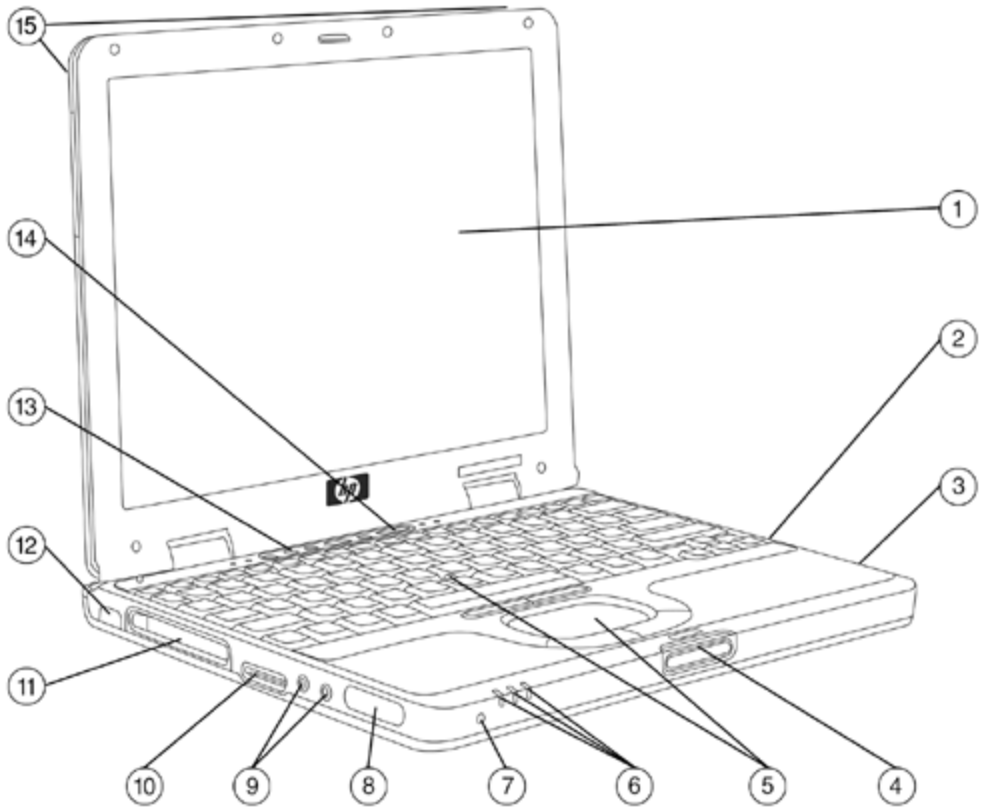
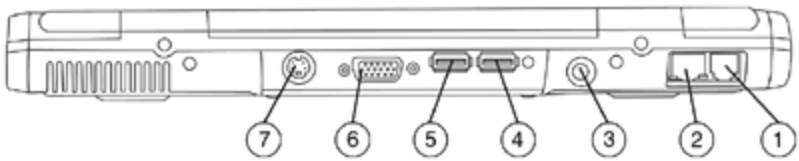
Overview



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



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

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.

What's New

- Microsoft Windows XP Professional and limited localizations of Windows XP Home Edition preinstalled
- Intel Pentium M Processors
- ATI Radeon IGP 350M 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 (Intel) 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

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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 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.	
Pointing Device	Dual pointing devices (both Pointstick and Touchpad)	
Optional Smart Card Reader	Optional integrated Smart Card reader (replaces current PC Card slot)	
Flash Media Slots	One integrated Secure Digital (SD) slot	
Storage	**Diskette Drives**	Optional Diskette Drive*
	Hard Drives	80-GB 5400 rpm SMART 60-GB 5400 rpm SMART 40-GB 5400 rpm SMART
	Optical Drives	24X/24X/24X/8X DVD/CD-RW combo Drive* 24X CD-RW Drive* 24X CD-ROM Drive* 8X DVD-ROM Drive* 2X DVD+RW Drive*
	Flash Media Storage	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.	
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.	

Standard Features

Interfaces	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 Radeon IGP 350M 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 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.

