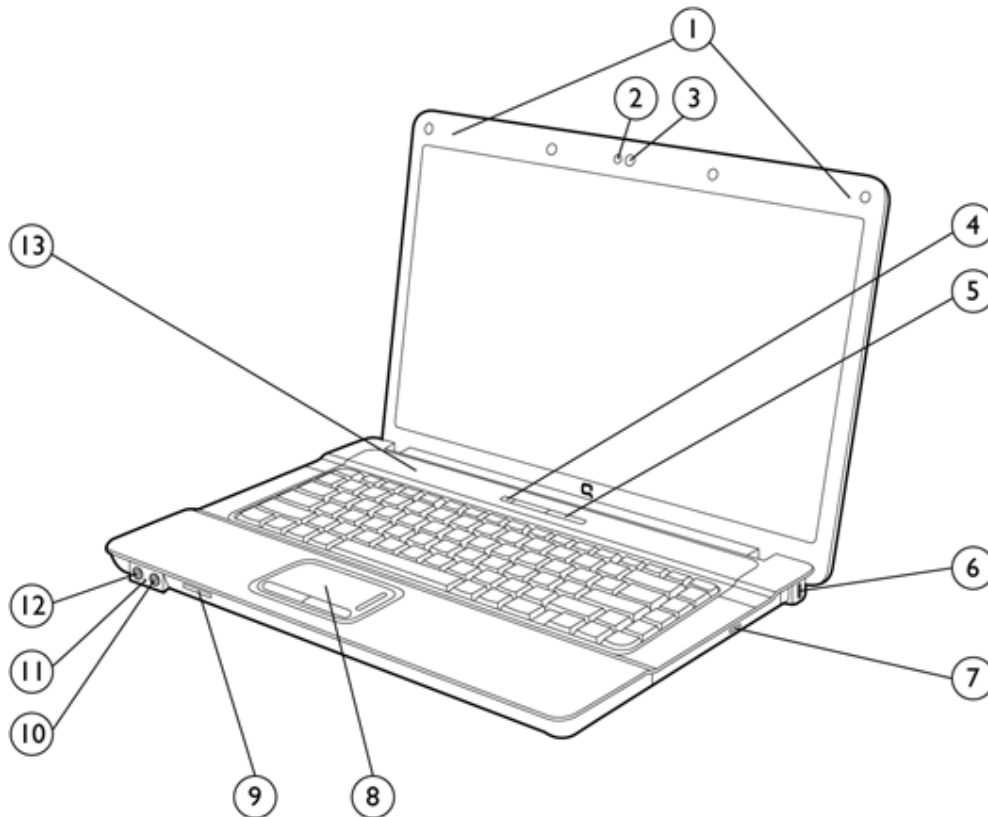


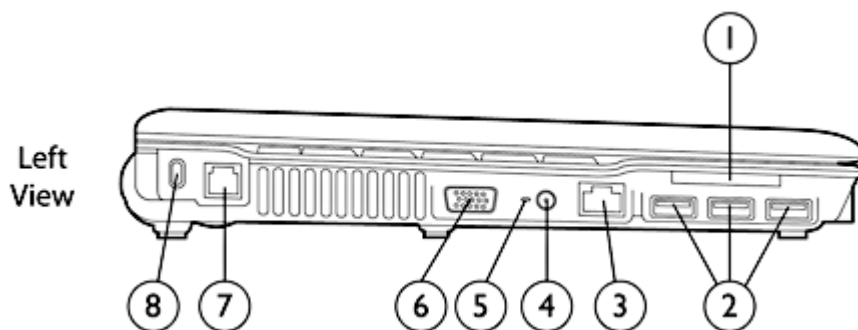
Overview

HP recommends Windows Vista® Business



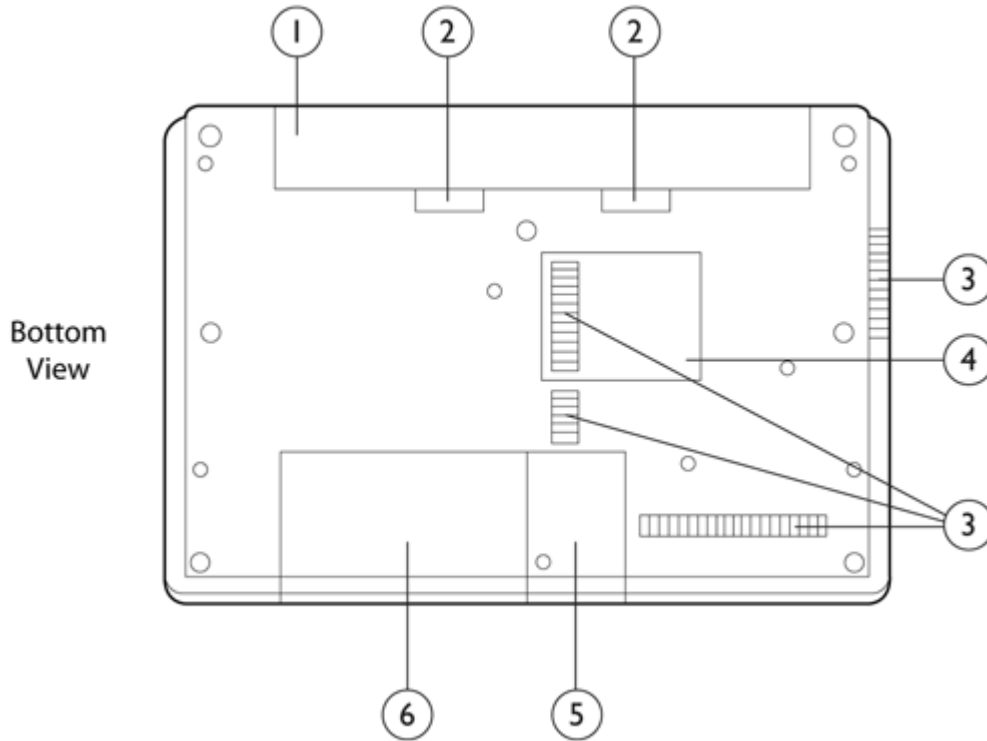
- | | |
|---|-------------------------------|
| 1. Dual-band wireless LAN antennas | 7. Optical drive* |
| 2. Webcam light (works with optional webcam) | 8. Touchpad with scroll zone |
| 3. Optional 2 MP webcam | 9. Secure Digital (SD) slot |
| 4. Wireless On/Off button with LED indicator* | 10. Stereo microphone in |
| 5. Power button with LED indicator | 11. Integrated microphone |
| 6. Speaker | 12. Stereo headphone/line out |

* Select models only



Overview

1. ExpressCard/34 slot
2. Three USB 2.0 ports
3. RJ-45/Ethernet port
4. Power connector
5. Battery charging LED indicator
6. VGA/external monitor connector
7. Optional RJ-11/modem port
8. Kensington Lock slot



1. Battery bay
2. Battery release latches
3. Vents
4. Memory module compartment
5. WLAN module compartment
6. Hard drive bay

At A Glance

- Genuine Windows Vista Business 32
Genuine Windows Vista Home Basic 32
Genuine Windows Vista Business with downgrade to Windows XP Professional custom installed
- Intel® Core™ 2 Duo processor or Intel Celeron® processor
- Industrial design starting at 5.5 lb/2.49 kg and 1.26 inch/32.0 mm thin at front
- Widescreen 15.6-inch diagonal LED-backlit HD display with 16:9 aspect ratio, BrightView
- Mobile Intel GME965 or GLE960 Express Chipset
- Supports up to 4 GB of DDR2 SDRAM (select models)
- 160/250 GB 5400 rpm SATA hard drive with DriveGuard
- Mobile Intel Graphics Media Accelerator X3100 integrated graphics
or ATI Mobility Radeon HD 4330 discrete graphics with HyperMemory support
- Integrated 802.11 a/b/g, or b/g wireless LAN module**
- Marvell Ethernet (10/100 NIC)
- Touchpad with scroll zone

Overview

- * Operating system options vary by country.
- ** Select models only

Standard Features

