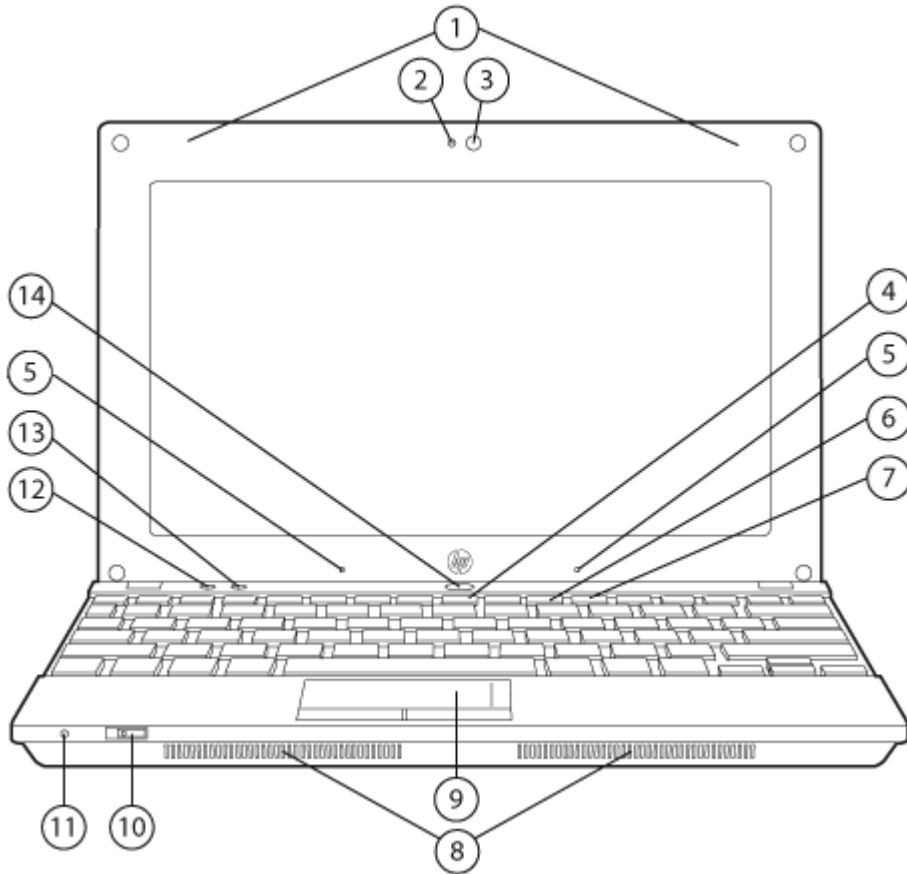
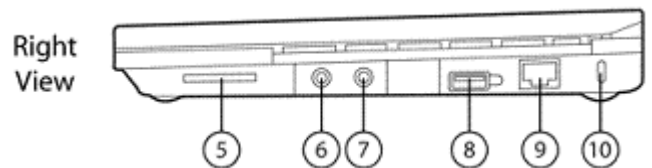
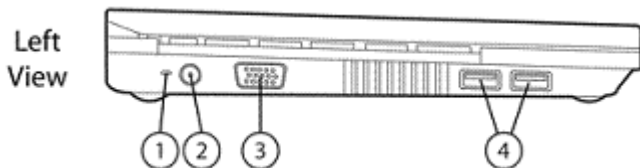


Overview



- | | |
|---|---|
| 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. Quick Launch button – web |
| 6. Volume down function key | 13. Quick Launch button – mail |
| 7. Volume up function key | 14. Power button with LED indicator |