Battery Re-Charge Time	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

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.

Standard Features

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.

All integrated wireless LAN options	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
HP W500 802.11a/b/g	Integrated support for 802.11a, b and g Up to 54mbps throughput performance Advanced Encryption Standard (AES) support
HP W400 802.11b/g	Integrated support for 802.11b and g Up to 54mbps throughput performance Advanced Encryption Standard (AES) support
Intel PRO 2100/Wireless 802.11b wireless LAN	Integrated support for 802.11b Up to 11mbps throughput performance
Intel PRO 2200/Wireless 802.11 b/g wireless LAN	Intel® Centrino™ mobile technology Integrated support for 802.11b and g Up to 11mbps throughput performance
Integrated Bluetooth	Designed to the Bluetooth v1.1 specification

Docking

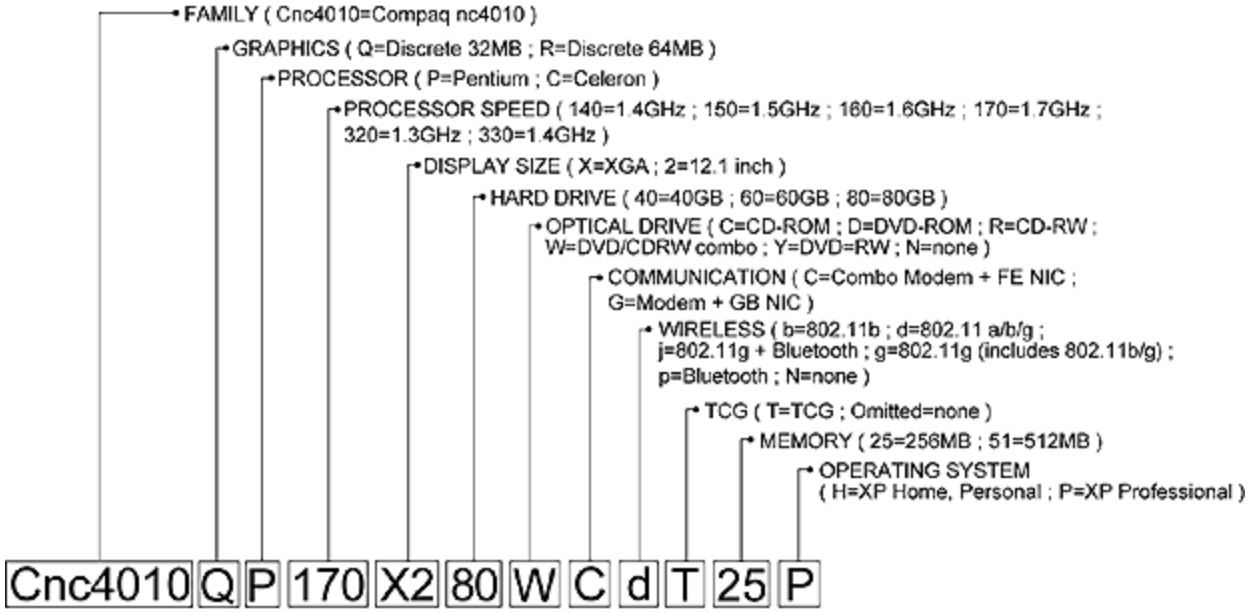
Port Replicator and Advanced Port Replicator. HP's common port replicator and advanced port replicator provide simple and convenient port management. Features include Gigabit NIC pass through, DVI, USB, and 1394 port. These docking solutions are compatible across multiple Business Notebook platforms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

The Etymology of a Model name:



