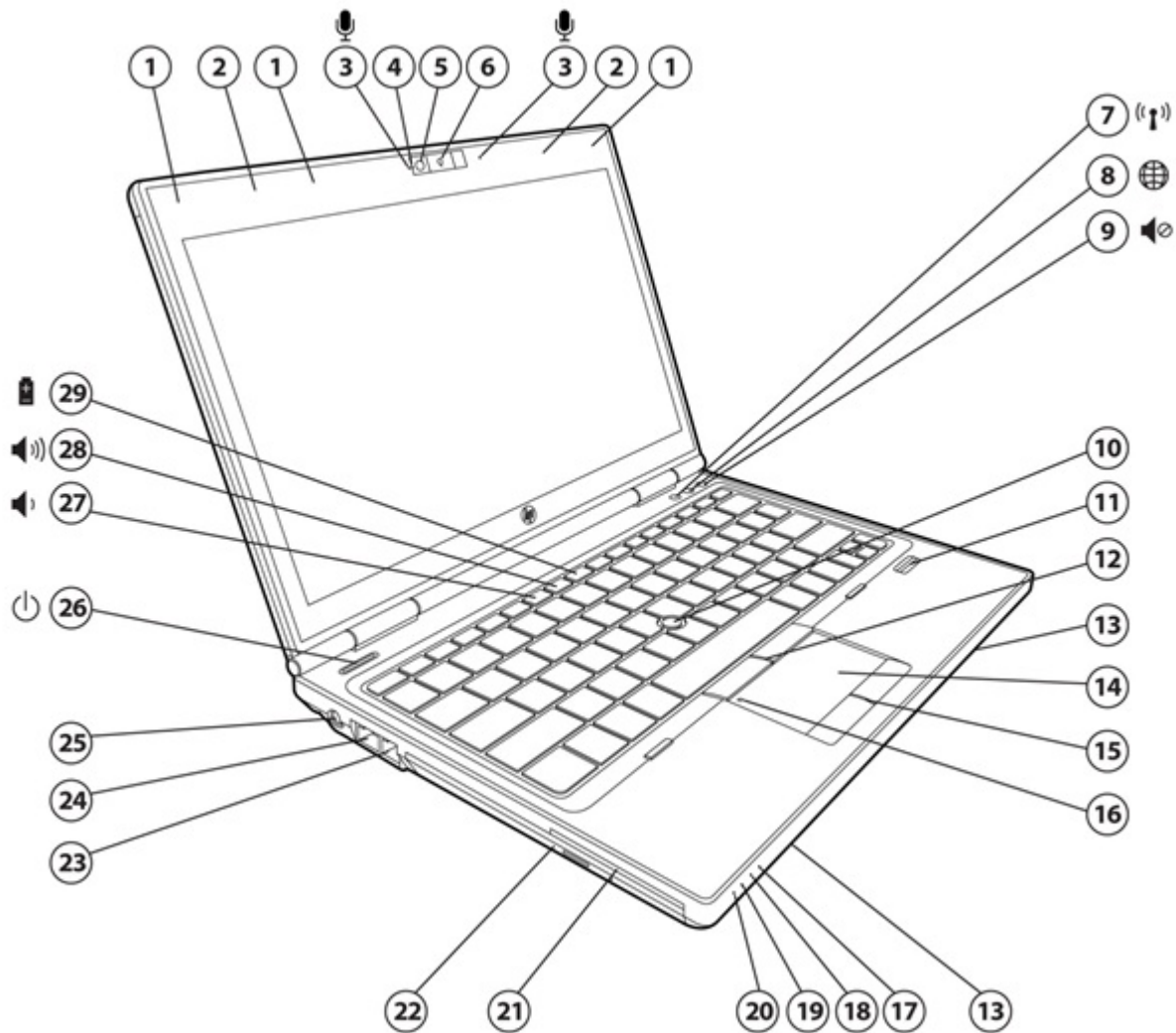


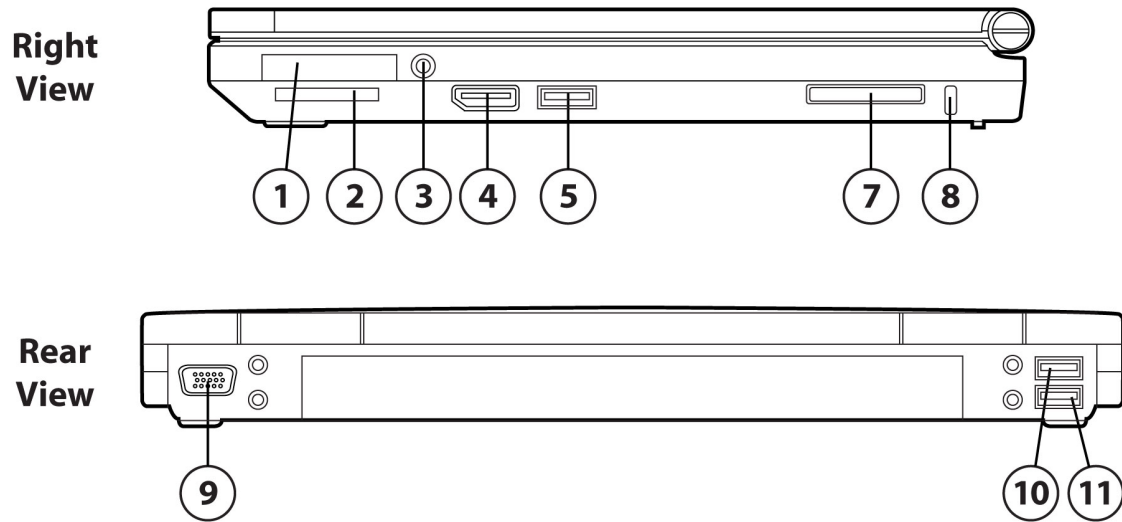
Overview



- | | |
|--|---|
| 1. WLAN antennas (3) | 16. Touchpad on/off button with LED indicator |
| 2. WWAN antennas (2) | 17. Drive activity / HP 3D DriveGuard LED indicator |
| 3. Dual-microphone array | 18. Battery charging LED indicator |
| 4. Webcam LED indicator | 19. Power/standby LED indicator |
| 5. Optional 720p HD Webcam | 20. Wireless on/off LED indicator |
| 6. HP Night Light button | 21. Integrated Smart Card Reader |
| 7. Wireless on/off button with LED indicator | 22. Optical drive or weight saver |
| 8. HP Web Browser button with LED indicator | 23. Optional RJ-11/modem port |
| 9. Volume mute button with LED indicator | 24. RJ-45/Ethernet port |
| 10. Pointstick | 25. Power connector |
| 11. Optional HP Fingerprint Sensor | 26. Power button with LED indicator |
| 12. Pointstick buttons (2) | 27. Volume down function key |
| 13. Stereo Speakers | 28. Volume up function key |
| 14. Touchpad with scroll zone | 29. HP Power Assistant function key |

