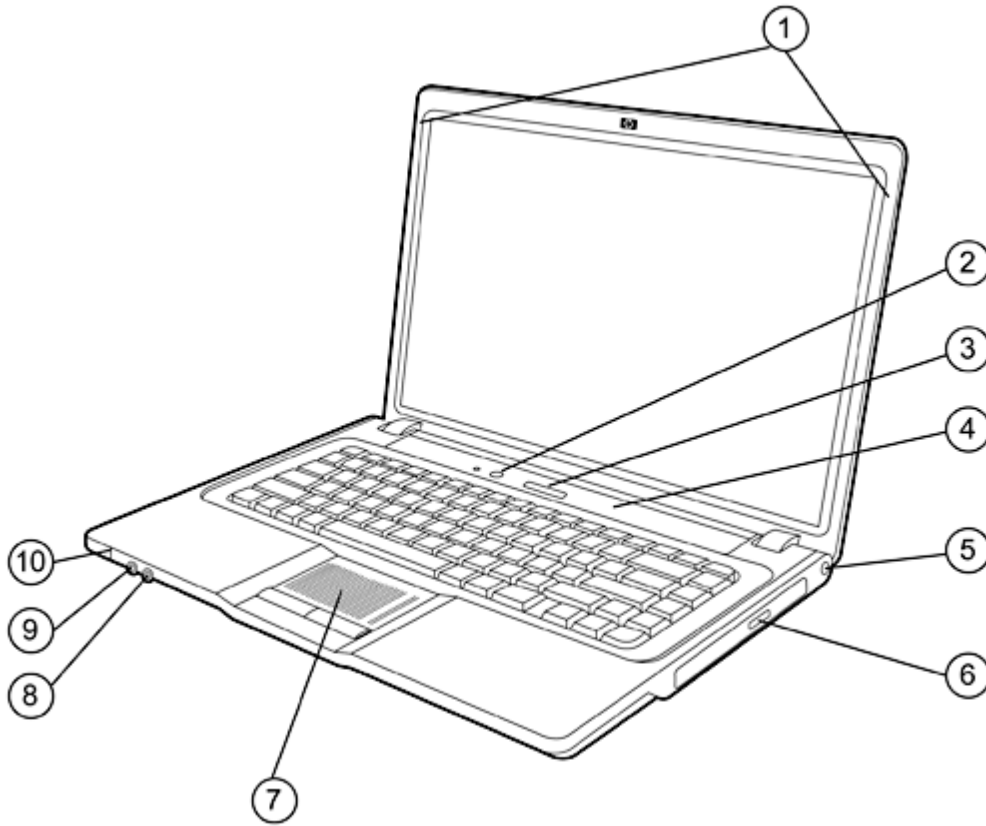


## Overview

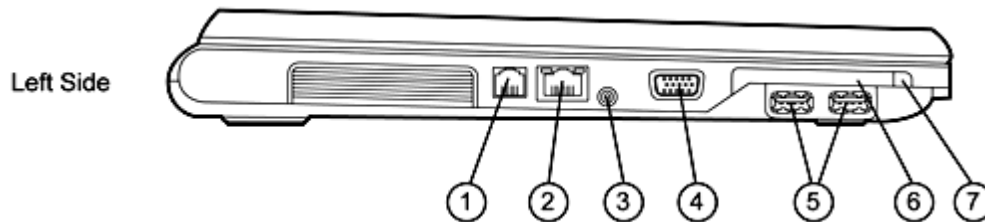
HP recommends  
Windows Vista™ Business



- 1. Dual-band Wireless LAN Antennas\*
- 2. Wireless On/Off Button with LED\*
- 3. Power Button with LED
- 4. Speaker
- 5. Kensington Lock Slot

- 6. Optical Drive
- 7. Touchpad with Scroll Zone
- 8. Microphone Jack
- 9. Headphone Jack
- 10. Battery LED