Processors		Intel Core 2 Duo Processor T5870 (2.0 GHz, 2 MB L2 cache, 800 MHz FSB)* † Intel Celeron Processor T1500 (1.86 GHz, 512 KB L2 cache, 533 MHz FSB)* * Intel's numbering is not a measurement of higher performance. † Requires Mobile Intel GME965 or PM965 Express Chipset. NOTE: Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.
Operating System	Preinstalled	Genuine Windows Vista Business 32* Genuine Windows Vista Home Basic 32* Genuine Windows Vista Business with downgrade to Windows XP Professional custom installed*†
	Supported	Genuine Windows Vista Business 64*
	Certified	SUSE Linux Enterprise Desktop 10
		* Certain Windows Vista product features require advanced or additional hardware. See http://www.microsoft.com/windowsvista/getready/hardwarereqs.mspx and http://www.microsoft.com/windowsvista/getready/capable.mspx for details. Windows Vista Upgrade Advisor can help you determine which features of Windows Vista will run on your computer. To download the tool, visit: http://www.windowsvista.com/upgradeadvisor .
		† Windows Vista Business disk may be included for future upgrade if desired. To qualify for this downgrade an end user must be a business (including governmental or educational institutions) and is expected to order annually at least 25 customer systems with the same custom image.
Chipset		Models with integrated graphics: Mobile Intel GLE960 Express Chipset with ICH8M, 533 MHz front side bus or Mobile Intel GME965 Express Chipset with ICH8M, 800 MHz front side bus
Graphics		Models with integrated graphics: Mobile Intel Graphics Media Accelerator X3100, up to 384 MB shared system memory Microsoft DirectX 10.1 (discrete), 10 (integrated) capable
Display	Internal	15.6-inch diagonal LED-backlit HD 16:9 widescreen BrightView (1366 x 768 resolution)
	External	Up to 32-bit per pixel colour depth VGA port supports resolutions up to 1600 x 1200 at 75 Hz, and lower resolutions at up to 100 Hz NOTE: Resolutions are dependent upon monitor capability, and resolution and colour depth settings.