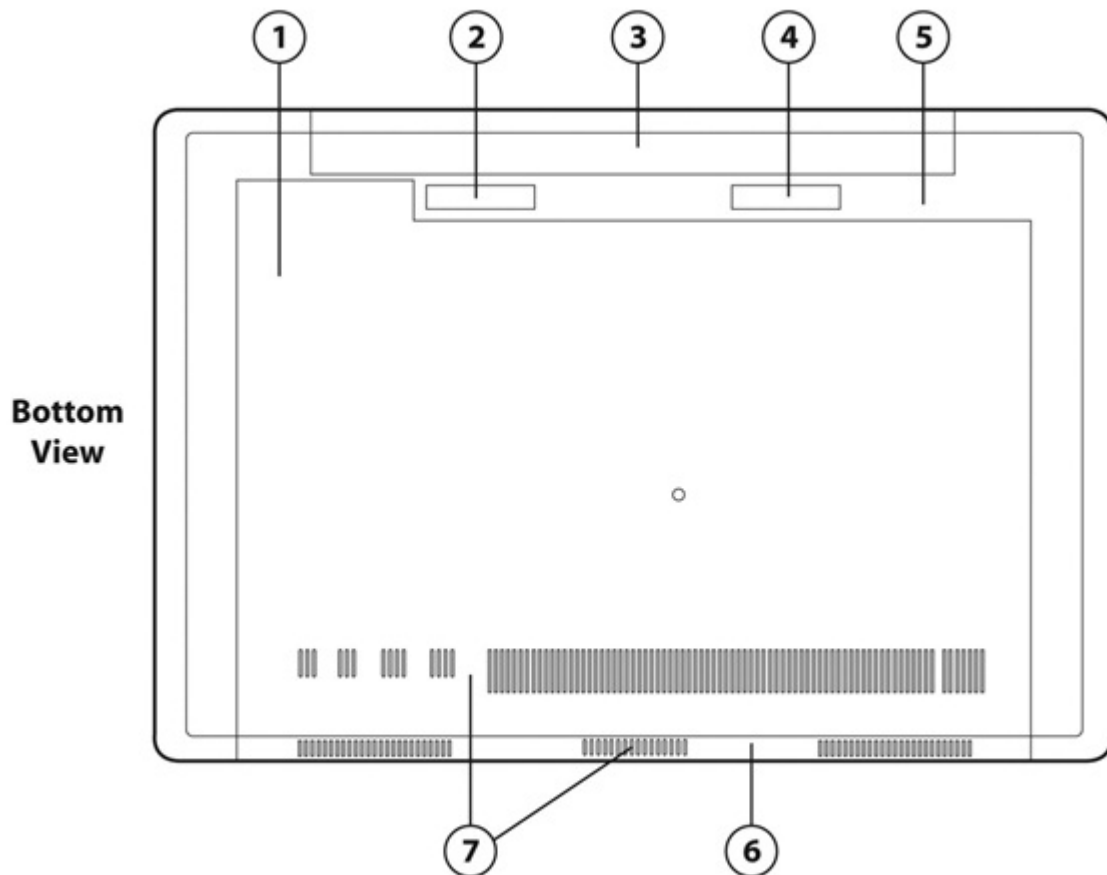
Overview

15. Touchpad buttons (2)



- | | |
|------------------------------------|---|
| 1. ExpressCard/34 slot | 6. Vent |
| 2. Secure Digital slot | 7. Docking connector |
| 3. Combo headphone/microphone jack | 8. Security Lock slot |
| 4. DisplayPort | 9. VGA connector (external monitor/projector) |
| 5. eSATA/USB 3.0 combo port | 10. USB 2.0 charging port |
| | 11. USB 3.0 port |

Overview



- | | |
|--------------------------|---|
| 1. Service cover | 5. SIM slot for WWAN (select models) inside battery bay |
| 2. Docking connector | 6. Bluetooth module compartment |
| 3. Battery bay | 7. Vents |
| 4. Battery release latch | |