Models

Global Wireless
Cnc4010UP170X240NGjT51P
PF672AA#XXX

Processor	1.7-GHz Intel Pentium-M processor with 400-MHz Front Side Bus	
Operating System	Microsoft Windows XP Professional	
Display	12.1-inch color TFT XGA with 1024 x 768 resolution (up to 16.7M colors internal)	
Cache Memory	2048-KB L2 cache	
Memory	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)
Hard Drive	40-GB 5400 rpm SMART Hard Drive	
Video Memory	32 MB standard w/256MB or more main memory, configurable up to 64MB	
Optical Drive	With optional External MultiBay or Advanced Port Replicator	
Graphics	ATI Radeon IGP 350M graphics controller with user selectable 32- or 64-MB DDR SDRAM Hardware support for DirectX 7.0 4X AGP	
Audio	HP Premier Sound 16-bit sound, Line out/headphone and microphone jacks	
Communications	High speed 56K Modem, Integrated 10/100/1000 NIC	
Integrated Wireless	Intel Pro/Wireless 2200BG 802.11b/g WLAN Bluetooth	
Embedded Security Chip	Yes	
Integrated Smart Card Reader	No	
Pointing Device	Dual pointing devices (both Pointstick and Touchpad)	
Battery	6-cell Lithium-Ion battery Dual battery capability with optional travel battery External 65W adapter	
Warranty	3/3/0	

Standard Features

Global
Cnc4010UP160X240NGN51P
PF673AA#XXX

Processor	1.6-GHz Intel Pentium-M processor with 400-MHz Front Side Bus	
Operating System	Microsoft Windows XP Professional	
Display	12.1-inch color TFT XGA with 1024 x 768 resolution (up to 16.7M colors internal)	
Cache Memory	2048-KB L2 cache	
Memory	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)
Hard Drive	40-GB 5400 rpm SMART Hard Drive	
Video Memory	32 MB standard w/256MB or more main memory, configurable up to 64MB	
Optical Drive	With optional External MultiBay or Advanced Port Replicator	
Graphics	ATI Radeon IGP 350M graphics controller with user selectable 32- or 64-MB DDR SDRAM Hardware support for DirectX 7.0 4X AGP	
Audio	HP Premier Sound 16-bit sound, Line out/headphone and microphone jacks	
Communications	High speed 56K Modem, Integrated 10/100/1000 NIC	
Integrated Wireless	No	
Embedded Security Chip	No	
Integrated Smart Card Reader	No	
Pointing Device	Dual pointing devices (both Pointstick and Touchpad)	
Battery	6-cell Lithium-Ion battery Dual battery capability with optional travel battery External 65W adapter	
Warranty	3/3/0	

Options

Memory	512-MB 333-MHz DDR Memory Upgrade	DC390B
	256-MB 333-MHz DDR Memory Upgrade	DC389B
MultiBay Hard Drives	80-GB 5400 rpm SMART Hard Drive	DC920A
	60-GB 5400 rpm SMART Hard Drive	DC894A
	40-GB 4200 rpm SMART Hard Drive	DC365A
MultiBay Storage Devices	DVD+RW Drive	DG189A
	24X Combo DVD/CD-RW	DC364A
	8X DVD Drive	DC352A
	Diskette Drive	DC362A
Other Storage Devices	USB Diskette Drive	DC361B
	40-GB USB External Hard Drive	DQ549A
	HP USB Digital drive with 128MB SD Memory	DL702A
Expansion Bases	Basic Port Replicator	DC367B#XXX
	Advanced Port Replicator	DC366B#XXX
	External MultiBay	DC373A#XXX
	Monitor Stand	DC377A
Power	Battery Kit with Travel Adapter	DD880A
Communication	W500 WLAN 802.11a/b/g kit	DR469A#ABA
	W500 WLAN 802.11a/b/g kit for GR/SP/BLG/SW	PA426A#ABA
Common Power Solutions	External Single Battery Charger	DF933A#XXX
	AC Adapter 65W	DC359A#XXX
	90W Aircraft Power Cables	DC899A
	AC Line Cord (10 ft/3.1 m)	DC851B
Input Devices	HP 2 Button Optical Mouse (carbon)	DC369A
	HP Travel Optical Mouse	F2100A
	External 10-Key Numeric Keypad (carbon)	DC854A
Security	Security Cable Lock	DC368A
	HP Smart Card PC Card Reader	DC350B
Carrying Cases	HP Entry Value Case	DL617A
	Top Load Leather	DC917A
	Executive Nylon	DC916A
	HP Sport Backpack	DG102A
	HP Value Case	DE642A