Standard Features

Memory	Standard	1 GB, or 2 GB 800 MHz DDR2 SDRAM*; two SODIMM slots supporting dual channel memory
	Maximum	Upgradeable to 4 GB** total memory
	Dual-channel	Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

* Models with Mobile Intel GLE960 Express Chipset use this memory at a maximum memory speed of 533 MHz. Models with Mobile Intel GME965 or Mobile Intel PM965 Express Chipset use this memory at a maximum memory speed of 667 MHz.

** 4 GB maximum requires Mobile Intel GME965 Express Chipset.

NOTE: Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed. Full availability of 4 GB or more of memory requires Windows Vista Business 64-bit or Linux. With Windows 32-bit operating systems, the amount of usable memory is dependent upon your configuration, so that above 3 GB all memory may not be available due to system resource requirements.

Communications	Marvell Ethernet Integrated Controller (10/100 NIC) Optional 56K V.92 modem*
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* Designed for downloads from 56K modem compliant sources. Maximum achievable download transmission rates currently do not reach 56 KB/s, and will vary with line conditions. Modem availability is subject to country regulatory approval.

Wireless Devices	Support for a broad range of secure, integrated wireless LAN options featuring support for the latest industry standards. Wireless LAN is factory configurable or available as an option to be added later.
All 802.11 integrated wireless LAN options	Wi-Fi certified* Wired Equivalent Privacy (WEP) support up to 128-bit keys Wi-Fi Protected Access (WPA) and WPA2 support 802.1x authentication support, including EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, and LEAP Advanced Encryption Standard (AES) support Dual antennas integrated in the display enclosure
Intel PRO/Wireless 3945ABG Network Connection	Integrated support for 802.11 a, b and g Cisco Compatible Extensions support Up to 54 mbps data rate
Broadcom 4312G 802.11b/g WiFi Adapter	Integrated support for 802.11 b and g Cisco Compatible Extensions support Up to 54 mbps data rate

* The specifications for 802.11n draft 2.0 are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11n WLAN devices.

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.

Pointing device

Touchpad with scroll zone, two pick buttons

Expansion Card Slots

ExpressCard/34 slot

Supports ExpressCard/34 (34 mm x 75 mm x 5 mm)

Secure Digital slot

Supports SD (Secure Digital), and MMC (MultiMedia Card)

Storage

Hard drives

160/250 GB 5400 rpm SMART SATA

NOTE: Up to 10 GB is reserved for the system recovery software.

DriveGuard

The hard drive is mounted directly to the notebook frame, reducing the transmission of shock to the hard drive.

Fixed optical drives

DVD+/-RW SuperMulti DL LightScribe Drive

Interfaces

ExpressCard/34 slot

Supports ExpressCard/34

External Monitor

One - VGA

External Microphone

One

Headphone/Line out

One

Power Connector

One

RJ-11/modem (optional)

One

RJ-45/Ethernet

One

USB 2.0

Three

LED Status Indicators

Six

Audio/Visual

High Definition Audio support

Integrated mono speaker

Stereo headphone/line out

Stereo microphone in

Optional integrated 2MP webcam

Standard Features

Software	Preinstalled Software with Windows Vista or Windows XP	HP Total Care Advisor HP Connections Manager PDF Complete MS Live Messenger MS Office Ready 2007 Adobe Flash Player HP Recovery Manager (Windows Vista only) HP Webcam Software HP Help and Support Center Roxio Creator Business McAfee Total Protection* Intervideo WinDVD 8SE- DVD Player
		<i>* 60 day trial period for McAfee Total Protection for Small Business software. Internet access required to receive updates. First update included. Subscription required for updates thereafter.</i>

HP Recovery Manager	Units with Windows Vista are shipped with HP Recovery Manager. HP Recovery Manager enables fast recovery of the factory preinstalled image if the system becomes corrupted or if important system files are accidentally deleted. Up to 10 GB of the hard drive is reserved for the system recovery software.
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Security	Standard Features	Disk Sanitizer Setup Password Power-On Password DriveLock Kensington Lock Slot Support for Computrace / LoJack for Laptops (must be purchased separately)
		For more information on HP security solutions refer to: http://www.hp.com/go/security .

