/s	
<b>Start-up Time</b>	< 10 seconds	Single Session CD-ROM	
<b>Stop Time</b>	< 3 seconds		

<b>DVD+RW Drive</b>	<b>Dimensions</b>	0.5 x 5.46 x 5.23 in (1.35 x 13.88 x 13.28 cm)	
	<b>Weight</b>	0.551 lb (250 g)	
	<b>Access Times</b>	Random	<175 ms CD
			<230 ms DVD
		Full Stroke	<285 ms CD <335 ms DVD
	<b>Max data transfer rate</b>	24X – CD-ROM	3,600 KB/s
		8X – DVD	10,800 KB/s
		16X – CD-R	2,400 KB/s
		8X – CD-RW	1,200 KB/s
		4X – DVD+R	5,400 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	
<b>Media Capacity (read)</b>	4.7 GB		
<b>Media Capacity (write)</b>	4.7 GB		
<b>Transport</b>	Tray Loading		

### Technical Specifications

<b>MultiBay Diskette Drive</b>	<b>MultiBay Drive</b>	Dimensions (H x W x D)	0.5 x 5.21 x 4.97 in (1.27 x 13.25 x 12.61 cm)
		Weight	0.51 lb (230 g)
	<b>Diskette Size</b>	3.5 in	
	<b>Height</b>	12.7 mm	
	<b>Bytes per Sector</b>	512	
	<b>Sectors per track</b>	High density	18 (1.44 MB)/15 (1.2 MB)
		Low density	9
	<b>Tracks per side</b>	High density	80 (1.44 MB)/80 (1.2 MB)
		Low density	80
	<b>Read/Write heads</b>	2	
	<b>Access Times</b>	Track-to track (high/low)	3 ms/6 ms
		Average (high/low)	94 ms/174 ms
		Settling time	15 ms
Latency average		100 ms	

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### Audio

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<b>Hardware</b>	<b>Implementation</b>	AC97 CODEC
	<b>Audio Signal Link to CPU</b>	Audio CODEC (AC) link
	<b>Full Duplex</b>	Yes
	<b>Stereo Inputs</b>	Line In – 20K Impedance (with Port Replicator only)
	<b>Mono Inputs</b>	Microphone – 20K Impedance
	<b>Stereo Outputs</b>	Headphone jack, S/PDIF from Port Replicator only

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<b>Audio Output Quality</b>	<b>Frequency Response</b>	20 Hz – 20 kHz
	<b>Signal to Noise Ratio</b>	>94dB
	<b>Total Harmonic Distortion</b>	0.01%
	<b>Noise Floor</b>	-120dB
	<b>Play/Record Sampling Rate(s)</b>	7 kHz – 48 kHz
	<b>AD/DA Resolution</b>	16 bit

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<b>Mono Speaker</b>	<b>Amplifier Power</b>	2-Watts RMS
	<b>Speaker Impedance</b>	4-Ohms

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### Technical Specifications

<b>Integrated 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
	<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>	Windows XP Windows 2000 Linux kernel versions 2.2 and 2.4

### Technical Specifications

Agere Systems AC'97 Modem	Form Factor	MDC Daughtercard
	Power Management Support	APM Revision 1.2, ACPI
	Approvals/Certifications	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
Data Mode Capabilities	Data Mode Capabilities	High speed 56K Modem V.90 (a-law, mu-law) V.8bis V.80 V.44, 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 (300 bps)
	Fax Mode Capabilities	TIA-578-S (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





## Technical Specifications

- Configuration Utility** Choice of Configuration Utility:
- Atheros Client Utility for Microsoft Windows 2000 or XP (required for Cisco Compatible Extensions support)
  - Microsoft Windows XP Wireless Zero Configuration Utility

