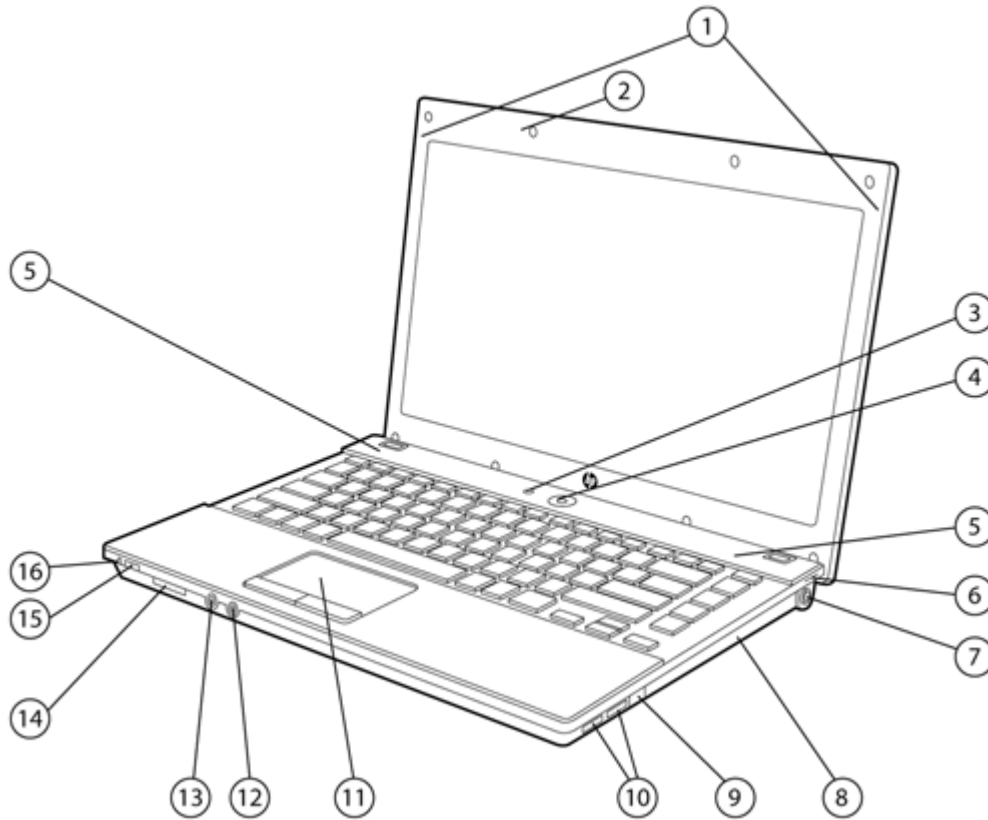
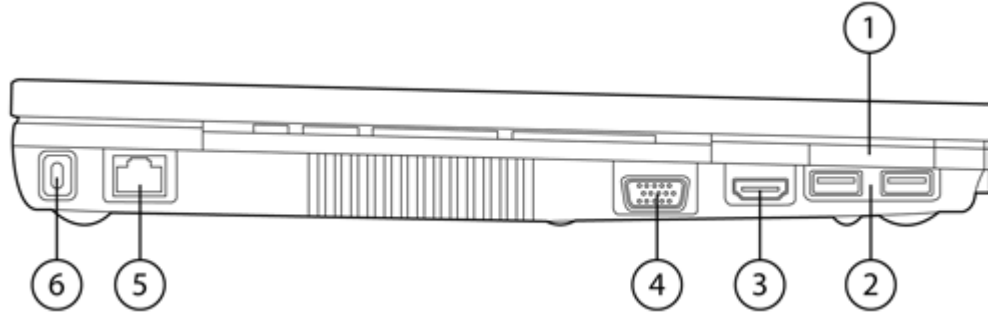