\* Select models only



- 1. RJ-11 Port (Modem)
- 2. RJ-45 Port (NIC)
- 3. DC Power Connector
- 4. VGA/External Monitor Connector

- 5. 2 USB 2.0 Ports
- 6. PC Card Slot
- 7. PC Card Eject Button

## Overview

### At A Glance

- Genuine Windows XP Home Edition, Genuine Windows XP Professional, or FreeDOS \*
- Intel® Pentium® M processor or Intel Celeron® M processor
- 15.4-inch WXGA BrightView Display
- Sleek industrial design starting at 6 lb/2.7 kg and 1.26 inch/31.9 mm thin at front
- Mobile Intel 915GM Express Chipset or Mobile Intel 910GML Express Chipset
- Supports up to 1GB of DDR2 SDRAM
- 60-GB 5400 rpm or 40-GB 4200 rpm hard drive
- Intel Graphics Media Accelerator 900
- Integrated 802.11 b/g wireless LAN module\*\*
- Intel Centrino® Mobile Technology\*\*
- Intel 82562V 10/100 Network Connection
- Touchpad with scroll zone
- Protected by one-year standard parts and labor warranty – certain restrictions and exclusions apply

\* Operating system options vary by country.

\*\* Select models only

### Select Models

<b>HP 510</b> RU960AA#XXX (may vary based on local regulatory requirements)	<b>Processor</b>	Intel Celeron M Processor 360M (1.4-GHz, 400-MHz FSB, 1-MB L2 cache) <sup>1</sup>
	<b>Operating System</b>	FreeDOS
	<b>Chipset</b>	Mobile Intel 910GML Express Chipset
	<b>System Memory</b>	256-MB 400-MHz DDR2 SDRAM One SODIMM slot; maximum optional memory 1024 MB <sup>2</sup>
	<b>Hard Drive</b>	40-GB <sup>3</sup> 4200 rpm SMART PATA
	<b>Removable Media</b>	DVD/CD-RW Combo Drive
	<b>Display</b>	15.4-inch WXGA BrightView (1280 x 800 resolution) VGA port supports resolutions up to 2048 x 1536 at 75 Hz, and lower resolutions at up to 100 Hz <sup>4</sup>
	<b>Graphics</b>	Intel Graphics Media Accelerator 900
	<b>Audio</b>	Conexant CX20468 Integrated speaker Stereo headphone/line out Microphone in
	<b>Communications</b>	Intel 82562V 10/100 Network Connection Conexant Ultima HD2.0 56K modem <sup>5</sup>
	<b>Integrated Wireless</b>	N/A
	<b>Pointing Device</b>	Touchpad with scroll zone, two soft-touch pick buttons
	<b>Battery</b>	4-cell (32 WHr) Lithium-Ion
	<b>Power</b>	External 65W adapter
<b>Warranty</b>	1/1/0	

<b>HP 510</b> RU961AA#XXX (may vary based on local regulatory requirements)	<b>Processor</b>	Intel Celeron M Processor 360M (1.4-GHz, 400-MHz FSB, 1-MB L2 cache) <sup>1</sup>
	<b>Operating System</b>	Genuine Windows XP Home Edition SP2
	<b>Chipset</b>	Mobile Intel 910GML Express Chipset
	<b>System Memory</b>	512-MB 400-MHz DDR2 SDRAM One SODIMM slot; maximum optional memory 1024 MB <sup>2</sup>
	<b>Hard Drive</b>	60-GB <sup>3</sup> 5400 rpm SMART PATA
	<b>Removable Media</b>	DVD/CD-RW Combo Drive
	<b>Display</b>	15.4-inch WXGA BrightView (1280 x 800 resolution) VGA port supports resolutions up to 2048 x 1536 at 75 Hz, and lower resolutions at up to 100 Hz <sup>4</sup>
	<b>Graphics</b>	Intel Graphics Media Accelerator 900
	<b>Audio</b>	Conexant CX20468 Integrated speaker Stereo headphone/line out Microphone in
	<b>Communications</b>	Intel 82562V 10/100 Network Connection Conexant Ultima HD2.0 56K modem <sup>5</sup>
	<b>Integrated Wireless</b>	Intel PRO/Wireless 2200BG 802.11 b/g WLAN
	<b>Pointing Device</b>	Touchpad with scroll zone, two soft-touch pick buttons
	<b>Battery</b>	4-cell (32 WHr) Lithium-Ion
	<b>Power</b>	External 65W adapter
<b>Warranty</b>	1/1/0	

