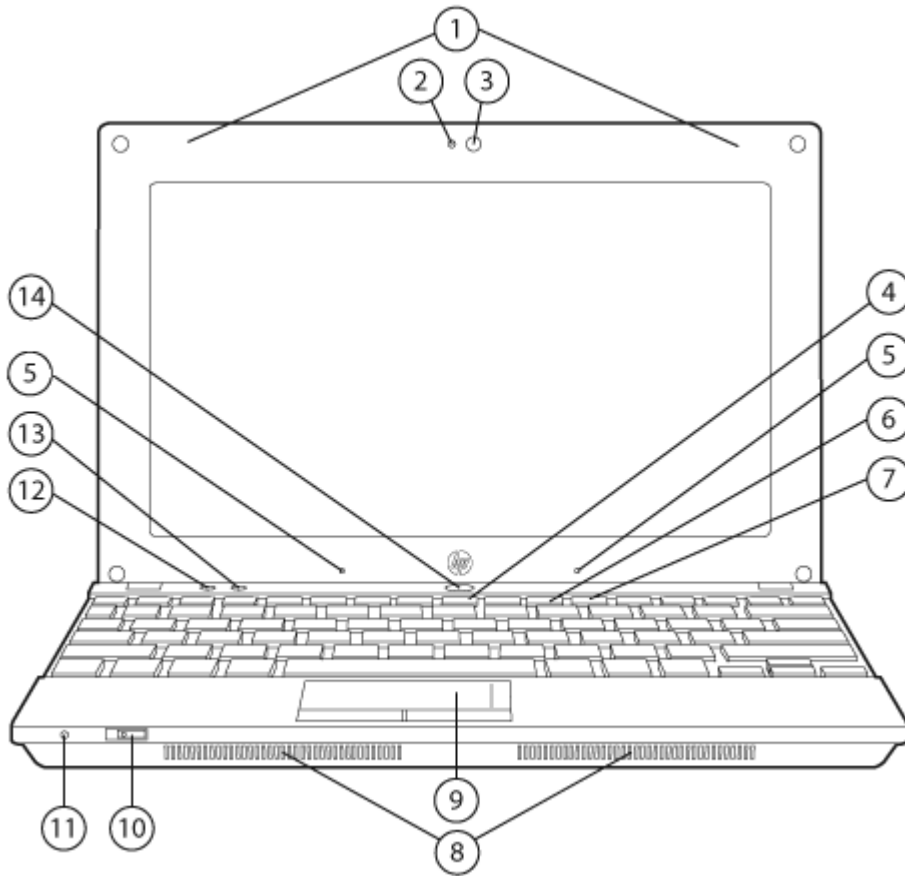
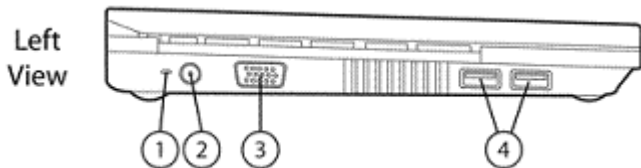


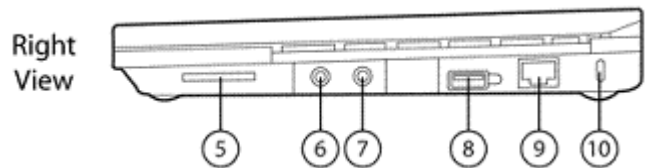
Overview



- | | |
|---|---|
| 1. WLAN and WWAN antennas (select models) | 8. Stereo speakers |
| 2. Webcam LED | 9. Touchpad with scroll zone |
| 3. 2 MP Webcam | 10. Wireless on/off button with LED indicator |
| 4. Volume mute function key | 11. Internal storage activity LED indicator |
| 5. Integrated stereo microphones | 12. QuickWeb button |
| 6. Volume down function key | 13. QuickLook 3 button |
| 7. Volume up function key | 14. Power button with LED indicator |