Overview

At A Glance

- Windows 8 versions, Windows 7 versions or FreeDOS
- 12.5-inch diagonal LED-backlit HD display
- Industrial, business rugged HP DuraCase construction features a full magnesium alloy chassis, wear-resistant HP DuraFinish, precision aluminum-alloy hinges, and cast titanium-alloy display latches; designed to meet the military standard Mil-Std-810G for vibration, dust, altitude, and high temperature operation*
- Spill-resistant keyboard with drains
- Choice of an Intel® Core™ i7, Core i5, or Core i3 standard voltage processor for maximum performance
- Intel vPro technology (optional) enables you to remotely monitor, diagnose, and repair PCs over the network, even if a system's OS is inoperable or it is powered off
- Optional fixed optical drive or weight saver
- Choice of 7200 rpm 2.5-inch hard drive up to 750 GB, with HP 3D DriveGuard protection; 7200 rpm Self-encrypting drive up to 500 GB, or 128/180/240GB Solid State Drive or 256 GB SED Solid State Drive
- Flexible wireless connectivity options:
 - Integrated HP hs2350 HSPA+ Mobile Broadband Module connects to both HSPA and HSPA+ (UMTS) networks and provides GPS functionality
 - Integrated HP un2430 EV-DO/HSPA Mobile Broadband Module (Gobi 3000) provides GPS functionality
 - Integrated Intel Centrino® 802.11 a/b/g/n 2x2, Broadcom 802.11 a/b/g/n 2x2 or Atheros b/g/n 1x1 wireless LAN module
 - Bluetooth® v4.0+EDR
- Choice of 9-cell, 6-cell, or 3-cell battery, including HP Long Life battery, to customize weight, run-time, and battery life to your needs
- HP Power Assistant (Windows 7 only) and HP Peak Power Manager** (web download) to conserve power, increase battery run-time, monitor power needs, and report workforce power consumption
- Integrated Intel HD Graphics 4000
- SRS Premium Sound PRO optimized for high fidelity audio
- Security features including HP Client Security (Windows 8 only) and HP ProtectTools, with central management across HP and non-HP client PCs
- Separate launch buttons for easy access to the following features: wireless on/off, HP QuickWeb, and volume mute
- DisplayPort for high resolution support
- Optional HP 2570 Series Docking Station provides additional DisplayPort, eSATA port, four additional USB ports (one charging), audio in/out ports, RJ-45, VGA, power connector, and HP Docking Station Cable Lock
- Optional 720p HD Webcam
- Dual pointing devices (touchpad with scroll zone and pointstick)
- HP Night Light
- ExpressCard/34 slot
- Secure Digital slot
- Low Halogen***, ENERGY STAR qualified and EPEAT Gold registered in the U.S. EPEAT status varies by country- please see epeat.net.

* Testing was not intended to demonstrate fitness for DOD contracts requirements or for military use. Test results are not a guarantee of future performance under these test conditions.

** HP Peak Power Manager replaces HP Power Assistant for both Win7 and Win8. HP Peak Power Manager will be available on the web for download for existing product owners.

*** External power supplies, power cords, cables and peripherals are not Low Halogen. Service parts obtained after purchase may not be Low Halogen.

Features

OPERATING SYSTEM

Preinstalled

Windows 8 Pro 64*
Windows 7 Professional (available through downgrade rights from Windows 8 Pro)**
Windows 8 64*
Windows 7 Professional 32***
Windows 7 Professional 64***
Windows 7 Home Premium 32***
Windows 7 Home Premium 64***
Windows 7 Home Basic 32***
FreeDOS

Supported

Windows 8 Pro 32*
Windows 8 32*
Windows 8 Enterprise 32*
Windows 8 Enterprise 64*
Windows 7 Enterprise 32***
Windows 7 Enterprise 64***
Windows 7 Ultimate 32***
Windows 7 Ultimate 64***
Windows 7 Home Basic 64***
Windows XP Professional 32

Certified

Novell SUSE Linux Enterprise Desktop
SUSE Linux Enterprise Desktop
MS WHQL

* Not all features are available in all editions of Windows 8. Systems may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows 8 functionality. See <http://www.microsoft.com> for details.

** This system is preinstalled with Windows® 7 Pro software and also comes with a license and media for Windows 8 Pro software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.

*** Not all features are available in all editions of Windows 7. This system may require upgraded and/or separately purchased hardware to take full advantage of Windows 7 functionality. See <http://www.microsoft.com/windows/windows-7/> for details.