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

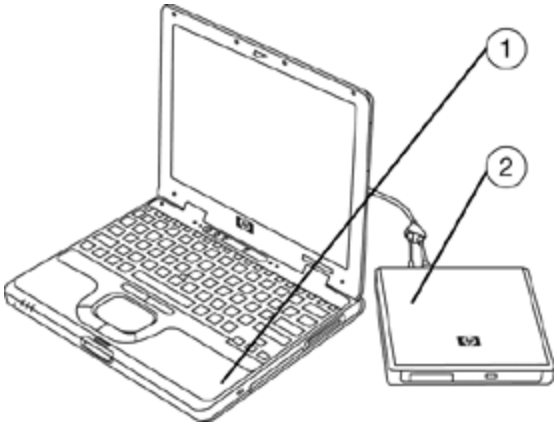
NOTE: This chart does not represent all possible memory configurations. Due to the non industry standard nature of some third-party memory modules, we strongly recommend using only HP branded memory modules to ensure compatibility.

Following are memory options available from HP:

	Compaq PN	HP PN
512-MB 333-MHz DDR Memory Upgrade	269087-B25	DC390B
256-MB 333-MHz DDR Memory Upgrade	269086-B25	DC389B

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

Secondary Hard Drives

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

System Unit	**Dimensions** (HxWxD)	12.1-inch TFT panel display	1.1 x 11 x 9.2 in (2.79 x 27.94 x 23.37cm)
	Weight	3.5 lb (1.58 kg)	
	NOTE: * Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components.		
	Stand-Alone Power Requirements	Nominal Operating Voltage (Li-Ion)	14.8 VDC
		Max Operating Power	40W
		Peak Operating Power	50W
	Temperature	Operating	50° to 95° F (10° to 35° C)
		Non-operating	4° to 140° F (-20° to 60° C)
	Relative Humidity	Operating	10% to 90% relative humidity, non-condensing
		Non-operating	5% to 90% relative humidity, 101.6° F (38.7° C) Maximum wetbulb temperature
	Shock	Operating	50g, 2ms, half-sine
		Non-operating	175g, 2ms, half-sine
	Vibration	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
	Random Vibration	Operating	0.75 grms
		Non-operating	1.50 grms
	Altitude	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)
	Maximum Altitude (unpressurized)	Operating	0 to 10,000 ft (0 to 3,048 m)
		Non-operating	0 to 30,000 ft (0 to 9,144 m)
	Industry Standard Certifications	Blue Angel	No
		Energy Star Compliant	Yes
		UL	Yes
		CSA	Yes
		VDE/TUV	Yes
		Nordic Safety	Yes
		Mexican Safety	Yes
		Poland Compliance	Yes

External AC Adapter	**Weight**	0.65 lb (0.29 kg) (adapter)	
		0.29 lb (0.13 kg) (power cord)	
	Power Supply (Input)	Operating Voltage	90 to 264 VAC RMS
		Operating Current	1.6 A RMS
		Operating Frequency Range	47 to 63 Hz AC