1. Battery charging LED indicator
2. Power connector
3. VGA/external monitor
4. (2) USB 2.0 ports

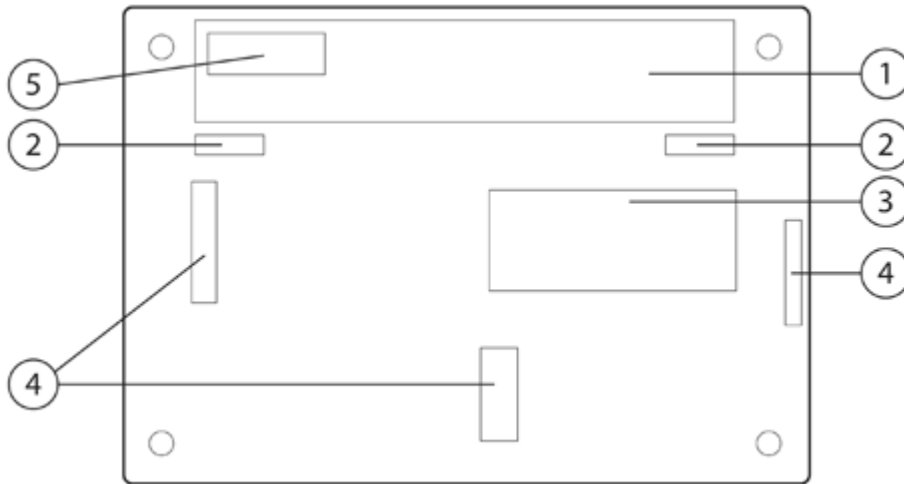


6. Stereo headphone/line out
7. Stereo microphone in
8. USB 2.0 port (powered)
9. RJ-45/ethernet

Overview

5. Secure Digital (SD)/MultiMedia Card slot

10. Kensington lock slot



1. Battery bay

2. Battery/memory module release latches

3. Memory module compartment

4. Vent

5. WWAN SIM module access (under battery)

At A Glance

- Genuine Windows 7 versions, Genuine Windows XP Home, SUSE Linux Enterprise 11, or FreeDOS
- 10.1-inch diagonal LED-backlit display available in WSVGA (1024 x 600) or 16:9 HD (1366 x 768) resolution; optional capacitive multi-touch screen (Windows only)
- Corel Home Office productivity suite of software included for word processing, spreadsheets and presentations
- Ultra-portable light-weight design starting at 2.64 lb (1.2 kg) and 0.91 in (23.2 mm) thin at front
- All metal case with magnesium alloy support structure and metal alloy hinges
- Choice of black, blue, or red color; optional handle
- 95% full-size, spill-resistant QWERTY keyboard with HP DuraKeys; touchpad with scroll zone; touch-sensitive controls
- Flexible wireless connectivity options:
 - Integrated HP un2420 EV-DO/HSDPA Mobile Broadband Module provides worldwide Gobi mobile Internet technology with GPS
 - Integrated 802.11 a/b/g/n or b/g wireless LAN module
 - Integrated 802.11 b/g wireless and Bluetooth combo adapter
 - Bluetooth® v2.1
- Flexible battery solutions: 4-cell for lightest weight or 6-cell for longer battery life; HP Fast Charge
- HP QuickSync for synchronization; HP QuickLook 3 and HP QuickWeb
- Intel® NM10 Express chipset and Intel Atom™ processor
- Up to 320 GB 7200 rpm hard drive with HP 3D DriveGuard protection, or 80/128 GB Solid State Drive
- Optional Broadcom Crystal HD Enhanced Video Accelerator enables 720p and 1080p HD video playback
- Integrated 2 MP Webcam
- Face Recognition for easy, secure login by simply looking into your notebook's camera
- Optional HP USB 2.0 Docking Station and HP External USB 2.0 CD/DVD R/RW Drive

Standard Features

Processors Intel Atom N450 Processor (1.66 GHz, 512 KB L2 cache, 667 MHz FSB)
Intel Atom N470 Processor (1.83 GHz, 512 KB L2 cache, 667 MHz FSB)
NOTE: Intel's numbering is not a measurement of higher performance. Processor speed denotes maximum performance mode; processor will run at lower speeds in battery optimization mode.

Operating System **Preinstalled** Genuine Windows 7 Home Premium Edition 32*
Genuine Windows 7 Starter*
Genuine Windows XP Home
SUSE Linux Enterprise 11
FreeDOS

* System may require upgraded and/or separately purchased hardware and/or a DVD drive to install the Windows 7 software and take full advantage of Windows 7 functionality. See: <http://www.microsoft.com/windows/windows-7/> for details.

Chipset Intel NM10 Express Chipset

Graphics Intel Graphics Media Accelerator 3150
Optional Broadcom Crystal HD Enhanced Video Accelerator*
with ArcSoft TotalMedia Theater 3 software

* Can only be installed when HP un2420 EV-DO/HSPA Mobile Broadband Module is not installed.

Display **Internal** 10.1-inch diagonal LED-backlit WSVGA widescreen display with 1024 x 600 resolution
10.1-inch diagonal LED-backlit HD 16:9 widescreen display with 1366 x 768 resolution
Optional capacitive multi-touch screen feature (Windows only)
External Up to 32-bit per pixel color depth
VGA port supports resolutions up to 1680 x 1050 at 60 Hz, and lower resolutions at up to 100 Hz
NOTE: Resolutions are dependent upon monitor capability, and resolution and color depth settings.