Features

PROCESSOR

3rd Generation Intel® Core™ i7-3540M (3.0 GHz, 4 MB L3 cache, 35W, 2 cores)*

Up to 3.70 GHz with Intel Turbo Boost Technology

3rd Generation Intel® Core™ i7-3520M (2.9 GHz, 4 MB L3 cache, 2 cores)

Up to 3.60 GHz with Intel Turbo Boost Technology

3rd Generation Intel® Core™ i5-3380M (2.90 GHz, 3 MB L3 cache, 35W, 2 cores)*

Up to 3.60 GHz with Intel Turbo Boost Technology

3rd Generation Intel® Core™ i5-3360M (2.8 GHz, 3 MB L3 cache, 2 cores)

Up to 3.50 GHz with Intel Turbo Boost Technology

3rd Generation Intel® Core™ i5-3340M (2.70 GHz, 3 MB L3 cache, 35W, 2 cores)*

Up to 3.40 GHz with Intel Turbo Boost Technology

3rd Generation Intel® Core™ i5-3320M (2.6 GHz, 3 MB L3 cache, 2 cores)

Up to 3.30 GHz with Intel Turbo Boost Technology

3rd Generation Intel® Core™ i5-3230M (2.6 GHz, 3 MB L3 cache, 2 cores)*†

Up to 3.20 GHz with Intel Turbo Boost Technology

3rd Generation Intel® Core™ i5-3210M (2.5 GHz, 3 MB L3 cache, 2 cores)†

Up to 3.10 GHz with Intel Turbo Boost Technology

3rd Generation Intel® Core™ i3-3130M (2.6 GHz, 3 MB L3 cache, 2 cores)*†

3rd Generation Intel® Core™ i3-3120M (2.5 GHz, 3 MB L3 cache, 2 cores)*

† Not available with vPro

* Multi-Core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. 64-bit computing on Intel® architecture requires a computer system with a processor, chipset, BIOS, operating system, device drivers, and applications enabled for Intel® 64 architecture. Processors will not operate (including 32-bit operation) without an Intel® 64 architecture-enabled BIOS. Performance will vary depending on your hardware and software configurations. Intel's numbering is not a measurement of higher performance.

NOTE: Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.

CHIPSET

Mobile Intel QM77 Express (vPro support)

INTEL CORE I5 WITH VPRO/CORE I7 WITH VPRO TECHNOLOGY CAPABLE

Intel Core i5 with vPro and Core i7 with vPro technology is a selectable feature that is available on units configured with select processors, an Intel Centrino® Advanced-N or Ultimate-N WLAN module and a preinstalled Windows operating system. It provides advances in remote manageability, security, energy efficient performance, and wireless connectivity. Intel Active Management Technology 8.0 (iAMT) offers built-in manageability and proactive security for networked notebook PCs, even when they are powered off* or when the operating system is inoperable. It can help identify threats before they reach the network, isolate infected systems, and update PCs regardless of their power state.

*Requires a Windows operating system, network hardware and software, connection with a power source, and a direct (non-VPN) corporate network connection which is either cable or wireless LAN.

NOTE: Some functionality of Intel Core i5 with vPro/Core i7 with vPro technology, such as Intel Active Management technology and Intel Virtualization technology, requires additional third- party software in order to run. Availability of future "virtual appliances" applications for Intel Core i5 with vPro/Core i7 with vPro technology is dependent on third- party software providers. Compatibility with future "virtual appliances" is yet to be determined.

Features

GRAPHICS

Integrated:
Intel HD Graphics 4000

DISPLAY

Internal

12.5" diagonal LED-backlit HD 16:9 anti-glare (1366 x 768)
HP Privacy Filter support

External

Up to 32-bit per pixel color depth

DisplayPort

Supports resolutions up to 2560 x 1600, 30-bit color depth at 60 Hz, and full HD (1920 x 1080) monitors, 24-bit color depth at 120 Hz

VGA

Port supports resolutions up to 2048 x 1536 at 75 Hz, and lower resolutions at up to 100 Hz

NOTE: Resolutions are dependent upon monitor capability, and resolution and color depth settings.