Primary Lithium-Ion Battery Pack	**Dimensions** (H x W x L)	0.9 x 2.48 x 8.15 in (2.3 x 6.3 x 20.7 cm)	
	Weight	0.62 lb (.28 kg)	
	Cells/Type	6-cell Lithium-Ion	
	Energy	Voltage	11.1 V
		Amp-hour capacity	3.96 Ah
		Watt-hour capacity	40Wh
	Temperature	Operating	41° to 113° F (5° to 45° C)
		Non-operating	-4° to 140° F (-20° to 60° C)
	Battery Re-Charge Time	System in OFF mode or Standby	2-3 hours
		System ON (depending on system power consumption)	2-5 hours
Lithium-Ion Travel Battery Pack	**Dimensions** (H x W x L)	0.9 x 2.48 x 8.15 in (2.3 x 6.3 x 20.7 cm)	
	Weight (includes caddy)	0.86 lb (0.39 kg)	
	Cells/Type	6-cell Lithium-Ion	
	Energy	Voltage	11.1 V
		Amp-hour capacity	3.96 Ah
		Watt-hour capacity	40Wh
	Temperature	Operating	41° to 113° F (5° to 45° C)
		Non-operating	-4° to 140° F (-20° to 60° C)
	Battery Re-Charge Time	System in OFF mode or Standby	2-3 hours
		System ON (depending on system power consumption)	2-5 hours
12.1-Inch Color TFT XGA Display	**Dimensions** (H x W x L)	10.3 x 7.8 in (26.1 x 19.9 cm)	
	Diagonal Size	12.1 in (30.7 cm)	
	Mounting	Internal	
	Number of Colors	16 M	
	Contrast Ratio	125:1	
	Refresh Rate	60 Hz	
	Brightness	130 nit typical	
	Pixel Resolution	Pitch	0.264 x 0.264 mm
		Format	1024 x 768
		Configuration	RGB Stripe
	Backlight	CCFT	
	Character Display	80 x 25	
	Total Power Consumption	4 W	
	Viewing Angle	±35° degrees Horizontal, +15°/-35° Vertical (typical)	

Hard Drives

80-GB 5400 rpm	MultiBay Drive Adapter	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)
	Drive Weight	0.22 lb (98 g)	
	Capacity	80 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-6	
	Transfer Rate	Synchronous (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track	3 ms
		Average	13 ms
		Maximum	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	156,301,488	
	Operating Temperature	41° to 131° F (5° to 55° C)	
	Features	Security	ATA Security

60-GB 5400 rpm	MultiBay Drive Adapter	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)
	Drive Weight	0.22 lb (98 g)	
	Capacity	60 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-5	
	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	Security	ATA Security

40-GB 5400 rpm	MultiBay Drive Adapter	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)
	Drive Weight	0.22 lb (99 g)	
	Capacity	40 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-5	
	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	Security	ATA Security
24X/24X/24X/8X DVD/CD-RW Combo Drive	MultiBay Drive	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)
	Center Hole Diameter	39 cm	
	Disk Diameter	12 cm/8 cm	
	Disk Thickness	1.2 mm	
	Track Pitch	0.74 μm	
	Access Times (typical reads, including settling)	Random CD	< 150 ms
		Full-Stroke CD	< 225 ms
	Audio Output Level	Line-out	0.7 Vrms
	Cache Buffer	128 KB/s (minimum)	
	Data Transfer Rate (typical, including settling)	CD-R (24X)	3600 KB/s (150 KB/s at 1X CD rate)
		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
	Start-up Time	< 15 seconds	
	Stop Time	< 6 seconds	

24X CD-RW Drive	**MultiBay Drive**	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)
	Center Hole Diameter	1.5 cm	
	Disk Diameter	12 cm/8 cm	
	Disk Thickness	1.2 mm	
	Track Pitch	0.74 µm	
	Access Times (typical reads, including settling)	Random CD	< 150 ms
		Full-Stroke CD	< 225 ms
	Audio Output Level	Line-out	0.7 Vrms
	Cache Buffer	128 KB/s (minimum)	
	Data Transfer Rate (typical, including settling)	CD-R (24X)	3600 KB/s
		CD-RW (24X)	3600 KB/s
		CD-ROM (24X)	3600 KB/s
		Normal PIO Mode 4 (single burst)	16.6 MB/s
	Start-up Time	< 15 seconds	
	Stop Time	< 6 seconds	
24X CD-ROM Drive	**MultiBay Drive**	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)
	Applicable Disk	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	
	Center Hole Diameter	15 mm	
	Disk Diameter	12 cm/8 cm	
	Disk Thickness	1.2 mm	
	Track Pitch	1.6 µm	
	Access Times (typical reads, including settling)	Random	< 150 ms
		Full-Stroke	< 300 ms
	Audio Output Level	Line-out	0.7 Vrms
	Cache Buffer	128 KB	
	Data Transfer Rate (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
	Start-up Time	< 8 seconds	
	Stop Time	< 4 seconds	