Memory **Standard** 1 GB or 2 GB DDR2 800 MHz SDRAM SODIMM*
one SODIMM slot
Maximum Supports up to 2 GB maximum**

* All memory modules operate at the maximum system supported speed of 667 MHz.
** Maximum memory is 1 GB with some configurations.
NOTE: Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility.

Standard Features

Communications Integrated Marvell Ethernet (10/100/1000 NIC)

Wireless Devices

Support for secure, integrated wireless LAN and wireless WAN options featuring support for the latest industry standards. Mobile Broadband (WWAN) requires a Windows operating system and is available in select countries as a factory configurable feature only. Integrated Bluetooth is also available (factory configurable only) and can be combined with any of the supported wireless LAN options.

HP un2420 EV-DO/HSPA Mobile Broadband Module (Windows models only; can only be installed when Broadcom Crystal HD Enhanced Video Accelerator is not installed) Integrated mobile broadband module with Gobi global mobile Internet technology that provides connectivity to both CDMA (EVDO) and UMTS (HSPA) networks. It also provides GPS functionality for various mapping applications and security applications such as Computrace LoJack Pro for HP ProtectTools. **NOTE: Separately purchased mobile network operator service is required.** Two 850/900/1575/1800/1900/2100 MHz antennas integrated in the top of the display panel support current and future WWAN technologies.

All 802.11 integrated wireless LAN options Wi-Fi certified
Cisco Compatible Extensions support
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 WiFi Link 1000 Integrated support for 802.11 b, g, and n
Up to 300 mbps data rate

Broadcom 4322G 802.11a/b/g/n Wi-Fi Adapter Integrated support for 802.11 a, b, g, and n
Up to 300 mbps data rate

Broadcom 4312G 802.11b/g Wi-Fi Adapter Integrated support for 802.11 b and g
Up to 54 mbps data rate

Broadcom 4312G 802.11b/g Wi-Fi and 2070 Bluetooth 2.1+EDR Combo Adapter Integrated support for 802.11 b and g
Up to 54 mbps data rate
Bluetooth Specification v2.1 compliant
Works with a wide range of Bluetooth devices

HP Integrated Module with Bluetooth Wireless Technology Bluetooth Specification v2.1 compliant
Works with a wide range of Bluetooth devices

Keyboard

Spill-resistant keyboard is 95% of full size, 101/102-key compatible with isolated inverted-T cursor control keys, both left and right control and alt keys, 12 function keys, and hotkey combinations for audio volume, power conservation, brightness, and other features. US and international key layouts are available.

Standard Features

Pointing Device Touchpad with scroll zone and two soft-touch buttons
Optional capacitive multi-touch screen (Windows only)

Expansion Card Slots **Secure Digital slot** Supports SD (Secure Digital), and MultiMedia Card

Internal Storage

Hard Drive 160/250*/320* GB 7200 rpm SATA

HP 3D DriveGuard (Windows models only) The hard drive is mounted directly to the notebook frame, reducing the transmission of shock to the hard drive. Uses three-axis digital motion detection with intelligent sensitivity to help protect the hard drive during normal use from shock and vibration. The digital accelerometer temporarily halts all data transfer and parks the hard drive when abrupt motion is detected.

Solid State 80 GB Solid State Drive*

* Not available with some configurations.
NOTE: Up to 15 GB is reserved for the system recovery software.

Interfaces

External Monitor One - VGA

External Microphone One

Headphone/Line out One

Power Connector One

RJ-45/Ethernet One

USB 2.0 Three

LED Status Indicators Seven

Audio/Visual

IDT 92HD75B High Definition audio
Integrated stereo speakers
Integrated stereo microphones
Stereo headphone/line out
Stereo microphone in
Integrated 2 MP webcam

Standard Features

Software

Software with Windows Operating Systems

HP Support Assistant (Windows 7 only)
HP QuickLook 3
HP QuickWeb
HP QuickSync
HP Connection Manager
Corel Home Office
Microsoft Office Ready with 60-day Office Professional 2007
Trial Edition (select models)
Microsoft Office Professional 2007 (Japan only)
Microsoft Office Personal 2007 (Japan only)
McAfee Total Protection*
Adobe Flash Player
ArcSoft TotalMedia Theater 3**
PDF Complete
Skype
WinZip

Software with SuSE Linux Enterprise Desktop

OpenOffice Suite
Evolution Email
Evince Document Viewer
OpenOffice Draw
F-Spot Photo Brower
Gnome CD/DVD Creator
Helix Banshee Music Player
Real Player 10 Media Player
Firefox Web Browser
Gaim Instant Messenger
Gnome FTP File Transfer
Liferea Feed Reader
Mutt Mail Client

* 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.