Overview

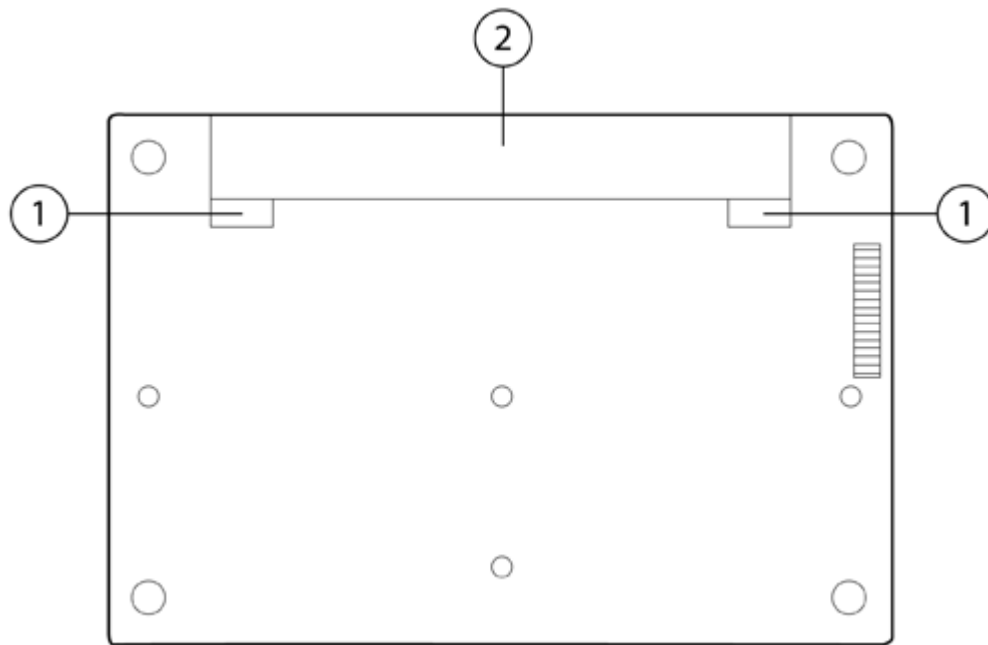


- | | |
|---|--|
| 1. WLAN antennas | 9. RJ-11/modem port |
| 2. Integrated microphone | 10. (2) USB 2.0 ports |
| 3. HP Info Center button with LED indicator | 11. Touchpad |
| 4. Power button with LED indicator | 12. Stereo microphone in |
| 5. Stereo speakers | 13. Stereo headphone/line out |
| 6. Battery charging LED indicator | 14. Media Card Reader |
| 7. Power connector | 15. Wireless switch with LED indicator |
| 8. Optical drive | 16. Internal Storage Activity LED |

Overview



- 1. ExpressCard/34 slot
- 2. (2) USB 2.0 ports
- 3. HDMI port
- 4. VGA connector (external monitor/projector)
- 5. RJ-45/Ethernet port
- 6. Kensington Lock slot



- 1. Battery release latches
- 2. Battery bay

Overview

At A Glance

- Genuine Windows Embedded Standard featuring File Based Write Filter, Enhanced Write Filter, RDP 6.1, Internet Explorer 7, Windows Media Player 11
- Intel® Celeron® processor
- 1 GB or 2 GB Solid State Module for durability and increased battery life
- Integrated 802.11 a/b/g/n draft 2.0 or b/g wireless connectivity
- Thin, lightweight design starting at 4.3 lb/1.95 kg and 1.22 in/31.0 mm thin at front
- Full-sized spill-resistant keyboard
- Widescreen 14.0-inch diagonal HD LED-backlit display with 16:9 aspect ratio
- Integrated Media Card Reader
- VGA and HDMI ports for dual external-monitor support
- Optional integrated DVD-ROM drive
- Compatible with HP USB 2.0 Docking Station and HP Essential USB Port Replicator