**NOTE:** May also be compatible with certain third-party software suppliers.

**LED Activity** LED Off – Radio OFF; Solid LED – Radio ON

<b>HP W500 802.11a/b/g WLAN</b>	<b>Wireless LAN Standards</b>	IEEE 802 Part 11a (802.11a) IEEE 802. Part 11b (802.11b) IEEE 802. Part 11g (802.11g)	
	<b>Interoperability</b>	Wi-Fi certified (details available at <a href="http://www.hp.com/go/notebooks/wlan">http://www.hp.com/go/notebooks/wlan</a> )	
	<b>Frequency Band</b>	2.4 and 5 GHz	
	<b>Data Rates</b>	802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps	
	<b>Modulation</b>	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM	
	<b>Security</b>	64- and 128-bit WEP encryption Support for WiFi Protected Access (WPA) including TKIP, MIC Hardware-accelerated support for the Advanced Encryption Standard (AES; 256-bit encryption) Support for 802.1x authentication types: EAP-TLS, LEAP (Cisco), PEAP (Microsoft implementation); more details available at 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 802.11a and 802.11b/g access points	
	<b>Output Power</b>	802.11b: 17 dBm (typical) 802.11a/g: 15 dBm (typical)	
	<b>Power Consumption</b>	Transmit: 2.0 W (max) Receive: 1.5 W (max) Sleep mode: 20 mW (max)	
	<b>Power Management</b>	ACPI compliant power management 802.11 Compliant Power Saving Mode Power Saving Mode selectable through the configuration utility	
	<b>Receiver Sensitivity<sub>1</sub></b>	54 Mbps: -70 dBm to 1 Mbps: -90 dbm	
	<b>Antenna type</b>	High efficiency dual band antenna with polarization diversity, mounted in the display enclosure	
<b>Range</b>	802.11a - Typical	500 feet – Outdoors Open Area 150 feet – Indoor, Office-environment	
	802.11 b - Typical	1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment	
	802.11 g - Typical	1000 feet – Outdoor Open Area 200 feet – Indoor, Office environment	
<b>Form Factor</b>	MiniPCI Type IIIA		
<b>Weight</b>	0.036 lb (16.5 gm)		
<b>Dimensions</b>	0.19 x 2.00 x 2.35 in (4.8 x 50.95 x 59.75 mm)		
<b>Operating Voltage</b>	3.3v		
<b>Temperature</b>	Operating	32° to 122° F (0° to 50° C)	

### Technical Specifications

<b>Humidity</b>	Non-operating	-14° to 158° F (-10° to 70° C)
	Operating	10% to 90%
<b>Altitude</b>	Non-operating	5% to 95%
	Operating	0 to 15,000 ft (4,572 m)
<b>Configuration Utility</b>	Non-operating	0 to 40,000 ft (12,192 m)
	Choice of Configuration Utility:	
	<ul style="list-style-type: none"><li>● Atheros Client Utility for Microsoft Windows 2000 or XP (required for Cisco Compatible Extensions support)</li><li>● Microsoft Windows XP Wireless Zero Configuration Utility</li></ul>	
<b>LED Activity</b>	<b>NOTE:</b> May also be compatible with certain third-party software supplicants. LED Off – Radio OFF; Solid LED – Radio ON	

## Technical Specifications

<b>Intel PRO/Wireless 2100 802.11b WLAN</b>	<b>Wireless LAN Standards</b>	IEEE 802. Part 11b (802.11b)	
	<b>Interoperability</b>	Wi-Fi certified	
	<b>Frequency Band</b>	2.4 GHz	
	<b>Data Rates</b>	802.11b: 1, 2, 5.5, 11 Mbps	
	<b>Modulation</b>	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK	
	<b>Security</b>	64- and 128-bit WEP encryption Support for WiFi Protected Access (WPA) including TKIP, MIC Support for 802.1x authentication types: EAP-TLS, LEAP (Cisco), PEAP (Microsoft implementation) 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 802.11b access points.	
	<b>Output Power</b>	16 dBm (typical)	
	<b>Power Consumption</b>	Transmit: 2.0 Watts (max) Receive: 1.75 Watts (max) Sleep mode: 200mW, nominal	
	<b>Power Management</b>	ACPI compliant power management 802.11 Compliant Power Saving Mode	
	<b>Receiver Sensitivity<sup>1</sup></b>	11 Mbps: -82 dBm to 1 Mbps: -89 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	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	
	<b>Temperature</b>	Operating	32° to 158° F (0° to 70° C)
		Non-operating	-14° to 176° F (-40° to 80° C)
	<b>Humidity</b>	Operating	0% 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</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 Zero Configuration Utility</li> </ul>	
	<b>LED Activity</b>	LED Off – Radio OFF; Solid LED – Radio ON	