** On configurations with optional Broadcom Crystal HD Enhanced Video Accelerator

Security

Standard Features

HP ProtectTools Security Manager
HP Disk Sanitizer
Setup Password
Power-On Password
Kensington Lock Slot
Support for Computrace* LoJack Pro for HP ProtectTools
Face Recognition for HP ProtectTools

* The Computrace agent is shipped turned off, and must be activated by customers when they purchase a subscription with terms ranging from one to five years.

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

Standard Features

HP ProtectTools Security Manager HP ProtectTools Security Manager is the security platform for business notebooks and desktops. The HP ProtectTools Security Manager is an extensible client security console that delivers enhanced security capabilities through add-on software modules. The following modules are available on the hard drive (also downloadable from the web) and can be configured in Software Setup:

- Credential Manager for HP ProtectTools
- Face Recognition for HP ProtectTools
- Drive Encryption for HP ProtectTools
- LoJack Pro for HP ProtectTools

Power Supply External 40-watt Smart AC adapter, 3.3-foot (1 meter) power cord included. Total length including external AC adapter is 8.55 feet (2.59 meter). HP Fast Charge*

* HP Fast Charge recharges 4-cell battery up to 90% within 90 minutes when the system is off.

Battery

Primary Battery	4-cell (29 Wh) high capacity Li-Ion 6-cell (66 Wh) high capacity Li-Ion
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Battery Life

6-cell Primary Battery and Hard Drive	Up to 10 hours
4-cell Primary Battery and Hard Drive	Up to 4 hours and 30 minutes

NOTE: Battery life will vary depending on the product model, configuration, loaded applications, features, use, wireless functionality and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See MobileMark07 battery benchmark www.bapco.com/products/mobilemark2007 for additional details.

System Standby Time Up to 1 week

Power Conservation Standby
ACPI compliance

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). On-site service and warranty upgrades are also available (depending on model). 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
	* Runs at maximum system supported speed of 667 MHz.	
Storage	HP USB Diskette Drive	DC361B
	HP External USB 2.0 CD/DVD R/RW Drive	FS943AA
	HP 250 GB Pocket Media Drive	FE477AA
Expansion	HP USB 2.0 Docking Station	FQ834AA
	HP Essential USB 2.0 Port Replicator	AQ731AA
Power	65W Smart AC Adapter	ED494AA
	6-cell Primary Battery	AT901AA
	90W Smart AC/Auto/Air Combo Adapter	AJ652AA
Carrying Cases	HP Ultra-portable Carrying Case	AL539AA
	HP Basic Carrying Case	AJ078AA
	HP Value Nylon Case	DL617A
	HP Professional 10.1 Slip Case	AW209AA
	HP Professional Series Backpack	AT887AA
	HP Deluxe Nylon Backpack	RR317AA
	HP Elite 10.1 Slip Case	AX681AA
	HP Basic Messenger Carrying Case	AP355AA
HP Basic Backpack	AM863AA	
Security	HP/Kensington MicroSaver Security Lock	PC766A
Input/Output Devices	HP USB Keyboard & Mouse Bundle	RC465AA
	HP USB/PS2 Optical 2-Button Scroll Mouse	DC369A
	HP USB Optical Travel Mouse	RH304AA
	HP Mobile USB 2.0 Speakers	FS944AA
	HP Bluetooth Stereo Headphones	AR084AA
	HP Wireless Optical Mouse	AR085AA

Storage

Internal Storage Device

Hard Drives (2.5-inch SMART SATA)

160 GB 7200 rpm

250 GB 7200 rpm

320 GB 7200 rpm

Solid State (2.5-inch)