Standard Features

Processors		Intel Celeron Processor 575 (2.00 GHz, 1 MB L2 cache, 667 MHz FSB)* NOTE: Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode. * Intel's numbering is not a measurement of higher performance.
Operating System	Preinstalled	Genuine Windows Embedded Standard
	Supported	Genuine Windows XP Embedded SP3
Chipset		Mobile Intel GL40 Express Chipset , 667 MHz front side bus
Graphics		Mobile Intel Graphics Media Accelerator 4500MHD integrated graphics with up to 512 MB of shared video memory Microsoft DirectX 9 capable
Display	Internal	14.0-inch diagonal LED-backlit HD anti-glare (1366 x 768 resolution)
	External	Up to 32-bit per pixel color depth VGA port supports resolutions up to 1600 x 1200 at 75 Hz, and lower resolutions at up to 100 Hz. HDMI 1.3 port supports direct connection to high-definition displays with up to 1920 x 1080 resolution and 7-channel audio with one convenient cable (not included). NOTE: Resolutions are dependent upon monitor capability, and resolution and color depth settings.
Memory	Standard	800 MHz DDR2 SDRAM; two slots supporting dual channel memory 1 GB or 2 GB
	Maximum	Upgradeable to 3 GB
	Dual-channel	Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots. NOTE: Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed.

Standard Features

Communications

Marvell Ethernet (10/100/1000 NIC)*
56K V.92 modem**

* The term "10/100/1000" or "Gigabit" Ethernet indicates compliance with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

** Designed for downloads from 56K modem compliant sources. Maximum achievable download transmission rates currently do not reach 56 KB/s, and will vary with line conditions. Modem availability is subject to country regulatory approval.

Wireless Devices

Secure, integrated wireless LAN options featuring support for the latest industry standards. Wireless LAN is factory configurable only.

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

Broadcom 4322AGN

Integrated support for 802.11 a, b, g, and n draft 2.0*

802.11a/b/g/draft-n Wi-Fi Adapter

Cisco Compatible Extensions support
Up to 300 mbps data rate

Broadcom 4312G

Integrated support for 802.11 b and g

802.11b/g

Cisco Compatible Extensions support

WiFi Adapter

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.

Keyboard

The HP spill-resistant keyboard is designed using a Mylar film that minimizes the risk of damage to sensitive components underneath. The 101/102-key compatible keyboard features a full-pitch key layout with desktop keyboard features, such as the isolated inverted-T cursor control keys, editing keys, both left and right control and alt keys, and 12 function keys. US and International key layouts are available. Other features include hotkeys for instant access to power conservation and brightness, and 19.05 x 19.05 mm key pitch (center-to-center spacing).

Pointing device

Touchpad, two pick buttons

Expansion card slots

ExpressCard/34 slot

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

Media Card Reader

Supports SD (Secure Digital), MMC (MultiMedia Card), Memory Stick, Memory Stick Pro, Memory Stick Duo*, xD-Picture card

* Memory Stick Duo Adapters are required and sold separately. Inserting a Memory Stick Duo Card directly into your notebook could damage the memory card and/or notebook.

Standard Features

Storage	Internal Storage Device	1 GB or 2 GB Solid State Module
	Optional Fixed Optical Drive	DVD-ROM Drive

Interfaces	External monitor	One (VGA)
	HDMI	One - 1.3 compliant
	Stereo microphone in	One
	Stereo headphone/line out	One
	Power connector	One
	RJ-11/modem	One
	RJ-45/Ethernet	One
	USB 2.0	Four
	LED status indicators	Seven

Audio/Visual	High Definition Audio support
	Integrated stereo speakers
	Integrated microphone
	Stereo headphone/line out
	Stereo microphone in

Software (Preinstalled)	Enhanced Write Filter	
	File Based Write Filter	
	Internet Explorer 7	
	Windows Media Player 11	
	TeamTalk Emulation	
	Microsoft Remote Desktop Protocol (RDP) 6.1	
	Microsoft Firewall	
	Citrix XenApp 11	
	VMWare View 3.1	
	WinDVD	
	Manageability Solution	HP ThinState Tools HP Device Manager HP Client Automation Altiris Deployment Solution (Full License)
	HP Virtual Client Essentials	HP Remote Desktop Protocol Enhancements HP Remote Graphics Software (RGS) HP Session Allocation Manager (SAM)
	Additional software available from the web	.NET Framework 2.0 Universal Print Driver (UPD) Adobe Acrobat Reader Citrix XenDesktop Broadcom Wireless Utility