## Select Models

<b>HP 510</b> RU962AA#XXX (may vary based on local regulatory requirements)	<b>Processor</b>	Intel Celeron M Processor 360M (1.4-GHz, 400-MHz FSB, 1-MB L2 cache) <sup>1</sup>
	<b>Operating System</b>	Genuine Windows XP Home Edition SP2
	<b>Chipset</b>	Mobile Intel 910GML Express Chipset
	<b>System Memory</b>	512-MB 400-MHz DDR2 SDRAM One SODIMM slot; maximum optional memory 1024 MB <sup>2</sup>
	<b>Hard Drive</b>	60-GB <sup>3</sup> 5400 rpm SMART PATA
	<b>Removable Media</b>	DVD+/-RW SuperMulti DL Drive
	<b>Display</b>	15.4-inch WXGA BrightView (1280 x 800 resolution) VGA port supports resolutions up to 2048 x 1536 at 75 Hz, and lower resolutions at up to 100 Hz <sup>4</sup>
	<b>Graphics</b>	Intel Graphics Media Accelerator 900
	<b>Audio</b>	Conexant CX20468 Integrated speaker Stereo headphone/line out Microphone in
	<b>Communications</b>	Intel 82562V 10/100 Network Connection Conexant Ultima HD2.0 56K modem <sup>5</sup>
	<b>Integrated Wireless</b>	Intel PRO/Wireless 2200BG 802.11 b/g WLAN
	<b>Pointing Device</b>	Touchpad with scroll zone, two soft-touch pick buttons
	<b>Battery</b>	4-cell (32 WHr) Lithium-Ion
	<b>Power</b>	External 65W adapter
<b>Warranty</b>	1/1/0	

<b>HP 510</b> RU963AA#XXX (may vary based on local regulatory requirements)	<b>Processor</b>	Intel Pentium M Processor 770 (2.13-GHz, 533-MHz FSB, 2-MB L2 cache) <sup>1</sup>
	<b>Operating System</b>	FreeDOS
	<b>Chipset</b>	Mobile Intel 915GM Express Chipset
	<b>System Memory</b>	512-MB 533-MHz DDR2 SDRAM One SODIMM slot; maximum optional memory 1024 MB <sup>2</sup>
	<b>Hard Drive</b>	60-GB <sup>3</sup> 5400 rpm SMART PATA
	<b>Removable Media</b>	DVD+/-RW SuperMulti DL Drive
	<b>Display</b>	15.4-inch WXGA BrightView (1280 x 800 resolution) VGA port supports resolutions up to 2048 x 1536 at 75 Hz, and lower resolutions at up to 100 Hz <sup>4</sup>
	<b>Graphics</b>	Intel Graphics Media Accelerator 900
	<b>Audio</b>	Conexant CX20468 Integrated speaker Stereo headphone/line out Microphone in
	<b>Communications</b>	Intel 82562V 10/100 Network Connection Conexant Ultima HD2.0 56K modem <sup>5</sup>
	<b>Integrated Wireless</b>	Intel PRO/Wireless 2200BG 802.11 b/g WLAN
	<b>Pointing Device</b>	Touchpad with scroll zone, two soft-touch pick buttons
	<b>Battery</b>	4-cell (32 WHr) Lithium-Ion
	<b>Power</b>	External 65W adapter