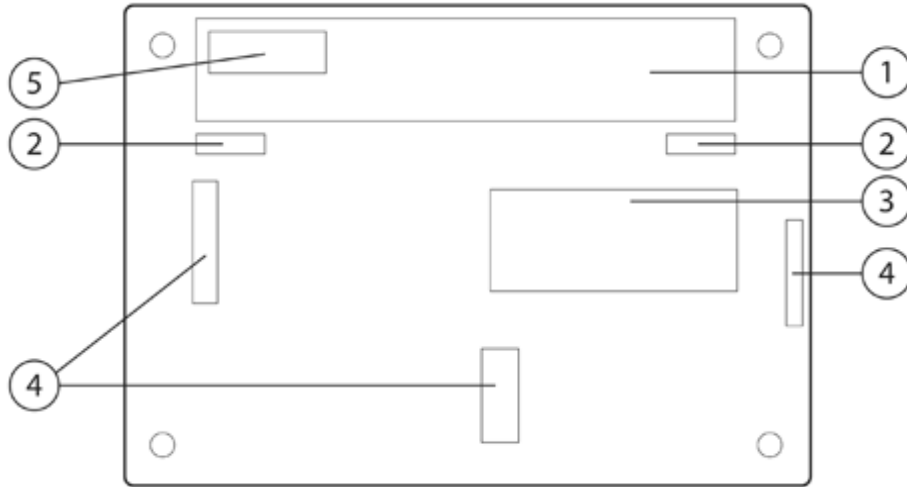


1. Battery charging LED indicator

6. Stereo headphone/line out

Overview

2. Power connector
3. VGA/external monitor
4. (2) USB 2.0 ports
5. Secure Digital (SD)/MMC slot
7. Stereo microphone in
8. USB 2.0 port (powered)
9. RJ-45/ethernet
10. Kensington lock slot



Bottom View

1. Battery bay
2. Battery/memory module release latches
3. Memory module compartment
4. Vents
5. WWAN SIM module access (under battery)

At A Glance

- 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
- Stylish brushed aluminum finish
- 95% full-size QWERTY keyboard with HP DuraKeys; touchpad with scroll zone
- 10.1-inch diagonal LED-backlit display available in WSVGA (1024 x 600) or 16:9 HD (1366 x 768) resolution
- Intel® Atom™ processor
- Flexible wireless connectivity options with HP Wireless Assistant:
 - Optional integrated HP un2400 EV-DO/HSDPA Mobile Broadband Module provides worldwide Gobi mobile Internet technology
 - Optional integrated 802.11 a/b/g/n draft 2.0 wireless LAN module
- Up to 320 GB 7200 rpm hard drive with HP 3D DriveGuard protection, or up to 128 GB Solid State Drive
- Integrated 2 MP Webcam
- Flexible battery solutions for lightest weight or all-day computing
- Optional HP External USB 2.0 CD/DVD R/RW Drive and HP USB 2.0 Docking Station

Standard Features

Processors		Intel Atom N280 Processor (1.66 GHz, 512 KB L2 cache, 533 MHz FSB)* * The Mobile Intel 945GSE Express Chipset supports maximum of 533 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 XP Home SUSE Linux Enterprise 11 FreeDOS
Chipset		Mobile Intel 945GSE Express Chipset
Graphics		Mobile Intel Graphics Media Accelerator 950
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
	External	Up to 32-bit per pixel color depth VGA port supports resolutions up to 1900 x 1200 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 SDRAM SODIMM* one SODIMM slot
	Maximum	Supports up to 2 GB maximum** * All memory modules operate at the maximum system supported speed of 533 MHz. ** Maximum memory is 1 GB with Windows XP Home. NOTE: Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility.
Communications		Integrated Marvell Ethernet (10/100/1000 NIC)

Standard Features

Wireless Devices

Support for secure, integrated wireless LAN and wireless WAN options featuring support for the latest industry standards. Wireless LAN is factory configurable or available as an option to be added later. Mobile Broadband (WWAN) requires Windows XP 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 un2400
EV-DO/HSPA Mobile
Broadband Module**
(Windows models only)

Integrated mobile broadband module with Gobi global mobile Internet technology that provides worldwide connection to both CDMA (EVDO) and UMTS (HSPA) networks.