Standard Features

Security	Standard Features	Setup Password Power-On Password Kensington Lock Slot HP Privacy Filter (must be purchased separately)
Power Supply	External 65-watt Smart 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* * HP Fast Charge recharges your battery up to 90% within 90 minutes when the system is off.	
Battery	Primary battery	6-cell (47 WHr) Li-Ion battery
Battery Life	Primary battery	Up to 4.5 hours NOTE: Battery life will vary depending on the product configuration, product model, applications loaded on the product, power management settings of the product, and the product features used by the customer. As with all batteries, the maximum capacity of this battery will decrease with time and usage.
System Standby Time	Up to 1 week	
Power Conservation	Standby ACPI compliance	
Docking	HP USB 2.0 Docking Station Uses a single USB cable to pass through video, audio, LAN, and USB signals. Allows easy connection of a monitor, mouse, external keyboard, printer, LAN cable, speakers and other accessories. Connect up to four concurrently working USB devices. HP Essential USB Port Replicator Uses a single USB cable to pass through audio, LAN, and USB signals. Allows easy connection of a mouse, external keyboard, printer, LAN cable, speakers and other accessories. Connect up to five concurrently working USB devices.	
Service and Support	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 (depending on model). 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 Center for details. http://h20000.www2.hp.com/bizsupport/TechSupport/ProductRoot.jsp .	

Options

Memory	HP 1 GB (DDR2 800 MHz) SODIMM	KT292AA
	HP 2 GB (DDR2 800 MHz) SODIMM	KT293AA
Expansion	HP USB 2.0 Docking Station	FQ834AA
	HP Essential USB Port Replicator	AQ731AA
	HP Basic Adjustable Stand	AL549AA
Power	HP 65W Smart AC Adapter	ED494AA#ABA
	HP 90W Smart Combo Adapter	AJ652AA#ABA
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	HP/Kensington MicroSaver Security Lock	PC766A
	HP Privacy Filter	TBD
Input/Output Devices	HP USB Keyboard & Mouse Bundle	RC465AA#ABA
	HP USB/PS2 Optical 2-Button Scroll Mouse	DC369A
	HP USB Optical Travel Mouse	RH304AA
	HP Mobile Audio Speakers	FS944AA

Memory

800 MHz DDR2 SDRAM

Two DIMM slots supporting dual channel memory

DIMM sizes supported: 1 GB and 2 GB

- Standard Memory**
- 1 GB (1 GB x 1)
 - 2 GB (2 GB x 1)

Optional Memory Upgrades Support for up to 3 GB of memory with the installation of optional DDR2 SDRAM memory kits. Both memory slots are user accessible. Please refer to the Hardware and Software Guide for installation procedures. Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

Up to	Slot 1	Slot 2
2 GB	1 GB	1 GB
3 GB	2 GB	1 GB

NOTE: This chart does not represent all possible memory configurations. Due to the non-industry standard nature of some third-party memory modules, we strongly recommend using only HP branded memory modules to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed. 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.

Memory Upgrades	HP 1 GB (DDR2 800 MHz) SODIMM	KT292AA
	HP 2 GB (DDR2 800 MHz) SODIMM	KT293AA

Storage

Removable Media Drive Support

	Quantity Supported	Drive Bay
DVD-ROM Drive	One	Fixed optical drive bay

Internal Storage Device

	Quantity Supported	Drive Bay
1 GB Solid State Module	One	Hard Drive Bay
2 GB Solid State Module	One	Hard Drive Bay

Technical Specifications

System Unit	Dimensions (HxWxD)	1.22 in (at front) x 13.2 in x 9.15 in 31.0 mm (at front) x 336 mm x 232.4 mm
	Weight	Starting at 4.3 lb (1.95 kg)
	NOTE: Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components.	
	Stand-Alone Power Requirements (AC Power)	Nominal Operating Voltage 18.5 V Average Operating Power 18.5 W Max Operating Power < 65W
	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)
	Cooling	Active
	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 ICES Yes Australia / NZ A-Tick Compliance Yes CCC Yes Japan VCCI Compliance Yes MIC Yes BSMI Yes CE Marking Compliance Yes BNCI or BELUS Yes CIT Yes GOST Yes Saudi Arabian Compliance (ICCP) Yes SABS Yes UKRSERTCOMPUTER Yes