Select Models

Warranty 1/1/0

<b>HP 510</b> RU964AA#XXX (may vary based on local regulatory requirements)	<b>Processor</b>	Intel Pentium M Processor 770 (2.13-GHz, 533-MHz FSB, 2-MB L2 cache) <sup>1</sup>
	<b>Operating System</b>	Genuine Windows XP Home Edition SP2
	<b>Chipset</b>	Mobile Intel 915GM Express Chipset
	<b>System Memory</b>	512-MB 533-MHz DDR2 SDRAM One SODIMM slot; maximum optional memory 1024 MB <sup>2</sup>
	<b>Hard Drive</b>	60-GB <sup>3</sup> 5400 rpm SMART PATA
	<b>Removable Media</b>	DVD+/-RW SuperMulti DL Drive
	<b>Display</b>	15.4-inch WXGA BrightView (1280 x 800 resolution) VGA port supports resolutions up to 2048 x 1536 at 75 Hz, and lower resolutions at up to 100 Hz <sup>4</sup>
	<b>Graphics</b>	Intel Graphics Media Accelerator 900
	<b>Audio</b>	Conexant CX20468 Integrated speaker Stereo headphone/line out Microphone in
	<b>Communications</b>	Intel 82562V 10/100 Network Connection Conexant Ultima HD2.0 56K modem <sup>5</sup>
	<b>Integrated Wireless</b>	Intel PRO/Wireless 2200BG 802.11 b/g WLAN
	<b>Pointing Device</b>	Touchpad with scroll zone, two soft-touch pick buttons
	<b>Battery</b>	4-cell (32 WHr) Lithium-Ion
	<b>Power</b>	External 65W adapter
	<b>Warranty</b>	1/1/0

<b>HP 510</b> RX709AA#XXX (may vary based on local regulatory requirements)	<b>Processor</b>	Intel Pentium M Processor 770 (2.13-GHz, 533-MHz FSB, 2-MB L2 cache) <sup>1</sup>
	<b>Operating System</b>	Genuine Windows XP Professional SP2
	<b>Chipset</b>	Mobile Intel 915GM Express Chipset
	<b>System Memory</b>	512-MB 533-MHz DDR2 SDRAM One SODIMM slot; maximum optional memory 1024 MB <sup>2</sup>
	<b>Hard Drive</b>	60-GB <sup>3</sup> 5400 rpm SMART PATA
	<b>Removable Media</b>	DVD+/-RW SuperMulti DL Drive
	<b>Display</b>	15.4-inch WXGA BrightView (1280 x 800 resolution) VGA port supports resolutions up to 2048 x 1536 at 75 Hz, and lower resolutions at up to 100 Hz <sup>4</sup>
	<b>Graphics</b>	Intel Graphics Media Accelerator 900
	<b>Audio</b>	Conexant CX20468 Integrated speaker Stereo headphone/line out Microphone in
	<b>Communications</b>	Intel 82562V 10/100 Network Connection Conexant Ultima HD2.0 56K modem <sup>5</sup>
	<b>Integrated Wireless</b>	Intel PRO/Wireless 2200BG 802.11 b/g WLAN
	<b>Pointing Device</b>	Touchpad with scroll zone, two soft-touch pick buttons
	<b>Battery</b>	4-cell (32 WHr) Lithium-Ion

## Select Models

<b>Power</b>	External 65W adapter
<b>Warranty</b>	1/1/0

1. Intel's numbering system is not a measurement of higher performance. Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.
2. Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility.
3. GB = 1 billion bytes. Actual available capacity is less. Up to 8-GB of memory is reserved for system recovery software.
4. Resolutions are dependent upon monitor capability, and resolution and color depth settings.
5. Designed for downloads from 56K modem compliant sources. Maximum achievable download transmission rates currently do not reach 56 KB/s, and will vary with line conditions. Modem availability is subject to country regulatory approval.