NOTE: Separately purchased mobile network operator service is required. Two 850/900/1800/1900/2100 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*

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 5100

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

Cisco Compatible Extensions support

Up to 450 mbps data rate

**Broadcom 4322G
802.11 a/b/g/draft-n
Wi-Fi Adapter**

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

Cisco Compatible Extensions support

Up to 300 mbps data rate

**HP Integrated Module
with Bluetooth Wireless
Technology**

Bluetooth Specification v2.1 compliant

Works with a wide range of Bluetooth devices

* The specifications for 802.11 n 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 802.11 n WLAN 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.

Pointing Device

Touchpad with scroll zone and two soft-touch buttons

Expansion Card Slots

Secure Digital slot

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

Standard Features

Storage	Internal Storage Device	160/250/320 GB 7200 rpm SATA Hard Drive 128 GB Solid State Drive
	NOTE: Up to 10 GB is reserved for the system recovery software.	
	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.

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	AD1984 High Definition audio Integrated stereo speakers Integrated stereo microphones Stereo headphone/line out Stereo microphone in Integrated 2 MP webcam
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Software	Software with Windows XP Home	HP Help and Support Center Corel Home Office Microsoft Office Professional 2007 60-day Convertible Trial McAfee Total Protection* Windows Live Messenger Adobe Flash Player Roxio Creator Business 10**
	Software with SuSE Linux Enterprise Desktop	OpenOffice Suite Evolution Email Evince Document Viewer OpenOffice Draw F-Spot Photo Browser 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



Standard Features

* 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

** Requires separately purchased external optical drive

Security	Standard Features	HP Disk Sanitizer Setup Password Power-On Password Kensington Lock Slot Computrace BIOS support / LoJack for Laptops (must be purchased separately)
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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.
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Battery	Primary Battery	4-cell (29 WHr) high capacity Li-Ion 6-cell (55 WHr) high capacity Li-Ion
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Battery Life	6-cell Primary Battery and Hard Drive	Up to 9 hours
	4-cell Primary Battery and Hard Drive	Up to 4 hours and 30 minutes
	NOTE: The listed battery life measurements were taken on models running Microsoft Windows XP. 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
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Power Conservation	Standby ACPI compliance
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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 .
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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 533 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#xxx
	6-cell Primary Battery	AT901AA#xxx
	90W Smart AC/Auto/Air Combo Adapter	AJ652AA#xxx
Carrying Cases	HP Ultra-portable Carrying Case	AL539AA
	HP Basic Carrying Case	AJ078AA
	HP Value Nylon Case	DL617A
	HP Universal Nylon Case	RR315AA
	HP Executive Leather Case	RR316AA
	HP Deluxe Nylon Backpack	RR317AA
	HP Deluxe Roller Case	GD405AA
	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#xxx
	HP USB/PS2 Optical 2-Button Scroll Mouse	DC369A
	HP USB Optical Travel Mouse	RH304AA
	HP Mobile USB 2.0 Speakers	FS944AA

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)

128 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	Dimensions (HxWxD)	0.91 (at front) x 10.30 x 7.09 in 23.2 (at front) x 262 x 180 mm
	Weight	With 4-cell primary battery With 6-cell primary battery Starting at 2.64 lb (1.2 kg) Starting at 2.91 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 14 W Max Operating Power < 65 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 Gold** 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 5101 that are ENERGY STAR qualified are identified as HP Mini 5101 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 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	
		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	<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.			