STORAGE AND DRIVES

Primary Storage Bay

Hard Drives

SATA, 7mm or 9.5mm, 2.5"

320/500 GB 7200 rpm SMART SATA II
500 GB 7200 rpm SMART SATA II Self Encrypting Drive

SATA, 9.5mm, 2.5"

750 GB 7200 rpm SMART SATA II

HP 3D DriveGuard (Windows only)

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

Solid State Drive

2.5" SSD III
128GB SATA III
180GB SATA III
240GB SATA III
256GB SATA III Self Encrypting Drive

NOTE: For hard drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 16 GB (for Windows 7) of system and up to 30 GB (for Windows 8) disk is reserved for system recovery software.

Features

OPTICAL DRIVES

Fixed 9.5 mm SATA optical drive

DVD+/-RW SuperMulti DL Drive

DVD-ROM Drive

Weight saver

MEMORY

Standard

DDR3 PC3-12800 SDRAM (1600 MHz)

Two SODIMM slots supporting dual-channel memory

2 GB, 4 GB, and 8 GB SODIMMs

Maximum

Upgradeable to 16384 MB with optional 8192 MB SODIMMs in slots 1 and 2

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. With Windows Starter 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.

NETWORKING/COMMUNICATIONS

Wireless

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

Broadband Wireless (WWAN)

HP hs2350 HSPA+ Mobile Broadband Module

HP un2430 EV-DO/HSPA Mobile Broadband Module

Integrated wireless LAN options

Intel Centrino Advanced-N 6205 802.11a/b/g/n (2x2)

Broadcom BCM943228HM4L 802.11 a/b/g/n WiFi Adapter (2x2)

Atheros AR9485 802.11 b/g/n WiFi Adapter (1x1)

HP Integrated Module with Bluetooth 4.0+ EDR Wireless Technology

Communications

Integrated Intel 82579LM Gigabit* Network Connection (vPro configurations)

56K V.92 modem**

* The term "10/100/1000" or "Gigabit" Ethernet indicates compatibility 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.

Features

AUDIO/MULTIMEDIA

Audio

SRS Premium Sound PRO™

Integrated stereo speakers

Integrated microphone (dual-microphone array when equipped with optional webcam)

Button for volume mute; function keys for volume up and down

Stereo headphone/line out

Stereo microphone/line in

Webcam

Optional 720p HD webcam

- HD format (widescreen)
 - Supports videoconferencing and still image capture
 - High quality fixed focus lens
 - Video capture at various resolutions up to 1280x720 resolution (720p) and up to 30fps
 - M-JPEG compression supports higher frame rates for video capture and videoconferencing
 - Improved low light sensitivity
 - Improved dynamic range
-

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard

The HP spill-resistant keyboard is designed using a thin layer of Mylar film under the keyboard and a drain system that funnels fluid through a hole in the bottom of the notebook. This minimizes the risk of damage to sensitive components underneath. The 101/102-key compatible keyboard features an industry standard, full-pitch key layout with desktop keyboard features, such as the isolated inverted-T cursor control keys, editing keys, both left and right control and alt keys, and 12 function keys. U.S. and International key layouts are available. Other features include an integrated numeric keypad, hotkeys for instant access to power conservation, brightness, and other features, 19 mm x 19 mm key pitch (center-to-center spacing), 2.0 mm stroke, and comfort-dished keycaps.

HP Night Light shines directly on keyboard for low-light conditions

Pointing Devices

Touchpad with on/off button, two-way scroll, gestures, two pick buttons

Pointstick with two additional pointstick buttons

Buttons and Function Keys

Discrete buttons provide easy access to the following features: wireless on/off, Web browser, and volume mute. Function keys provide control of the following features: standby mode, external display, volume down, volume up, HP Power Assistant, and display brightness.