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

Technical Specifications

HP 65W Smart 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	
	Output	Input frequency range	47 to 63 Hz	
		Input AC current	1.7 A at 90 VAC, 0.85 A at 180 VAC	
		Output power 65W	65W	
		DC output	18.5V	
		Hold-up time	5 msec at 115 VAC input	
		Output current limit	5 A at 115 VAC input 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, Class I, 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.			

6-Cell (47 WHr) Lithium-Ion battery	Dimensions (H x W x L)	0.8 x 2.3 x 8.0 in (2.0 x 5.8 x 20.3 cm)		
	Weight	0.710 lb (0.322 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

Technical Specifications

14.0-inch LED-backlit HD (1366 x 768) anti-glare	Active Area (W x H)	12.16 x 6.85 in (30.9 x 17.4 cm)	
	Diagonal Size	14.0 in (35.6 cm)	
	Surface Treatment	Anti-glare	
	Contrast Ratio	300:1 (typical)	
	Refresh Rate	60 Hz	
	Brightness	200 nit (typical)	
	Pixel Resolution	Pitch	0.226 mm
		Format	1366 x 768
		Configuration	RGB Stripe
	Backlight	LED	
	PPI	112 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)	

Internal Storage Devices

1 GB Solid State Module (SSM)	Interface	SATA II, 3.0 Gbps	
	Connector	7-pin SATA male connector	
		15-pin SATA power connector	
	Capacities	1 GB	
	Transfer mode	up to PIO mode-4, Multiword DMA mode-2, UDMA mode-5	
	Sustained Read	up to 45 MB/sec	
	Sustained Write	up to 20 MB/sec	
	ECC Support	up to 8 bits correction per 512 bytes (BCH)	
	Low Power Consumption (5.0V)	Active mode: 260 mA	
		Idle mode: 120 mA	
	Product types	Serial ATA 2.5	
Orientation	180D		

Technical Specifications

2 GB Solid State Module (SSM)	Interface	SATA II, 3.0 Gbps
	Connector	7-pin SATA male connector 15-pin SATA power connector
	Capacities	2 GB
	Transfer mode	up to PIO mode-4, Multiword DMA mode-2, UDMA mode-5
	Sustained Read	up to 54 MB/sec
	Sustained Write	up to 33 MB/sec
	ECC Support	up to 8 bits correction per 512 bytes (BCH)
	Low Power Consumption (5.0V)	Active mode: 260 mA Idle mode: 120 mA
	Product types	Serial ATA 2.5
	Orientation	180D

Removable Storage Drives

DVD-ROM Drive	Access Times	Random	< 110 ms CD (typical) < 110 ms DVD (typical)
	Max Data Transfer Rate	24X CD-ROM 8X-DVD	Up to 3,600 KB/s Up to 10,800 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)	None	
	Max Media Capacity (read)	8.5 GB	
	Transport	Tray Loading	

Audio

Hardware	Implementation	ADI 1984AJCPZ High Definition CODEC
	Full Duplex	Yes
	Microphone In	Stereo
	Headphone/Line Out	Stereo
	Integrated Microphone	Yes

Technical Specifications

Audio Output Quality	Frequency Response	20 Hz – 20 kHz
	Signal to Noise Ratio	>85 dB
	Total Harmonic Distortion	0.01%
	Noise Floor	-110 dB
	Play/Record Sampling Rate(s)	8 kHz – 48kHz
	DAC	16, 20 or 24-bit
	ADC	16 or 20-bit

Integrated Stereo Speakers	Power Rating	1.5 Watts
	Impedance	4 Ohms

Communications

Integrated Marvell 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 compliant – multiple power modes Situation-sensitive features reduce power consumption
	Performance Features	TCP/IP/UDP Checksum Offload (configurable)
	Manageability	Wake-on-LAN from standby (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 88E8072 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 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

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 XP (details at: http://www.hp.com/go/notebooks/WLAN)
	Frequency Band	2.4 GHz

Technical Specifications

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 XP.
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; power varies by data rate)²	15 dBm , nominal
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)
LED Activity	LED Off – Radio OFF; Solid LED On – Radio ON

Technical Specifications

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.