Power Supply	Models with integrated graphics: External 65-watt AC adapter 6-foot (1.8-metre) power cord included Total length including External AC adapter is 12 feet (3.66 metre). Fast Charge*
	<i>* Fast Charge recharges your battery up to 90% within 90 minutes when the system is off.</i>

Battery	6-cell (47 WHr) high capacity Lithium-Ion
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Battery Life	Up to 5 hours with GME965; Up to 3 hours 45 minutes with GLE960
System Standby Time	Up to 1 week

Power Conservation	Hibernation Standby ACPI compliance
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Standard Features

Service and Support

HP Services offers limited 1-year warranty options depending on country; 1-year limited warranty on primary battery. On-site service and warranty upgrades are also available. HP Care Pack Services extend service contracts beyond the standard warranties. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at: <http://www.hp.com/go/lookuptool>. Additional HP Care Pack Services information by product is available at: <http://www.hp.com/hps/carepack>.

NOTE: Certain restrictions and exclusions apply. Consult the HP Customer Support Centre for details. <http://h20000.www2.hp.com/bizsupport/TechSupport/ProductRoot.jsp>

Select Model(s)

Compaq 610 FM949UT#ABA (English) FM949UT#ABC (Fr CAN) Smart Buy	Processor	Intel Dual-Core Celeron Processor T1500 (1.86 GHz, 512 KB L2 cache, 533 MHz FSB)
	Operating System	Genuine Windows Vista Home Basic 32
	Chipset	Mobile Intel GLE960 Express Chipset
	System Memory	2048-MB 800-MHz DDR2 SDRAM (1 DIMM) Memory operates at a maximum of 533-MHz with Celeron processor
	Hard Drive	250-GB 5400 rpm SATA HDD
	Display	15.6-inch diagonal LED-backlit HD 16:9 widescreen BrightView (1366 x 768 resolution)
	Integrated Webcam	2MP webcam included
	Graphics	Mobile Intel Graphics Media Accelerator X3100, up to 384-MB shared system memory
	Communications	Marvell Ethernet (10/100 NIC) 56K V.92 modem
	Integrated Wireless	Broadcom 4312G 802.11b/g WiFi Adapter
	Pointing Device	Touchpad with scroll zone, two pick buttons
	Optical Drive	DVD+/-RW SuperMulti DL LightScribe Drive
	Battery	6-cell (47 WHr) Lithium-Ion
	Power	External 65-watt AC adapter
Warranty	1 Year Limited Warranty	

Standard Features

Compaq 610 FM950UT#ABA (English) FM950UT#ABC (Fr CAN) Smart Buy	Processor	Intel Core 2 Duo Processor T5870 (2.0 GHz, 2 MB L2 cache, 800 MHz FSB)
	Operating System	Genuine Windows Vista Business 32 with downgrade to Windows XP Professional custom installed
	Chipset	Mobile Intel GME965 Express Chipset
	System Memory	3072-MB 800-MHz DDR2 SDRAM (2 DIMM)
	Hard Drive	250-GB 5400 rpm SATA HDD
	Display	15.6-inch diagonal LED-backlit HD 16:9 widescreen BrightView (1366 x 768 resolution)
	Integrated Webcam	2MP webcam included
	Graphics	Mobile Intel Graphics Media Accelerator X3100, up to 384-MB shared system memory
	Communications	Marvell Ethernet (10/100 NIC) 56K V.92 modem
	Integrated Wireless	Intel PRO/Wireless 3945ABG Network Connection*
	Pointing Device	Touchpad with scroll zone, two pick buttons
	Optical Drive	DVD+/-RW SuperMulti DL LightScribe Drive
	Battery	6-cell (47 WHr) Lithium-Ion
	Power	External 65-watt AC adapter
	Warranty	1 Year Limited Warranty