6-Cell (55 WHr) 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	55Wh
		Temperature	Operating (Charging)
	Battery Re-Charge Time	Operating (Discharging)	14° to 140° F (-10° to 60° C)
		Non-operating	-4° to 140° F (-20° to 60° C)
		System in OFF Mode or Standby	2.5 hours
System ON	3 to 5 hours (depending on system power consumption)		

Technical Specifications

Display

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 (1024 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	1024 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)	
	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)	
	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		

128 GB 2.5-inch SATA Solid State Drive	Weight	80.1 Grams			
	Capacity	128 GB			
	Height	0.37 in (9.5 mm)			
	Width	2.75 in (70 mm)			
	Interface	SATA			
	Performance	Maximum Sequential Read	220 MB/s	Maximum Sequential Write	200 MB/s
		Logical Blocks	250,069,680		
	Operating Temperature	32° to 158°F (0° to 70°C) [case temp]			
Features	ATA Security; ATA-7 ;SATA 2.6; DIPM				

Audio

Hardware	Implementation	ADI 1984AJCPZ High Definition CODEC		
	Function Key Volume Controls	Volume up, volume down, and mute		
	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

Internal 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 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 88E8072 PCI-E Gigabit Ethernet Controller

Technical Specifications

HP un2400 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), 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 5 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)
	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
	Weight	11.5 g
	Dimensions (Length x Width x Thickness)	2.01 x 1.18 x 0.18 in (51 x 30 x 4.5 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 5100	Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n (draft 2.0)*
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Technical Specifications

* 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. In countries where n draft 2.0 is not allowed, this capability is not enabled.

Interoperability	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)
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): 66 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 (draft) specification
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 (support for key sizes of 128, 192, and 256 bits), 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	15 dBm
Output Power (for OFDM; power varies by data rate)²	15 dBm
Power Consumption	Transmit: 2.3 Watts (average, with one spatial streams) Receive: 1.9 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	300 Mbps: -68 dBm, 54 Mbps: -74 dBm, 6 Mbps: -90 dBm
Antenna Connections	3 U.FL type connectors, 50 ohm nominal impedance
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 +/- 9%, 1.5V +/- 5%

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	Microsoft Windows XP	
	Choice of Configuration Utility: <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) 	
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. 	

Broadcom 4322AGN 802.11a/b/g/draft-n WiFi Adapter	Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n (draft 2.0)*
		* 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.
	Interoperability	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)
	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, 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



Technical Specifications

	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 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)
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	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.

Technical Specifications

with Bluetooth 2.1 Wireless Technology

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
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} Generic Object Exchange Profile (GOEP) ^{1,2} Object Push Profile (OPP) ^{1,2} File Transfer Profile (FTP) Synchronization Profile (SYNC)

Technical Specifications

- Hard Copy Cable Replacement (HCRP)^{1,2}
- Personal Area Networking Profile (PAN)^{1,2}
- Human Interface Device Profile (HID)^{1,2}
- 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

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*

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

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	9.93W	10.22W	9.88W
Sleep (Energy Star low power mode)	0.70W	0.79W	0.69W
Off	0.56W	0.64W	0.54W

Heat Dissipation*	115 VAC	230 VAC	100 VAC
Normal Operation	34 BTU/hr	35 BTU/hr	34 BTU/hr
Sleep	2 BTU/hr	3 BTU/hr	2 BTU/hr
Off	2 BTU/hr	2 BTU/hr	2 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	3.3	29
Fixed Disk (random writes)	3.4	33.7

System fan is usually off except when charging the battery

Technical Specifications

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:

Lithium

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 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 in the U.S.

NOTE: EPEAT registration varies by country. See www.epeat.net for registration status by country.

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 96.4% recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
 - Corrugated Carton 415 g
 - Cardboard & misc. 110 g
 - Canon bags - several layers 15 g
- Internal:
 - EPE - Expanded Polyethylene 30 g
- The Corrugated Carton packaging material is made from 70~80% recycled content.
- The Cardboard & misc. materials contains at least 70~80% recycled content.
- The Canon bags - several layer packaging materials contains at least 0% recycled content.
- The EPE - Expanded Polyethylene packaging materials contains at least 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.

Technical Specifications

- 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.

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

Technical Specifications

Hewlett-Packard Corporate Environmental Information

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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