### Standard Features

**Keyboard** The 101/102-key compatible keyboard features an industry standard, full-pitch key layout with desktop keyboard features, such as the isolated inverted-T cursor control keys, editing keys, both left and right control and alt keys, and 12 function keys. International key layouts are available. Other features include an integrated numeric keypad, hotkeys for instant access to power conservation, brightness, and other features, 19-mm x 19-mm key pitch (center-to-center spacing), 2.5-mm stroke, comfort-dished keycaps, and bright key legends for improved visibility in low light conditions.

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**Expansion Card Slots**      **One Type I/II PC Card slot**      Supports 32-bit CardBus and 16-bit PC Cards

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<b>Interfaces</b>	<b>PC Card Slot</b>	One Type I/II
	<b>External Monitor</b>	One – VGA
	<b>External Microphone</b>	One
	<b>Headphone/Line out</b>	One
	<b>Power Connector</b>	One
	<b>RJ-11 (Modem)</b>	One
	<b>RJ-45 (NIC)</b>	One
	<b>USB 2.0</b>	Two
<b>LED Status Indicators</b>	Five	

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<b>Software</b>	<b>Preinstalled Software</b>	Microsoft Windows Media Player 10
	Genuine Windows XP	Adobe Acrobat Reader
	Home Edition or Genuine Windows XP Professional	HP Backup and Recovery Manager
		HP Help and Support Center
		Sonic Digital Media Plus
		Synaptics Touchpad Driver
		Symantec Norton Internet Security with complimentary 60-day live update
	Intervideo WinDVD – DVD Player	

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**HP Backup and Recovery Manager** Each unit is shipped with HP Backup and Recovery Manager. HP Backup and Recovery Manager can provide data and system file protection for HP business PCs to enable fast recovery if the system becomes corrupted or if important information is accidentally deleted. HP Backup and Recovery Manager can perform scheduled or manual backups of the entire drive or individual files and folders. Up to 8GB of the hard drive is reserved for the system recovery software. HP Backup and Recovery Manager can also create software recovery CDs or DVDs (requires optional hardware).

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**SMBIOS Version 2.3** System Management BIOS, previously known as DMI BIOS, is used to store system management information.

## Standard Features

<b>Security</b>	<b>Standard Features</b>	Configuration Control Hardware Memory Change Alert Ownership Tag Setup Password Power-On Password DriveLock Kensington Lock Slot
		For more information on HP security solutions refer to <a href="http://www.hp.com/go/security">http://www.hp.com/go/security</a> .
<b>Power Supply</b>		External 65-watt AC adapter, 6-foot (1.8-meter) power cord included. Total length including External AC adapter is 12 feet (3.66 meter). HP Fast Charge Technology*
		* Fast Charge Technology recharges your battery up to 90% within 90 minutes when the system is off.
<b>Battery</b>		4-cell (32Wh) high capacity Lithium-Ion
<b>Battery Life</b>	<b>Intel Pentium M Processor</b>	Up to 2 hours and 45 minutes
	<b>Intel Celeron M Processor</b>	Up to 2 hours
<b>Power Conservation</b>		Hibernation Standby ACPI compliance
<b>Service and Support</b>		HP Services includes a one-year standard parts and labor warranty, pick-up or carry-in, and toll-free 7 x 24 hardware technical phone support. <b>NOTE:</b> Certain restrictions and exclusions apply. Consult the HP Customer Support Center for details. <a href="http://h20000.www2.hp.com/bizsupport/TechSupport/ProductRoot.jsp">http://h20000.www2.hp.com/bizsupport/TechSupport/ProductRoot.jsp</a> .