80 GB Solid State Drive

Quantity Supported

One

One

One

One

Drive Bay

Dedicated hard drive bay

Dedicated hard drive bay

Dedicated hard drive bay

Dedicated hard drive bay

Technical Specifications

System Unit

	Non-touch screen	Touch screen
Dimensions (HxWxD)	0.91 (at front) x 10.30 x 7.09 in 23.2 (at front) x 262 x 180 mm	0.98 (at front) x 10.30 x 7.09 in 24.8 (at front) x 262 x 180 mm
Weight	Starting at 2.64 lb (1.2 kg)	Starting at 2.86 lb (1.3 kg)
NOTE: Height varies depending upon where on the notebook the measurement is made. Weight includes 1 GB memory, 160 GB hard drive. Weight varies by configuration and components.		
Stand-Alone Power Requirements	Normal Operating Voltage	18.5 V
	Average Operating Power	10.5 W
	Max Operating Power	< 40 W
Temperature	Operating	32° to 95° F (0° to 35° C)
	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	TBD (Gold target)**
	ICES	Yes
	Australia / NZ C-Tick Compliance	Yes
	CCC	Yes
	Japan VCCI Compliance	Yes
	MIC / KCC	Yes
	BSMI	Yes
	CE Marking Compliance	Yes
	BNCI or BELUS	Yes
	CIT	Yes
	GOST	Yes
	Saudi Arabian Compliance (ICCP)	Yes
	SABS	Yes
	UKRSERTCOMPUTER	Yes

Technical Specifications

* Configurations of the HP Mini 5102 that are ENERGY STAR qualified are identified as HP Mini 5102 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.

HP 40W AC Adapter	Dimensions	3.66 x 1.57 x 1.14 in (9.3 x 4.0 x 2.9 cm)	
	Weight	0.35 lb (160 g)	
	Input	100 to 240 VAC	
		Input Efficiency	83% min at 115 VAC
		Input frequency range	47 to 63 Hz
	Output	Input AC current	1.1 A at 90 VAC, 0.55 A at 180 VAC
		Output power	40W
		DC output	19.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<5.0A, Over voltage protection- 29V max automatic shutdown
		Connector	2 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.		

NOTE: Unless otherwise noted, temperature limits listed in the following component specifications relate to the internal temperatures of these components and not to the environment in which the PC is operating.

Technical Specifications

6-Cell (66 Wh) Lithium-ion battery	Dimensions (HxWxL)	1.61 x 1.65 x 8.27 in (4.1 x 4.2 x 21 cm)	
	Weight	0.77 lb (0.35 kg)	
	Cells/Type	6-cell Lithium-Ion	
	Energy	Watt-hour Capacity	66Wh
	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)	

4-Cell (29 Wh) Lithium-ion battery	Dimensions (HxWxL)	0.6 x 2.1 x 8.1 in (1.4 x 5.2 x 20.6 cm)	
	Weight	0.44 lb (0.199 kg)	
	Cells/Type	4-cell Lithium-Ion	
	Energy	Watt-hour Capacity	29 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	

Display

Technical Specifications

10.1-inch LED WSVGA (1024 x 600)	Dimensions (W x H)	8.77 x 4.93 in (22.27 x 12.52 cm)		
	Diagonal Size	10.06 in (25.55 cm)		
	Surface Treatment	Anti-glare		
	Contrast Ratio	400:1 (typical)		
	Refresh Rate	60 Hz		
	Brightness	200 nit (typical)		
	Pixel Resolution	Pitch	0.2715(H)/0.2088(V) mm	
		Format	1024 x 600	
		Configuration	RGB Vertical Stripe	
		Backlight	LED	
	PPI	117(H)/122(V)		
	Viewing Angle	±30° Horizontal, ±10° Vertical (typical)		

10.1-inch 16:9 LED HD (1366 x 768)	Dimensions (W x H)	8.77 x 4.93 in (22.27 x 12.52 cm)		
	Diagonal Size	10.06 in (25.55 cm)		
	Surface Treatment	Anti-glare		
	Contrast Ratio	400:1 (typical)		
	Refresh Rate	60 Hz		
	Brightness	200 nit (typical)		
	Pixel Resolution	Pitch	0.1630 mm	
		Format	1366 x 768	
		Configuration	RGB Vertical Stripe	
		Backlight	LED	
	PPI	156		
	Viewing Angle	±30° Horizontal, ±10° Vertical (typical)		

Internal Storage

Technical Specifications

320 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lbs (115 g)	
	Capacity	320 GB	
	Height	0.37 in (9.5 mm) or on some models 0.28 in (7 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	1.5 ms
		Average	11 ms
		Maximum	22 ms
	Rotational Speed	7200 rpm	
	Logical Blocks	625,142,448	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

250 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lbs (115g)	
	Capacity	250 GB	
	Height	0.37 in (9.5 mm) or on some models 0.28 in (7 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	1.5 ms
		Average	11 ms
		Maximum	22 ms
	Rotational Speed	7200 rpm	
	Logical Blocks	488,397,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	

Technical Specifications

160 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lb (115 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	1.5 ms
		Average	11 ms
		Maximum	22 ms
	Rotational Speed	7200 rpm	
	Logical Blocks	312,581,808	
Operating Temperature	32° to 140° F (0° to 60° C) [case temp]		
Features	ATA Security		