* Requires Intel Core 2 Duo processor

Options

Memory	1 GB 800 MHz DDR2 SDRAM SODIMM*	KT292AA
	2 GB 800 MHz DDR2 SDRAM SODIMM*	KT293AA
<p>* Models with Mobile Intel GLE960 Express Chipset use this memory at a maximum memory speed of 533 MHz. Models with Mobile Intel GME965 Express Chipset use this memory at a maximum memory speed of 667 MHz.</p>		
Other Storage	HP USB Diskette Drive	DC361B
	HP Primary SATA 250 GB 5400 rpm Hard Drive	AK072AA
	HP 250 GB USB Pocket Media Hard Drive	FE477AA
Expansion	HP USB 2.0 Docking Station	FQ834AA#ABA
Power	65W Smart AC Adapter	ED494AA#ABA
	90W Smart AC Adapter	ED495AA#ABA
	90W Smart Auto/Truck Adapter	ED493AA
	Primary 8-cell battery	KH386AV
Carrying Cases	HP Basic Carrying Case	AJ078AA
	HP Basic Backpack	AM863AA
	HP Basic Messenger	AP355AA
	HP Value Nylon Case	RR314AA
	HP Universal Nylon Case	RR315AA
	HP Executive Leather Case	RR316AA
	HP Deluxe Nylon Backpack	RR317AA
	HP Deluxe Roller Case	GD405AA
Security	ExpressCard Smart Card Reader with Java Card	AJ451AA
	HP/Kensington Cable Lock	PC766A
Input/Output Devices	USB Keyboard & Mouse Bundle	RC465AA#ABA
	HP USB/PS2 Optical Scroll Mouse	DC369A
	HP USB Optical Travel Mouse	RH304AA
	HP Mobile Audio Speakers	FS944AA
	HP Bluetooth Stereo Headphones	AR084AA
	HP Wireless Optical Mouse	AR085AA
Miscellaneous	Belkin USB to Serial Adapter	EM449AA

Technical Specifications

System Unit	Dimensions (HxWxD)	1.26 (at front) x 14.64 x 10.01 in 32.0 (at front) x 371.8 x 254.3 mm
	Weight	Starting at 5.5 lb (2.49 kg)
	NOTE: Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components. Weight includes 6-cell battery, 160GB hard drive, 1 GB memory, and optical drive. Weight varies by configuration and components.	
Stand-Alone Power Requirements	Normal Operating Voltage	18.5 V
	Average Operating Power	Models with integrated graphics: 17.6 W Models with discrete graphics: 19.6 W
	Max Operating Power	< 90 W
Temperature	Operating	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)
	Non-operating	-4° to 140° F (-20° to 60° C)
Relative Humidity	Operating	10% to 90%, non-condensing
	Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
Shock	Operating	125 G, 2 ms, half-sine
	Non-operating	200 G, 2 ms, half-sine
Random Vibration	Operating	0.75 grms
	Non-operating	1.50 grms
Altitude (unpressurized)	Operating	-50 to 10,000 ft (-15.24 to 3,048 m)
	Non-operating	-50 to 40,000 ft (-15.24 to 12,192 m)
Industry Standard Certifications	UL	Yes
	CSA	Yes
	FCC Compliance	Yes
	ENERGY STAR®	Yes*
	EPEAT	Gold**
	ICES	Yes
	Australia / NZ A-Tick Compliance	Yes
	CCC	Yes
	Japan VCCI Compliance	Yes
	MIC	Yes
	BSMI	Yes
	CE Marking Compliance	Yes
	BNCL or BELUS	Yes
	CIT	Yes
	GOST	Yes
	Saudi Arabian Compliance (ICCP)	Yes
SABS	Yes	

Technical Specifications

UKRSERTCOMPUTER Yes

* Configurations of the Compaq 610 that are ENERGY STAR qualified are identified as Compaq 610 ENERGY STAR on HP websites and on www.energystar.gov.

** EPEAT registration varies by country. See www.epeat.net for registration status by country. EPEAT status listed above applies to U.S.

NOTE: For accessibility information on HP products, please visit: <http://www.hp.com/accessibility>.

HP 65W AC Adapter	Dimensions	4.17 x 1.85 x 1.1 in (10.6 x 4.7 x 2.8 cm)	
	Weight	0.62 lb (280 g)	
	Input	100 to 240 VAC	
		Input Efficiency	83% min at 115 VAC
		Input frequency range	47 to 63 Hz
	Output	Input AC current	1.7 A at 90 VAC, 0.85 A at 180 VAC
		Output power	65W
		DC output	18.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	Output current limit < 11A, Over voltage protection- 29V max automatic shutdown
		Connector	3 pin/grounded, mates with interchangeable cords
	Environmental Design	Operating temperature	32° to 104° F (0° to 40° C)
		Non-operating (storage) temperature	-4° to 149° F (-20° to 65° C)
		Altitude	0 to 10,000 ft (0 to 3,048 m)
		Humidity	20% to 80%
EMI and Safety Certifications	Storage Humidity	10% to 90%	
	CE Mark – full compliance with LVD and EMC directives; Worldwide safety standards – IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals – C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; MTBF – over 200,000 hours at 25°C ambient condition.		