### Options

Memory	512-MB 533-MHz DDR2 SDRAM*	PE831A
	1024-MB 533-MHz DDR2 SDRAM*	PE832A
<b>*NOTE:</b> Models with Mobile Intel 910GML Express Chipset use this memory at a maximum memory speed of 400-MHz.		
<hr/>		
Other Storage	HP USB Diskette Drive	DC361B
<hr/>		
Power	65W Smart AC Adapter	ED494AA#xxx
	65W Air/Auto/AC Smart Combo Adapter	ED993AA#xxx
	Primary 8-cell Battery Pack	RW557AA
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Carrying Cases	HP Entry Value Case	DL617A
	HP Top Load Nylon	DC915A
	HP Executive Leather case	PA847A
	HP Sport Backpack	DG102A
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Security	HP/Kensington Cable Lock	PC766A
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Input/Output Devices	USB Keyboard & Mouse Bundle	RC465AA#xxx
	HP USB Optical Travel Mouse	RH304AA

## Technical Specifications

<b>System Unit</b>	<b>Dimensions (HxWxD)</b>	1.26 (at front) x 14.09 x 10.12 in 31.9 (at front) x 357.9 x 257.0 mm
	<b>Weight</b>	6.0 lb (2.7 kg)
	<b>NOTE:</b> Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components. Weight includes 4-cell battery, 60-GB hard drive, 512-MB memory, and optical drive. Weight varies by configuration and components.	
<b>Stand-Alone Power Requirements</b>	Normal Operating Voltage	18.5 V
	Average Operating Power	12.5 W
	Max Operating Power	< 65 W
<b>Temperature</b>	Operating	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)
	Non-operating	-4° to 140° F (-20° to 60° C)
<b>Relative Humidity</b>	Operating	10% to 90%, non-condensing
	Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
<b>Shock</b>	Operating	125 G, 2 ms, half-sine
	Non-operating	200 G, 2 ms, half-sine
<b>Random Vibration</b>	Operating	0.75 grms
	Non-operating	1.50 grms
<b>Altitude (unpressurized)</b>	Operating	-50 to 10,000 ft (-15.24 to 3,048 m)
	Non-operating	-50 to 40,000 ft (-15.24 to 12,192 m)
<b>Industry Standard Certifications</b>	UL	Yes
	FCC Compliance	Yes
	CCC	Yes
	CE Marking Compliance	Yes
	BNCI or BELLIS	Yes
	CIT	Yes
	GOST	Yes
	Saudi Arabian Compliance (ICCP)	Yes
	SABS	Yes
	UKRSERTCOMPUTER	Yes

### Technical Specifications

<b>65W AC Adapter</b>	<b>Dimensions</b>	4.17 x 1.85 x 1.1 in (10.6 x 4.7 x 2.8 cm)	
	<b>Weight</b>	0.62 lb (280 g)	
	<b>Input</b>	100 to 240 VAC	
		Input Efficiency	83% min at 115 VAC
		Input frequency range	47 to 63 Hz
		Input AC current	1.7 A at 90 VAC, 0.85 A at 180 VAC
	<b>Output</b>	Output power 65W	65W
		DC output	18.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<5A, Over voltage protection- 29V max automatic shutdown
	<b>Connector</b>	3 pin/grounded, mates with interchangeable cords	
	<b>Environmental Design</b>	Operating temperature	32° to 104° F (0° to 40° C)
		Non-operating (storage) temperature	-4° to 149° F (-20° to 65° C)
		Altitude	0 to 10,000 ft (0 to 3,048 m)
		Humidity	20% to 80%
	Storage Humidity	10% to 90%	
<b>EMI and Safety Certifications</b>	CE Mark - full compliance with LVD and EMC directives; Worldwide safety standards - IEC950, EN60950, UL1950, Class2, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCIB, NOM-1 NYCE; MTBF - over 200,000 hours at 25°C ambient condition.		