80 GB 2.5-inch SATA Solid State Drive	Weight	0.19 lbs (86 g)			
	Capacity	80 GB			
	Height	0.37 in (9.5 mm)			
	Width	2.75 in (70 mm)			
	Interface	SATA			
	Performance	Maximum Sequential Read	250 MB/s	Maximum Sequential Write	70 MB/s
		Logical Blocks	156,301,488		
	Operating Temperature	32° to 158°F (0° to 70°C) [case temp]			
Features	ATA Security; ATA-7 ;SATA 2.6; DIPM				

Audio

Hardware	Implementation	IDT 92HD75B High Definition audio		
	Function Key Volume Controls	Volume up, volume down, and mute		
	Full Duplex	Yes		
	Microphone In	Stereo		
	Headphone/Line Out	Stereo		
	Integrated Stereo Microphones	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

Internal Speakers	Power Rating	2.0 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 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 8059 PCI-E Gigabit Ethernet Controller	

Technical Specifications

HP un2420 EV-DO/HSPA Mobile Broadband Module	Technology/Operating Bands	GSM/GPRS/EDGE: 850MHz(Cell), 900MHz(EGSM), 1800MHz(DCS), 1900MHz (PCS) UMTS/WCDMA with receive diversity: 2100MHz (UTRA FDD Band I), 1900MHz (UTRA FDD Band II), 900MHz (UTRA FDD Band VIII), 850MHz (UTRA FDD Band V) 1xEVDO/1xRTT with receive diversity: 850MHz (Band Class0-Cell), 1900MHz (Band Class1-PCS)
	Wireless Protocol Standards	GSM/GPRS/EDGE: Class B, Multi-slot operation, coding schemes CS1 - CS4 and MSC1 - MSC9. UMTS/WCDMA: Release 99 and Release 6 CDMA: 1xEVDO Release 0 and Release A, IS-95A, IS-95B, IS-2000
	Wireless Parametric Standards	Meets or exceeds TIA/EIA IS-98-D
	Maximum Data Rates	UMTS (HSPA) - 7.2 Mbps (Download), 2.0 Mbps (Upload) CDMA (EVDO Release A) - 3.1 Mbps (Download), 1.8 Mbps (Upload)
	GPS	Standalone GPS enabled
	GPS Bands	L1 - 1575.42 MHz
	Maximum Output Power	GSM/GPRS/EDGE: 32dBm (+/-1) WCDMA: 24dBm (+/-1) CDMA: 24dBm (+/-1)
	Maximum Power Consumption	2500mA (peak); 1000mA (average)
	Power Consumption, Sleep Mode	5 mA
	Power Management	USB selective suspend Integrated notebook wireless button
	Antenna Type	Dual high efficiency 5 band antennae with spatial diversity, mounted in the display enclosure
	Form Factor	PCI-Express MiniCard, USB 2.0 interface
	Weight	11.5 g
	Dimensions (Length x Width x Thickness)	2.01 x 1.18 x 0.18 in (51 x 30 x 5 mm)
	Voltage, Operating	3.3v +/- 10%
	Temperature, Operating (from TIA/EIA/IS-98-D)	-22° to 140° F (-30° to 60° C) (full RF performance) -22° to 167° F (-30° to 75° C) (reduced RF performance)
	Temperature, Non-operating, 96 hours (from MIL-STD 202 Method 108)	-40° to 185° F (-40° to 85° C)
	Humidity, Non-operating	85% relative humidity for 48 hours @ 185° F (85° C) (non-condensing)
	Configuration Utilities	HP Connection Manager
	LED Activity	LED Off - Radio Off; Solid LED On - Radio On

Intel WiFi Link 1000	Wireless LAN Standards	IEEE 802.11b IEEE 802.11g
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Technical Specifications

	IEEE 802.11n*
	* In countries where n draft 2.0 is not allowed, this capability is not enabled.
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
Antenna Structure	1 transmit; 2 receive (1x2)
Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: many possible data rates, ranging from 6 Mbps to 300 Mbps, depending on the combination of Bandwidth, Modulation Coding Scheme, and Guard Interval used, as defined in IEEE 802.11n specification
Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM
Security¹	Authentication: WPA and WPA2, 802.1x (EAP_TLS, TTLS, PEAP, LEAP, EAP-FAST) Authentication Protocols: PAP, CHAP, TLS, GTC, MS-CHAP, MS-CHAPv2 Encryption: 64 and 128-bit WEP, AES-CCMP, CKIP, TKIP 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 2.4GHz band Access Points
Output Power (for CCK and OFDM) ²	15 dBm typical
Power Consumption	Transmit: 1.4 Watts (average, with one spatial streams) Receive: 1.3 Watts (average with two receive chains) Idle mode ³ : 30 mW (average) Radio off: 20 mW (max)
Power Management	ACPI compliant power management 802.11 compliant power saving mode
Receiver Sensitivity⁴	54 Mbps: -74 dBm, 6 Mbps: -91 dBm
Antenna Connections	2 U.FL type connectors, 50 ohm nominal impedance
Form Factor	PCI-Express Half-MiniCard
Weight	0.0075 lb (3.4 g)
Dimensions	0.12 x 1.06 x 1.18 in (3.1 x 26.8 x 30.0 mm)
Operating Voltage	3.3V +/- 9%