8X DVD-ROM Drive	**MultiBay Drive**	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)
	Center Hole Diameter	1.5 cm	
	Disk Diameter	12 cm/8 cm	
	Disk Thickness	1.2 mm	
	Track Pitch	0.74 µm	
	Access Times (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
	Cache Buffer	512 KB/s (minimum)	
	Data Transfer Rate (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
	Start-up Time	< 10 seconds	Single Session CD-ROM
	Stop Time	< 3 seconds	

DVD+RW Drive	**Dimensions**	0.5 x 5.46 x 5.23 in (1.35 x 13.88 x 13.28 cm)	
	Weight	0.551 lb (250 g)	
	Access Times	Random	<175 ms CD
			<230 ms DVD
		Full Stroke	<285 ms CD
			<335 ms DVD
	Max data transfer rate	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
	Transfer Mode	Multiword DMA Mode 2	
	Interface	EIDE	
	Supported Media (read)	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW	
	Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+RW	
	Media Capacity (read)	4.7 GB	
	Media Capacity (write)	4.7 GB	
	Transport	Tray Loading	

MultiBay Diskette Drive	MultiBay Drive	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)
	Diskette Size	3.5 in	
	Height	12.7 mm	
	Bytes per Sector	512	
	Sectors per track	High density	18 (1.44 MB)/15 (1.2 MB)
		Low density	9
	Tracks per side	High density	80 (1.44 MB)/80 (1.2 MB)
		Low density	80
	Read/Write heads	2	
	Access Times	Track-to track (high/low)	3 ms/6 ms
		Average (high/low)	94 ms/174 ms
		Settling time	15 ms
		Latency average	100 ms

Audio

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

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

Mono Speaker	Amplifier Power	2-Watts RMS
	Speaker Impedance	4-Ohms

Integrated 10/100/1000 NIC	Ethernet Features	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3z and 802.3ab; IEEE 802.3 clauses 34-42) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s IEEE 802.1p QoS (Quality of Service) Support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable)
	Power Management	ACPI 1.1a compliant – multiple power modes Situation-sensitive features reduce power consumption NIC Battery Saving Mode (enabled by default)
	Performance Features	TCP/IP/UDP Checksum Offload (configurable) Microsoft Large Send Offload (configurable) TCP Segmentation Offload CPU Task Offload Adaptive Interrupts
	Manageability	Wake-on-LAN from all Power-Managed States (configurable; Magic Packet and Microsoft Wake-Up Frame) PXE 2.0 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite Cable Analyzer
	NIC Device Driver Name	Broadcom NetXtreme Gigabit Ethernet
	Drivers Available	Windows XP Windows 2000 Linux kernel versions 2.2 and 2.4

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	High speed 56K Modem (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) Optional symbol rates: 2800, 3429 Asymmetric Symbol rates Synchronous primary channel data signaling rates: 3600, 31200 Automatic rate re-negotiation V.32bis V.32 V.23 V.22bis V.22 V.21 Bell 212A Bell 103J (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

HP W400 802.11b/g WLAN	**Wireless LAN Standards**	IEEE 802. Part 11b (802.11b) IEEE 802. Part 11g (802.11g)	
	Interoperability	Wi-Fi certified (http://www.hp.com/go/notebooks/wlan)	
	Frequency Band	2.4 GHz	
	Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps	
	Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM	
	Security	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).	
	Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.	
	Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK	
	Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)	
	Roaming	IEEE 802.11 compliant roaming between 802.11b/g access points.	
	Output Power	802.11b: 17 dBM (typical) 802.11g: 15 dBM (typical)	
	Power Consumption	Transmit: 2.0 W (max) Receive: 1.5 W (max) Sleep mode: 20 mW (max)	
	Power Management	ACPI compliant power management 802.11 Compliant Power Saving Mode Power Saving Mode selectable through the configuration utility	
	Receiver Sensitivity[1]	54 Mbps: -70 dBm to 1 Mbps: -90 dbm	
	Antenna type	High efficiency dual band antenna with polarization diversity, mounted in the display enclosure	
	Range	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
	Form Factor	MiniPCI Type IIIA	
	Weight	0.035 lb (16 gm)	
	Dimensions	0.19 x 2.00 x 2.35 in (4.8 x 50.95 x 59.75 mm)	
	Operating Voltage	3.3v	
	Temperature	Operating	32° to 122° F (0° to 50° C)
		Non-operating	-14° to 158° F (-10° to 70° C)
	Humidity	Operating	10% to 90%
		Non-operating	5% to 95%
	Altitude	Operating	0 to 15,000 ft (4,572 m)
		Non-operating	0 to 40,000 ft (12,192 m)