Technical Specifications

6-Cell (47 WHr) Lithium-Ion battery	Dimensions (H x W x L)	0.8 x 2.1 x 8.0 in (2.0 x 5.3 x 20.3 cm)		
	Weight	0.659 lb (0.299 kg)		
	Cells/Type	6-cell Lithium-Ion		
	Energy	Watt-hour Capacity	47 WHr	
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)	
		Operating (Discharging)	14° to 140° F (-10° to 60° C)	
		Non-operating	-4° to 140° F (-20° to 60° C)	
	Battery Re-Charge Time	System in OFF mode or Standby	2.5 hours	
		System ON	3 to 5 hours (depending on system power consumption)	
		HP Fast Charge Technology	Charges the battery up to 90% within 90 minutes when system is OFF	

Displays

15.6-inch LED HD (1366 x 768) BrightView	Active Area (W x H)	13.54 x 7.59 in (34.4 x 19.4 cm)	
	Diagonal Size	15.6 in (39.6 cm)	
	Surface Treatment	BrightView (glossy)	
	Contrast Ratio	300:1 (typical)	
	Refresh Rate	60 Hz	
	Brightness	200 nit (typical)	
	Pixel Resolution	Pitch	0.252 mm
		Format	1366 x 768
		Configuration	RGB Stripe
	Backlight	LED	
PPI	100 ppi		
Viewing Angle	±30° Horizontal, ±10° Vertical (minimum)		
	30/30/20/10 (Left/Right/Down/Up) (minimum) or 45/45/35/25 (Left/Right/Down/Up) (typical)		

Hard Drives

Technical Specifications

250 GB 5400 rpm SATA Hard Drive	Drive Weight	0.22 lb (101 g)	
	Capacity	250 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	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	488,397,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
Features	ATA Security		

160 GB 5400 rpm SATA Hard Drive	Drive Weight	0.22 lb (101 g)	
	Capacity	160 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	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	312,581,808	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
Features	ATA Security		

Removable Storage Drives

Technical Specifications

DVD+/-RW SuperMulti DL LightScribe Drive	Access Times	Random	< 150ms CD (typical) < 160 ms DVD (typical)
	Max Data Transfer Rate	24X CD-ROM	Up to 3,600 KB/s
		8X DVD	Up to 10,800 KB/s
		24X CD-R	Up to 3,600 KB/s
		16X CD-RW	Up to 2,400 KB/s
		8X DVD+R	Up to 10,800 KB/s
		8X DVD+RW	Up to 10,800 KB/s
		8X DVD-R	Up to 10,800 KB/s
		6X DVD-RW	Up to 8100KB/s
		4X - DVD+R Dual Layer	Up to 5,400 KB/s
		4X - DVD-R Dual Layer	Up to 5,400 KB/s
	5X DVD-RAM	Up to 6,750 KB/s	
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
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, DVD-RAM		
Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM, LightScribe		
Max Media Capacity (read)	8.5 GB		
Max Media Capacity (write)	8.5 GB		
Transport	Tray Loading		

Audio

Hardware	Implementation	IDT 92HD75 High Definition audio
	Volume Controls	Up, down, and mute function keys
	Full Duplex	Yes
	Microphone In	Stereo
	Headphone/Line Out	Stereo
	Integrated Microphone	Yes

Technical Specifications

Audio Output Quality	Frequency Response	10 Hz ~ 30 KHz
	Signal to Noise Ratio	>95 db
	Total Harmonic Distortion	>83 dBr
	Noise Floor	-110 dB
	Play/Record Sampling Rate(s)	Up to 192 KHz
	DAC	24 bits
	ADC	24 bits

Internal Mono Speaker	Power Rating	1.5 W
	Impedance	4 ohms

Communications

Integrated Marvell 10/100 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) Auto-Negotiation (Automatic Speed Selection) Full Duplex & Half Duplex Operation at all Speeds IEEE 802.1p QoS (Quality of Service) Support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable)
	Power Management	ACPI compliant – multiple power modes Situation-sensitive features reduce power consumption
	Performance Features	TCP/IP/UDP Checksum Offload (configurable)
	Manageability	Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite
	Interface	PCI Express x1
	NIC Device Driver Name	Marvell Yukon 88E8042 PCI-E Gigabit Ethernet Controller

Technical Specifications

V.92 56K Data/Fax Modem	Form Factor	MDC 1.5 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		V.92 data
		V.8bis
		V.80
		V44, V.42bis, MNP5 (Compression)
		V.42 (LAPM, MNP2-4) (Error Correction)
		Optional symbol rates: 2800, 3429
		Asymmetric Symbol rates
		Synchronous primary channel data signaling rates: 3600, 31200
		Automatic rate re-negotiation
		V.34
		V.32bis
		V.32
		V.23
	V.22bis	
	V.22	
	V.21	
	Bell 212A	
	Bell 103J	
Fax Mode Capabilities		TIA/EIA-578-B (Class 1)
		T.30, T.4 (Group 3)
		V.17
		V.29
		V.27ter
Command Set		V.21 Channel 2
		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	