Technical Specifications

Temperature	Operating	32° to 176° F (0° to 80° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 90% (non-condensing)
Altitude	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
Configuration Utility⁵	Choice of Configuration Utility: Microsoft Windows XP	
	<ul style="list-style-type: none"> ● Microsoft Windows XP Wireless Network Connection Manager ● Intel PROSet for Microsoft Windows XP (required for Cisco Compatible Extensions support) 	
	Microsoft Windows Vista	
	<ul style="list-style-type: none"> ● Microsoft Windows Vista Wireless Network Connection Manager. ● Intel IHV extensions for Windows Vista available to support Cisco Compatible Extensions. 	
LED Activity	LED Off - Radio OFF; Solid LED On - Radio ON	
	<ol style="list-style-type: none"> 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 and on battery power. 4. 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). 5. 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. 	

Broadcom 4322AGN 802.11a/b/g/n WiFi Adapter

Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n
Interoperability	Wi-Fi certified (802.11abg only) Cisco Compatible Extensions Program compliant (802.11abg only) with Microsoft Windows XP
Frequency Band	2.4 GHz and 5 GHz
Data Rates	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
Frequency Support	20 MHz: 2.4 GHz and 5 GHz bands 40 MHz: 2.4 GHz and 5 GHz bands
Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM
Security¹	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES,

Technical Specifications

	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
Output Power (for OFDM; power varies by data rate) ²	15 dBm
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 Sensitivity ³	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)
Configuration Utility ⁴	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)
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.

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
	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; 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)

Technical Specifications

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) 	
LED Activity	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	
	<ol style="list-style-type: none"> 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. 	

Broadcom 4312G 802.11b/g WiFi and 2070 Bluetooth 2.1+EDR Combo 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
	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.

Technical Specifications

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 Sensitivity ³	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 Utility ⁴	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) <p>Microsoft Windows Vista</p> <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	
	<ol style="list-style-type: none"> 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 	

Technical Specifications

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.

Bluetooth 2.1 Wireless Technology	Bluetooth Specification	2.1 Compliant		
	Dimensions	1.18 x 0.26 x 0.13 in (30 x 6.5 x 3.25 mm)		
	Frequency Band	2402 to 2480 MHz		
	Number of Available Channels	79 (1 MHz) available channels		
	Data Rates and Throughput	3 Mbps data rate; throughput up to 2.17 Mbps Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric		
	Transmit Power	-6 dBm to 4 dBm (Bluetooth Class II)		
	Receiver Sensitivity	Better than -80 dBm at 0.1 % raw bit error rate		
	Power Consumption	Peak (Tx) 264 mW Peak (Rx) 231 mW Sleep <1 mW		
	Antenna	Internally integrated within module		
	Range	Up 33 ft (10 m)		
	Electrical Interface	USB 2.0 compliant Microsoft Windows Plug and Play compliant		
	Bluetooth Software Supported	Broadcom Bluetooth for Windows Microsoft Windows Bluetooth Software		
	Link Topology	Point to Point, Multipoint Pico Nets up to 7 slaves		
	Security	Full support of Bluetooth Security Provisions		
	Power Management	Microsoft Windows ACPI, and USB Bus Support Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff		
	Certifications	All necessary regulatory approvals for supported countries, including: FCC (47 CFR) Part 15C, Section 15.247 & 15.249 ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark		
	Temperature	Operating	-4° to 158° F (-20° to 70° C)	
		Non-operating	-40° to 176° F (-40° to 80° C)	
	Humidity	Operating	10% to 90%	
		Non-operating	5% to 95%	
	Altitude	Operating	15,000 ft (4,572 m)	
	Non-operating	40,000 ft (12,192 m)		
Bluetooth Profiles Supported	Serial Port Profile (SPP) ¹ Service Discovery Application Profile (SDAP) Dial-Up Networking (DUN) ^{1,2}			