	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 supplicants.
	LED Activity	LED Off – Radio OFF; Solid LED – Radio ON
HP W500 802.11a/b/g WLAN	**Wireless LAN Standards**	IEEE 802 Part 11a (802.11a) IEEE 802. Part 11b (802.11b) IEEE 802. Part 11g (802.11g)
	Interoperability	Wi-Fi certified (details available at http://www.hp.com/go/notebooks/wlan)
	Frequency Band	2.4 and 5 GHz
	Data Rates	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
	Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM
	Security	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).
	Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
	Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK
	Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
	Roaming	IEEE 802.11 compliant roaming between 802.11a and 802.11b/g access points
	Output Power	802.11b: 17 dBM (typical) 802.11a/g: 15 dBM (typical)
	Power Consumption	Transmit: 2.0 W (max) Receive: 1.5 W (max) Sleep mode: 20 mW (max)
	Power Management	ACPI compliant power management 802.11 Compliant Power Saving Mode Power Saving Mode selectable through the configuration utility
	Receiver Sensitivity[1]	54 Mbps: -70 dBm to 1 Mbps: -90 dbm
	Antenna type	High efficiency dual band antenna with polarization diversity, mounted in the display enclosure
	Range	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
	Form Factor	MiniPCI Type IIIA
	Weight	0.036 lb (16.5 gm)
	Dimensions	0.19 x 2.00 x 2.35 in (4.8 x 50.95 x 59.75 mm)
	Operating Voltage	3.3v
	Temperature	Operating: 32° to 122° F (0° to 50° C)

	Non-operating	-14° to 158° F (-10° to 70° C)
Humidity	Operating	10% to 90%
	Non-operating	5% to 95%
Altitude	Operating	0 to 15,000 ft (4,572 m)
	Non-operating	0 to 40,000 ft (12,192 m)
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 supplicants.	
LED Activity	LED Off – Radio OFF; Solid LED – Radio ON	

Intel PRO/Wireless 2100 802.11b WLAN	**Wireless LAN Standards**	IEEE 802. Part 11b (802.11b)	
	Interoperability	Wi-Fi certified	
	Frequency Band	2.4 GHz	
	Data Rates	802.11b: 1, 2, 5.5, 11 Mbps	
	Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK	
	Security	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).	
	Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.	
	Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK	
	Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)	
	Roaming	IEEE 802.11 compliant roaming between 802.11b access points.	
	Output Power	16 dBM (typical)	
	Power Consumption	Transmit: 2.0 Watts (max) Receive: 1.75 Watts (max) Sleep mode: 200mW, nominal	
	Power Management	ACPI compliant power management 802.11 Compliant Power Saving Mode	
	Receiver Sensitivity1	11 Mbps: -82 dBm to 1 Mbps: -89 dBm	
	Antenna type	High efficiency dual band antenna with polarization diversity, mounted in the display enclosure	
	Range	802.11 b - Typical	1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment
	Form Factor	MiniPCI Type IIIB	
	Weight	0.026 lb (11.75 gm) (max)	
	Dimensions	0.20 x 1.75 x 2.34 in (4.9 x 44.6 x 59.8 mm)	
	Operating Voltage	3.3v	
	Temperature	Operating	32° to 158° F (0° to 70° C)
		Non-operating	-14° to 176° F (-40° to 80° C)
	Humidity	Operating	0% to 90% (non-condensing)
		Non-operating	5% to 95% (non-condensing)
	Altitude	Operating	0 to 10,000 ft (3,048 m)
		Non-operating	0 to 50,000 ft (15,240 m)
	Configuration Utility	Choice of Configuration Utility: • Intel ProSet 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 supplicants.	
	LED Activity	LED Off – Radio OFF; Solid LED – Radio ON	