Intel PRO/Wireless 3945ABG Network Connection	Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g
	Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliant with Microsoft Windows 2000 and XP (details at: http://www.hp.com/go/notebooks/WLAN)

Technical Specifications

Frequency Band	2.4 GHz							
Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps							
Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM							
Security¹	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST, EAP-SIM. Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4).							
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.							
Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK							
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)							
Roaming	IEEE 802.11 compliant roaming between access points							
Output Power (for CCK)²	15 dBm							
Output Power (for OFDM; power varies by data rate)²	15 dBm							
Power Consumption	Transmit: 1.8 Watts (max) Receive: 1.4 Watts (max) Idle mode ³ : 150 mW (nominal) Sleep mode: 30 mW (max)							
Power Management	ACPI compliant power management 802.11 compliant power saving mode							
Receiver Sensitivity⁴	54 Mbps: -72 dBm, 11 Mbps: -88 dBm , 1 Mbps: -97 dBm							
Antenna Connections	2 U.FL type connectors, 50 ohm nominal impedance							
Range	<table> <tr> <td>802.11 a – Typical (@6 Mbps)</td> <td>600 feet – Outdoor Open Area 150 feet – Indoor, Office environment</td> </tr> <tr> <td>802.11 b – Typical (@1 Mbps)</td> <td>1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment</td> </tr> <tr> <td>802.11 g – Typical (@1 Mbps)</td> <td>1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment</td> </tr> </table>		802.11 a – Typical (@6 Mbps)	600 feet – Outdoor Open Area 150 feet – Indoor, Office environment	802.11 b – Typical (@1 Mbps)	1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment	802.11 g – Typical (@1 Mbps)	1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment
802.11 a – Typical (@6 Mbps)	600 feet – Outdoor Open Area 150 feet – Indoor, Office environment							
802.11 b – Typical (@1 Mbps)	1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment							
802.11 g – Typical (@1 Mbps)	1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment							
Form Factor	PCI-Express MiniCard							
Weight	0.013 lb (6 g)							
Dimensions	0.19 x 1.2 x 2.0 in (4.75 x 29.85 x 50.8 mm)							
Operating Voltage	3.3V +/- 9%, 1.5V +/- 5%							
Temperature	<table> <tr> <td>Operating</td> <td>32° to 176° F (0° to 80° C)</td> </tr> <tr> <td>Non-operating</td> <td>-40° to 176° F (-40° to 80° C)</td> </tr> </table>		Operating	32° to 176° F (0° to 80° C)	Non-operating	-40° to 176° F (-40° to 80° C)		
Operating	32° to 176° F (0° to 80° C)							
Non-operating	-40° to 176° F (-40° to 80° C)							
Humidity	<table> <tr> <td>Operating</td> <td>10% to 90% (non-condensing)</td> </tr> <tr> <td>Non-operating</td> <td>5% to 95% (non-condensing)</td> </tr> </table>		Operating	10% to 90% (non-condensing)	Non-operating	5% to 95% (non-condensing)		
Operating	10% to 90% (non-condensing)							
Non-operating	5% to 95% (non-condensing)							
Altitude	<table> <tr> <td>Operating</td> <td>0 to 10,000 ft (3,048 m)</td> </tr> <tr> <td>Non-operating</td> <td>0 to 50,000 ft (15,240 m)</td> </tr> </table>		Operating	0 to 10,000 ft (3,048 m)	Non-operating	0 to 50,000 ft (15,240 m)		
Operating	0 to 10,000 ft (3,048 m)							
Non-operating	0 to 50,000 ft (15,240 m)							

Technical Specifications

- Configuration Utility⁵** Microsoft Windows 2000 or XP
Choice of Configuration Utility:
- Microsoft Windows XP Wireless Network Connection Manager
 - Intel PROSet for Microsoft Windows 2000 or XP (required for Cisco Compatible Extensions support)

Microsoft Windows Vista

- Microsoft Windows Vista Wireless Network Connection Manager

LED Activity

LED Off – Radio OFF; Solid LED On – 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. In Power Save Polling mode.
4. 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).
5. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows 2000 or XP. WLAN may also be compatible with certain third-party software supplicants.