**NOTE:** May also be compatible with certain third-party software supplicants.

## Technical Specifications

<b>Intel PRO/Wireless 2200BG 802.11b/g WLAN</b>	<b>Wireless LAN Standards</b>	IEEE 802.11b IEEE 802.11g
	<b>Interoperability</b>	Wi-Fi certified (details available at <a href="http://www.hp.com/go/notebooks/wlan">http://www.hp.com/go/notebooks/wlan</a> )
	<b>Frequency Band</b>	2.4 GHz
	<b>Data Rates</b>	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
	<b>Modulation</b>	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM
	<b>Security</b>	64 and 128 bit WEP encryption Support for WiFi Protected Access (WPA) including TKIP, MIC Support for 802.1x authentication types: EAP-TLS, LEAP (Cisco), PEAP (Microsoft implementation); more details available at <a href="http://www.hp.com/go/notebooks/wlan">http://www.hp.com/go/notebooks/wlan</a> 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</b>	16 ± 2 dBm for CCK 11 +6/-1 dBm for OFDM (power varies by data rate) Maximum output power may vary by country according to local regulations
	<b>Power Consumption</b>	Transmit: 1.8 Watts (max) Receive: 1.0 Watts (max) Idle mode: 75mW, nominal
	<b>Power Management</b>	ACPI compliant power management 802.11 Compliant Power Saving Mode
	<b>Receiver Sensitivity*</b>	54 Mbps: -72 dBm, 11 Mbps: -84 dBm, 1 Mbps: -94 dBm
	<b>Antenna type</b>	High efficiency dual band antenna with polarization diversity, mounted in the display enclosure
	<b>Range</b>	Outdoor 1200 feet at 1 Mbps 250 feet at 54 Mbps Indoor 300 feet at 1 Mbps 50 feet at 54 Mbps
	<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 0 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

<b>Configuration Utility</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 Zero Configuration Utility</li> </ul> <p><b>NOTE:</b> May also be compatible with certain third party software suppliers.</p>
<b>LED Activity</b>	LED Off – Radio OFF; Solid LED – Radio ON
<b>Agency Approvals</b>	Details at <a href="http://www.hp.com/go/notebooks/wlan">http://www.hp.com/go/notebooks/wlan</a>
	*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).

### Bluetooth by HP

<b>Form Factor</b>	Integrated USB module
<b>Bluetooth</b>	1.1 Compliant
<b>Dimensions</b>	1.02 x 0.55 x 0.22 in (26 x 14 x 5.7 mm)
<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 (4572 m) Non-operating 40,000 ft (12192 m)
<b>Plug and Play</b>	USB 1.1 compliant Microsoft Windows Plug and Play compliant
<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 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>Antenna type</b>	Internally integrated within module
<b>Range</b>	33 ft (10 m)
<b>OS Support</b>	Microsoft Windows XP Professional and Home Microsoft Windows 2000
<b>Software Stack Supported</b>	User may choose: Microsoft User Interface (Profiles supported: HID, DUN, HCRP) Widcomm User Interface (see profile support below)
<b>Profile Support</b>	General Access Profile Service Discovery Application Profile Serial Port Profile Generic Object Exchange Profile File Transfer Profile Synchronization Profile Dial-Up Networking Profile LAN Access Profile Object Push Profile Hard Copy Cable Replacement Profile Personal Area Networking Profile Human Interface Device Profile
<b>Usage Models</b>	Service Discovery (determine what Bluetooth devices are within range and support authorization) <b>Synchronization:</b> PDAs to PCs Portable to Desktop

## Technical Specifications

	<b>File Transfer:</b>
	File and directory browsing and navigation on another Bluetooth device. File copying Object manipulation – including add, delete, create new folders etc. Wireless link to Corporate LAN using several Bluetooth devices sharing the same
	<b>Access Point:</b>
	Corporate email, network neighborhood, access to LAN applications, file transfer, ftp, Internet browsing, etc, using TCP/IP Wireless link to WAN thru cell phone Agnostic to WAN technology Send/receive SMS messages Wireless link to Printer Adhoc peer to peer networking (two computers) or Personal Area Networking (PAN) using NDIS (< 7 computers) Adhoc Bluetooth Pico-networking (point to multi-point) Object Push – Business card or appointment exchange
	<b>Human Interface Devices</b>
	Wirelessly interface to notebook with mouse, keyboard, etc
	<b>Printing</b>
	Wirelessly print to Bluetooth enabled printers
<b>Transmit Power</b>	-6dBm to 4 dBm (Bluetooth Class II)
<b>Receive Sensitivity</b>	Better than -80 dBm at 0.1 % raw bit error rate
<b>Link Topology</b>	Point to Point, Multipoint Pico Nets up to 7 slaves
<b>Security</b>	Full support of Bluetooth Security Provisions
<b>Network Architecture Models</b>	Ad-hoc (Peer to Peer) Infrastructure (Access Points Required)
<b>Power Requirement</b>	Peak < 270 mW
<b>Power Management</b>	Microsoft Windows ACPI, and USB Bus Support Wireless EAB On/Off Software On/Off control Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff
<b>Protocols Supported</b>	TCP/IP IPX/SPX UDP
<b>LED Activity</b>	Solid Blue LED – On LED Off – Power Off
<b>Certifications</b>	All necessary regulatory approvals for countries we support 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

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