Intel PRO/Wireless 2200BG 802.11b/g WLAN	**Wireless LAN Standards**	IEEE 802.11b IEEE 802. 11g	
	Interoperability	Wi-Fi certified (details available at http://www.hp.com/go/notebooks/wlan)	
	Frequency Band	2.4 GHz	
	Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12,18, 24, 36, 48, 54 Mbps	
	Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM	
	Security	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 http://www.hp.com/go/notebooks/wlan Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program).	
	Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.	
	Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK	
	Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)	
	Roaming	IEEE 802.11 compliant roaming between access points.	
	Output Power	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	
	Power Consumption	Transmit: 1.8 Watts (max) Receive: 1.0 Watts (max) Idle mode: 75mW, nominal	
	Power Management	ACPI compliant power management 802.11 Compliant Power Saving Mode	
	Receiver Sensitivity*	54 Mbps: -72 dBm, 11 Mbps: -84 dBm , 1 Mbps: -94 dBm	
	Antenna type	High efficiency dual band antenna with polarization diversity, mounted in the display enclosure	
	Range	Outdoor	1200 feet at 1 Mbps 250 feet at 54 Mbps
		Indoor	300 feet at 1 Mbps 50 feet at 54 Mbps
	Form Factor	MiniPCI Type IIIB	
	Weight	0.026 lb (11.75 g) (max)	
	Dimensions	0.20 x 1.75 x 2.34 in (4.9 x 44.6 x 59.8 mm)	
	Operating Voltage	3.3v	
	Temperature	Operating Non-operating	32° to 158° F (0° to 70° C) -40° to 176° F (-40° to 80° C)
	Humidity	Operating Non-operating	0 to 90% (non-condensing) 5 to 95% (non-condensing)
	Altitude	Operating Non-operating	0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)

Configuration Utility	Choice of Configuration Utility: • Intel PROset 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 supplicants.	
LED Activity	LED Off – Radio OFF; Solid LED – Radio ON	
Agency Approvals	Details at http://www.hp.com/go/notebooks/wlan	

*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	**Form Factor**	Integrated USB module	
	Bluetooth	1.1 Compliant	
	Dimensions	1.02 x 0.55 x 0.22 in (26 x 14 x 5.7 mm)	
	Temperature	Operating	-4° to 158° F (-20° to 70° C)
		Non-operating	-40° to 176° F (-40° to 80° C)
	Humidity	Operating	10% to 90%
		Non operating	5% to 95%
	Altitude	Operating	15,000 ft (4572 m)
		Non-operating	40,000 ft (12192 m)
	Plug and Play	USB 1.1 compliant Microsoft Windows Plug and Play compliant	
	Frequency Band	2402 to 2480 MHz	
	Number of Available Channels	79 (1 MHz) available channels	
	Data Rates and throughput	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	
	Antenna type	Internally integrated within module	
	Range	33 ft (10 m)	
	OS Support	Microsoft Windows XP Professional and Home Microsoft Windows 2000	
	Software Stack Supported	User may choose: Microsoft User Interface (Profiles supported: HID, DUN, HCRP) Widcomm User Interface (see profile support below)	
	Profile Support	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	
	Usage Models	Service Discovery (determine what Bluetooth devices are within range and support authorization) **Synchronization:** PDAs to PCs Portable to Desktop	

	File Transfer: 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 **Access Point:** 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 **Human Interface Devices** Wirelessly interface to notebook with mouse, keyboard, etc **Printing** Wirelessly print to Bluetooth enabled printers
Transmit Power	-6dBm to 4 dBm (Bluetooth Class II)
Receive Sensitivity	Better than –80 dBM at 0.1 % raw bit error rate
Link Topology	Point to Point, Multipoint Pico Nets up to 7 slaves
Security	Full support of Bluetooth Security Provisions
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Points Required)
Power Requirement	Peak < 270 mW
Power Management	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
Protocols Supported	TCP/IP IPX/SPX UDP
LED Activity	Solid Blue LED – On LED Off – Power Off
Certifications	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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