Broadcom 4312G 802.11b/g WiFi Adapter

- Wireless LAN Standards** IEEE 802.11b
IEEE 802.11g
- Interoperability** Wi-Fi certified
Cisco Compatible Extensions Program compliant with Microsoft Windows Vista and XP (details at: <http://www.hp.com/go/notebooks/WLAN>)
- Frequency Band** 2.4 GHz
- Data Rates** 802.11b: 1, 2, 5.5, 11 Mbps
802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
- Modulation** Direct Sequence Spread Spectrum
DBPSK, DQPSK, CCK, OFDM
- Security¹** Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST.
- Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only.
- Sub-channels** Multinational support with frequency bands and channels compliant to local regulations.
- Media Access Protocol** CSMA/CA (Collision Avoidance) with ACK
- Network Architecture Models** Ad-hoc (Peer to Peer)
Infrastructure (Access Point Required)
- Roaming** IEEE 802.11 compliant roaming between access points
- Output Power (for CCK)²** 17 dBm , nominal
- Output Power (for OFDM; 15 dBm , nominal power varies by data rate)²**



Technical Specifications

Power Consumption	Idle associated: 250 mW Idle unassociated: 150 mW Transmit: 2.0 W (max) Receive: 2.0 W (max)
Power Management	ACPI compliant power management 802.11 compliant power saving mode
Receiver Sensitivity³	54 Mbps: -71 dBm, 11 Mbps: -85 dBm , 1 Mbps: -95 dBm
Antenna type	High efficiency dual band antenna with spatial diversity, mounted in the display enclosure
Form Factor	PCI-Express Half-MiniCard
Weight	0.013 lb (6 g)
Dimensions	0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm)
Operating Voltage	3.3v +/- 10%
Temperature	Operating 14° to 149° F (-10° to 65° C) Non-operating -40° to 176° F (-40° to 80° C)
Humidity	Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing)
Altitude	Operating 0 to 10,000 ft (3,048 m) Non-operating 0 to 50,000 ft (15,240 m)
Configuration Utility⁴	Microsoft Windows XP Choice of Configuration Utility: <ul style="list-style-type: none">● Microsoft Windows XP Wireless Network Connection Manager● Broadcom Wireless Configuration Utility (required for Cisco Compatible Extensions support) Microsoft Windows Vista <ul style="list-style-type: none">● Microsoft Windows Vista Wireless Network Connection Manager● Broadcom IHV extensions for Windows Vista available to support Cisco Compatible Extensions.
LED Activity	LED Off – Radio OFF; Solid LED On – 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 (CCK 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 with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.

Technical Specifications

Eco Data

Eco-Label Certifications

This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- US Energy Star
- IT ECO declaration
- EPEAT – Gold

System Configuration

The configuration used for the Energy Consumption and Declared Noise Emissions data for this model is based on a "Typically Configured Notebook"

Energy Consumption

	115 VAC	230 VAC	100 VAC
Normal Operation	9.039 W	9.109 W	8.969 W
Sleep (Energy Star low power mode)	0.667 W	0.756 W	0.625 W
Off	0.825 W	0.967 W	0.821 W

Heat Dissipation*

	115 VAC	230 VAC	100 VAC
Normal Operation	31 BTU/hr	31 BTU/hr	31 BTU/hr
Sleep	2 BTU/hr	3 BTU/hr	2 BTU/hr
Off	3 BTU/hr	3 BTU/hr	3 BTU/hr

* Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

Declared Noise Emissions

(in accordance with ISO 7779 and ISO 9296)

System Fan Off

	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Idle	2.8	22.7
Fixed Disk (random writes)	2.9	23.2

NOTE: System fan is usually off except when charging the battery

Batteries

This battery(s) in this product comply with EU Directive 2006/66/EC

Batteries used in the product do not contain:

- Mercury greater than 5ppm by weight
- Cadmium greater than 10ppm by weight

The battery type and chemistry used in the product is:

- CR2032 (coin cell), Li ion
- 6-cell high capacity Li ion battery (optional 8 cell available)

Additional information:

This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive – 2002/95/EC.

This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.

This product is in compliance with California Proposition 65 (State of

Technical Specifications

California; Safe Drinking Water and Toxic Enforcement Act of 1986).

This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold level, see www.epeat.net

Plastics parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.

This product contains 0% post consumer recycled plastic (by wt.)

This product is greater than 98.4% recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
 - Paper / Cardboard – 765 g
- Internal:
 - EPE-Expanded Polyethylene – 70 g
 - Polypropylene – 15 g

- The EPE foam packaging material is made from 0% recycled content.
- The corrugated paper packaging materials contains at least 70~80% recycled content.

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

Material Usage

This product does not contain any of the following substances in excess of regulatory limits (for reference of these limits please refer to the HP General Specification of the Environment

http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants – may not be used as flame retardants in plastics

Technical Specifications

- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel - finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

End-of-life Management and Recycling

Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: <http://www.hp.com/go/reuse-recycle> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: <http://www.hp.com/go/recyclers>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

Hewlett-Packard Corporate Environmental Information

For more information about HP's commitment to the environment:

Global Citizenship Report

<http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html>

Environment website

<http://www.hp.com/environment>

Eco-label certifications

<http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html>

ISO 14001 certificates:

<http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html>

Technical Specifications

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