<b>32Wh Primary 4-Cell Battery</b>	<b>Dimensions (H x W x L)</b>	0.8 x 1.6 x 10.6 in (2.4 x 4.0 x 26.9 cm)	
	<b>Weight</b>	0.50 lb (0.225 kg)	
	<b>Cells/Type</b>	4-cell Lithium-Ion	
	<b>Energy</b>	Voltage	14.4 V
		Watt-hour Capacity	32Wh
		Amp-hour Capacity	2.2Ah
	<b>Temperature</b>	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 140° F (-10° to 60° C)
		Non-operating	-4° to 140° F (-20° to 60° C)
	<b>Battery Re-Charge Time</b>	System in OFF mode or Standby	2.5 hours
		System ON	3 to 5 hours (depending on system power consumption)
HP Fast Charge Technology		Charges the battery up to 90% within 1.5 hours when system is OFF	

### Technical Specifications

15.4-inch Color TFT WXGA BrightView Display	Active Area (W x H)	13.0 x 8.1 in (33.1 x 20.7 cm)	
	Diagonal Size	15.4 in (39.1 cm)	
	Surface Treatment	BrightView	
	Contrast Ratio	300:1 (typical)	
	Refresh Rate	60 Hz	
	Brightness	170 nit (typical)	
	Pixel Resolution	Pitch	0.259 mm
		Format	1280 x 800
		Configuration	RGB Stripe
	Backlight	CCFL	
	PPI	98	
Viewing Angle	±45° Horizontal, ±25° Vertical (typical)		

### Hard Drives

60-GB 5400 rpm	Drive Weight	0.22 lb (101 g)	
	Capacity	60 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-7	
	Transfer Rate	Synchronous (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track	3 ms
		Average	13 ms
		Maximum	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	117,210,240	
Operating Temperature	41° to 131° F (5° to 55° C)		
Features	ATA Security		

## Technical Specifications

40-GB 4200 rpm	Drive Weight	0.22 lb (101 g)	
	Capacity	40 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-7	
	Transfer Rate	Synchronous (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track	3 ms
		Average	13 ms
		Maximum	24 ms
	Rotational Speed	4200 rpm	
	Logical Blocks	78,140,160	
	Operating Temperature	41° to 131° F (5° to 55° C)	
	Features	ATA Security	

## Removable Storage Drives – Fixed Bay

DVD/CD-RW Combo Drive	Access Times	Random	<110 ms CD
			<130 ms DVD
	Max Data Transfer Rate	24X CD-ROM	3,600 KB/s
		8X DVD	10,800 KB/s
		24X CD-R	3,600 KB/s
		24X CD-RW	3,600 KB/s
	Transfer Mode	Multiword DMA Mode 2	
	Interface	EIDE	
	Supported Media (read)	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW	
	Supported Media (write)	CD-R, CD-RW	
	Max Media Capacity (read)	8.5 GB	
	Max Media Capacity (write)	700 MB	
	Transport	Tray loading	

## Technical Specifications

DVD+/-RW SuperMulti Drive with Double Layer	<b>Access Times</b>	Random	<175 ms CD <230 ms DVD
	<b>Max Data Transfer Rate</b>	24X CD-ROM	3,600 KB/s
		8X DVD	10,800 KB/s
		24X CD-R	3,600 KB/s
		10X CD-RW	1,500 KB/s
		8X DVD+R	10,800 KB/s
		4X DVD+RW	5,400 KB/s
		8X DVD-R	10,800 KB/s
		4X DVD-RW	5,400 KB/s
		2.4X DVD+R(9)	2,700 KB/s
		5X DVD-RAM	6,750 KB/s
	<b>Transfer Mode</b>	Multiword DMA Mode	
	<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, DVD-RAM		
<b>Supported Media (write)</b>	CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM		
<b>Max Media Capacity (read)</b>	8.5 GB		
<b>Max Media Capacity (write)</b>	8.5 GB		
<b>Transport</b>	Tray Loading		

## Audio

Hardware	<b>Implementation</b>	Conexant CX20468
	<b>Full Duplex</b>	Yes
	<b>Sound Blaster Pro compatible</b>	Yes
	<b>Microphone Jack</b>	Mono
	<b>Headphone/Line Out Jack</b>	Stereo