<p>Broadcom 4322AGN 802.11a/b/g/draft-n WiFi Adapter</p>	<p>Wireless LAN Standards</p>	<p>IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n (draft 2.0)*</p> <p>* 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.</p>
	<p>Interoperability</p>	<p>Wi-Fi certified (802.11abg only) Cisco Compatible Extensions Program compliant (802.11abg only) with Microsoft Windows XP (details at: http://www.hp.com/go/notebooks/WLAN)</p>
	<p>Frequency Band</p>	<p>2.4 GHz and 5 GHz</p>
	<p>Data Rates</p>	<p>802.11b: 1, 2, 5.5, 11 Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n (draft): 6, 6.5, 9, 12, 13, 13.5, 18, 19.5, 24, 26, 27, 36, 39, 40.5, 48, 52, 54, 58.5, 65, 78, 81, 104, 108, 117, 121.5, 130, 135, 162, 216, 243, 270, 300 Mbps</p>
	<p>Frequency Support</p>	<p>20 MHz: 2.4 GHz and 5 GHz bands 40 MHz: 2.4 GHz and 5 GHz bands</p>
	<p>Modulation</p>	<p>Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM</p>
	<p>Security¹</p>	<p>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.</p> <p>Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows XP.</p>
	<p>Sub-channels</p>	<p>Multinational support with frequency bands and channels compliant to local regulations.</p>
	<p>Media Access Protocol</p>	<p>CSMA/CA (Collision Avoidance) with ACK</p>
	<p>Network Architecture Models</p>	<p>Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)</p>
	<p>Roaming</p>	<p>IEEE 802.11 compliant roaming between access points</p>
	<p>Output Power (for CCK)²</p>	<p>17 dBm</p>
	<p>Output Power (for OFDM; power varies by data rate)²</p>	<p>15 dBm</p>

Technical Specifications

Power Consumption	Idle associated: 250 mW Idle unassociated: 150 mW Transmit/Receive 20 MHz channel: 2.0 W (max) Transmit/Receive 40 MHz channel: 2.0 W (max)
Power Management	ACPI compliant power management 802.11 compliant power saving mode
Receiver Sensitivity³	270 Mbps: -61dBm, , 54 Mbps: -72 dBm, 11 Mbps: -85 dBm , 1 Mbps: -92 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)
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.

Environmental 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:		
		<ul style="list-style-type: none"> ● IT ECO declaration 		
	System Configuration	The configuration used for the Energy Consumption and Declared Noise Emissions data for the Convertible Mini tower Desktop model is based on a "Typically Configured Notebook"		
	Energy Consumption	115 VAC	230 VAC	100 VAC
	Normal Operation	10.55 W	11.06 W	10.43 W
	Sleep (Energy Star low power mode)	0.936 W	1.061 W	0.9 W
	Off	0.565 W	0.660 W	0.536 W
	Heat Dissipation*	115 VAC	230 VAC	100 VAC
	Normal Operation	36 BTU/hr	38 BTU/hr	36 BTU/hr
	Sleep	3 BTU/hr	4 BTU/hr	3 BTU/hr
	Off	2 BTU/hr	2 BTU/hr	2 BTU/hr

Technical Specifications

* 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	2.5	16.2
Fixed Disk (random writes)	NA	NA

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

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.

Additional information

This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).

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 97.4% recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
 - CANON bags - several layers 15g
 - Corrugated carton 485g
 - Cardboard & misc. 70g
- Internal:
 - EPE-Expanded Polyethylene 70g
- The EPE foam packaging material is made from 100% recycled content.
- The corrugated paper packaging materials contains at least 80% recycled content.

Technical Specifications

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
- 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.

Technical Specifications

Hewlett-Packard Corporate Environmental Information

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.

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>

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