Technical Specifications

- Generic Object Exchange Profile (GOEP)^{1,2}
- Object Push Profile (OPP)^{1,2}
- File Transfer Profile (FTP)
- Synchronization Profile (SYNC)
- Hard Copy Cable Replacement (HCRP)^{1,2}
- Personal Area Networking Profile (PAN)^{1,2}
- Human Interface Device Profile (HID)^{1,2,3}
- FAX Profile (FAX)
- Basic Imaging Profile (BIP)²
- Headset Profile (HSP)
- Hands Free Profile (HFP)
- Advanced Audio Distribution Profile (A2DP)

1. indicates the profile is supported by Microsoft Windows XP SP2

2. indicates the profile is part of Windows Vista

HP Integrated Module with Bluetooth 2.1 Wireless Technology

Bluetooth Specification	2.1 Compliant
Dimensions	1.18 x 0.26 x 0.13 in (30 x 6.5 x 3.25 mm)
Frequency Band	2402 to 2480 MHz
Number of Available Channels	79 (1 MHz) available channels
Data Rates and Throughput	3 Mbps data rate; throughput up to 2.17 Mbps Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric
Transmit Power	-6 dBm to 4 dBm (Bluetooth Class II)
Receiver Sensitivity	Better than -80 dBm at 0.1 % raw bit error rate
Power Consumption	Peak (Tx) 264 mW Peak (Rx) 231 mW Sleep <1 mW
Antenna	Internally integrated within module
Range	Up 33 ft (10 m)
Electrical Interface	USB 2.0 compliant Microsoft Windows Plug and Play compliant
Bluetooth Software Supported	Broadcom Bluetooth for Microsoft Windows Bluetooth Software
Link Topology	Point to Point, Multipoint Pico Nets up to 7 slaves
Security	Full support of Bluetooth Security Provisions
Power Management	Microsoft Windows ACPI, and USB Bus Support Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff

Technical Specifications

Certifications	All necessary regulatory approvals for supported countries, including: FCC (47 CFR) Part 15C, Section 15.247 & 15.249 ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark	
Temperature	Operating	-4° to 158° F (-20° to 70° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90%
	Non-operating	5% to 95%
Altitude	Operating	15,000 ft (4,572 m)
	Non-operating	40,000 ft (12,192 m)
Bluetooth Profiles Supported	Serial Port Profile (SPP) ¹ Service Discovery Application Profile (SDAP) Dial-Up Networking (DUN) ^{1,2,3} Generic Object Exchange Profile (GOEP) ^{1,2,3} Object Push Profile (OPP) ^{1,2,3} File Transfer Profile (FTP) Synchronization Profile (SYNC) Hard Copy Cable Replacement (HCRP) ^{1,2,3} Personal Area Networking Profile (PAN) ^{1,2,3} Human Interface Device Profile (HID) ^{1,2,3} FAX Profile (FAX) Basic Imaging Profile (BIP) ^{2,3} Headset Profile (HSP) ³ Hands Free Profile (HFP) ³ Advanced Audio Distribution Profile (A2DP) ³	

1. indicates the profile is supported by Microsoft Windows XP SP2
2. indicates the profile is part of Windows Vista
3. indicates the profile is part of Windows 7

Technical Specifications

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:

- US Energy Star
- IT ECO declaration
- EPEAT - Gold where HP registers commercial desktop products. See <http://www.epeat.net> for registration status in your country.

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	7.04 W	7.05 W	6.91 W
Sleep (Energy Star low power mode)	0.85 W	0.81 W	0.83 W
Off	0.76 W	0.72 W	0.74 W

Heat Dissipation*

	115 VAC	230 VAC	100 VAC
Normal Operation	24 BTU/hr	24 BTU/hr	24 BTU/hr
Sleep	3 BTU/hr	3 BTU/hr	3 BTU/hr
Off	3 BTU/hr	2 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	3.2	28.7
Fixed Disk (random writes)	3.3	29.8

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 the 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 Lithium-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.

Technical Specifications

This product is in compliance with California Proposition 65 (State of 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 95% recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
 - CANON bags - several layers 15 g
 - Corrugated carton 415 g
 - Cardboard & misc 110 g
- Internal:
 - EPE-Expanded Polyethylene 30 g
- The CANON bags - several layers packaging material is made from 0% recycled content.
- The Corrugated carton packaging material is made from 75% recycled content.
- The Cardboard & misc packaging material is made from 75% recycled content.
- The EPE-Expanded Polyethylene packaging material is made from 0% 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:

Technical Specifications

(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
- 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)
- Nickel finishes that release greater than 0.5 µgrams/cm²/week, measured according to EN 1811:1998, are not used on any product surface designed to be frequently handled or touched by users.

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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