## Technical Specifications

Audio Output Quality	Frequency Response	20 Hz – 20 kHz
	Signal to Noise Ratio	>85 dB
	Total Harmonic Distortion	0.02%
	Noise Floor	-110 dB
	Play/Record Sampling Rate(s)	8 kHz– 48 kHz
	DAC	16, 18, or 20-bit
	ADC	16, 18, or 20-bit

Internal Speaker	Power Rating	1.5 Watts
	Impedance	4 Ohms

## Communications

Intel 82562V 10/100 Network Connection	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) Auto-Negotiation (Automatic Speed and Duplex Selection) Full Duplex and Half Duplex operation at 10 and 100 Mbit/s IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) <b>NOTE:</b> Auto MDI/MDI-X is not supported.
	Power Management	ACPI compliant -- multiple power modes
	Performance Features	TCP / IP / UDP Checksum Offload
	Manageability	Boot-from-LAN using PXE 2.1 <b>NOTE:</b> Wake-on-LAN and Boot-from-LAN using RPL are not supported.
	NIC Device Driver Name	Intel PRO/100 VE Network Connection
	Drivers Available	Microsoft Windows XP

Conexant Ultima HD2.0 56K Modem	Form Factor	Integrated on system board
	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

## Technical Specifications

<b>Data Mode Capabilities</b>	V.92 data V.8bis V.80 V44, V.42bis, MNP5 (Compression) V.42 (LAPM, MNP2-4) (Error Correction)
	<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.34 V.32bis V.32 V.23 V.22bis V.22 V.21 Bell 212A Bell 103J
<b>Fax Mode Capabilities</b>	TIA/EIA-578-B (Class 1) T.30, T.4 (Group 3) V.17 V.29 V.27ter V.21 Channel 2
<b>Command Set</b>	V.250 (Partial) TIA-602 Identification: +GMI, +GMM, +GMR Port control: +IPR, +ICF, +IFC, +ILRR Modulation: +MS, +MR, +MA Error control: +ES, +ER, +EB, +ESR, +ETBM Data compression: +DS, +DR V.251

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<b>Intel 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 Cisco Compatible Extensions Program compliant (details 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

## Technical Specifications

<b>Security<sup>1</sup></b>	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST.	
<b>Sub-channels</b>	Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program). Multinational support with frequency bands and channels compliant to local regulations.	
<b>Media Access Protocol</b>	CSMA/CA (Collision Avoidance) with ACK	
<b>Network Architecture Models</b>	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)	
<b>Roaming</b>	IEEE 802.11 compliant roaming between access points.	
<b>Output Power (for CKK)<sup>2</sup></b>	16 dBm +/- 2 dB	
<b>Output Power (for OFDM; power varies by data rate)<sup>2</sup></b>	15 dBm +/- 5 dB	
<b>Power Consumption</b>	Transmit: 1.8 Watts (max) Receive: 1.4 Watts (max) Idle mode: 75 mW (nominal) Sleep mode: 60 mW	
<b>Power Management</b>	ACPI compliant power management 802.11 Compliant Power Saving Mode	
<b>Receiver Sensitivity<sup>3</sup></b>	54 Mbps: -72 dBm, 11 Mbps: -88 dBm , 1 Mbps: -97 dBm	
<b>Antenna type</b>	High efficiency dual band antenna with polarization diversity, mounted in the display enclosure	
<b>Range</b>	802.11 b – Typical (@1 Mbps)	1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment
	802.11 g – Typical (@1 Mbps)	1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment
<b>Form Factor</b>	MiniPCI Type IIIB	
<b>Weight</b>	0.026 lb (11.75 g) (max)	
<b>Dimensions</b>	0.20 x 1.75 x 2.34 in (4.9 x 44.6 x 59.8 mm)	
<b>Operating Voltage</b>	3.3v	
<b>Temperature</b>	Operating	32° to 158° F (0° to 70° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
<b>Humidity</b>	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
<b>Altitude</b>	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)

## Technical Specifications

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

Choice of Configuration Utility:

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

### LED Activity

LED Off – Radio OFF; Solid LED – Radio ON

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

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