Features

SOFTWARE AND SECURITY

Preinstalled Software with Windows Operating System

Buy Office
Cyberlink Media Suite for Win 8
HP Wireless Hotspot (Windows 8 only, web download)
Adobe Flash (Windows 7 only)
PDF Complete, Corporate Edition
WinZip Basic (Windows 7 only)
Corel WinDVD (Windows 7 only)
Roxio Secure Burn (Windows 7 only)
Roxio MyDVD Business 2010 (Windows 7 only)
Skype ready*

NOTE: HP Recovery Manager enables fast recovery of the factory preinstalled image if the system becomes corrupted or if important system files are accidentally deleted. Up to 16 GB (for Windows 7) of system and up to 30 GB (for Windows 8) disk is reserved for system recovery software.

* Skype-ready. Skype is not offered in China.

Security

Standard

HP Client Security (Windows 8 only)
HP ProtectTools
TPM Embedded Security Chip 1.2
Drive Encryption ((will be web-only ready at Win8 GA date)
Credential Manager
Password Manager
One Step Logon
Face Recognition
SpareKey
Device Access Manager w/ JITA
Smart Card Reader
Security lock slot

Optional

HP Fingerprint Sensor
HP Privacy Filter
HP Combo Lock
Microsoft® Security Essentials

NOTE: Computrace agent is shipped turned off, and must be activated by customers when they purchase a subscription. Subscriptions can be purchased for terms ranging from one to five years. Service is limited, check with Absolute for availability outside the U.S.

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

Features

POWER

Power Supply

External 65W HP Smart AC Adapter

Power cord included is 6-foot (1.8 meter).

Total length including external AC adapter is 12 feet (3.66 meter).

HP Fast Charge

Primary Battery

HP 9-cell Lithium-Ion Battery (100 WHr)

HP 6-cell Lithium-Ion Battery (62 WHr)

HP 3-cell Lithium-Ion Battery (31 WHr)

HP Long Life Battery (6-cell /55 WHr)

Battery Life*

HP 9-cell Primary Battery Up to 15 hours and 15 minutes

Battery

HP 6-cell Primary Battery Up to 9 hours and 15 minutes

Battery

System Standby Time

Up to 30 days

*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 <http://www.bapco.com/products/mobilemark2007> for additional details.

** Configurations with integrated graphics.

NOTE: Fast Charge recharges your battery up to 90% within 90 minutes when the system is off. Please note that 9-cell batteries and the HP Long Life Battery do not support Fast Charge.

Power Conservation

Supports enhanced Intel SpeedStep technology (allows Battery Optimized Mode, Maximum Performance Mode, or Automatic mode)

Intel Display Power Saving technology

Hibernation

Standby

ACPI compliance

ENVIRONMENTAL

ENERGY STAR

IT ECO Declaration

EPEAT Gold where HP registers commercial notebook products. See <http://www.epeat.net> for registration status in your country.

NOTE: 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.

Features

WEIGHTS & DIMENSIONS

Weight

Starting at 3.60 lbs (1.63 kg) with 3-cell battery and weight saver
Starting at 3.85 lbs (1.75 kg) with 3-cell battery and lightest optical drive
Starting at 3.92 lbs (1.78 kg) with 6-cell battery and weight saver
Starting at 4.18 lbs (1.90 kg) with 6-cell battery and lightest optical drive
Starting at 4.25 lbs (1.93 kg) with 9-cell battery and weight saver
Starting at 4.51 lbs (2.05 kg) with 9-cell battery and lightest optical drive

Dimensions (w x d x h)

12.02 x 8.23 x 1.08 in (at front) / 30.5 x 20.9 x 2.7 cm (at front)

NOTE: Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components. Weight includes battery, lightest hard drive/SSD, 1 SODIMM, and either weight saver or lightest optical drive.

PORTS/SLOTS

Ports

VGA – One
DisplayPort – One (v1.1a)
Stereo headphone/microphone combo jack – One
Power Connector – One
Docking Connector – One
RJ-45 (Ethernet) – One
RJ-11 (Modem) – One
USB 3.0 – One
USB 2.0 – One charging port
eSATA/USB 3.0 combo port – One

Digital Media Slots

1 ExpressCard/34 slot, 1 Secure Digital slot (SD/SDHC/SDXC)

SERVICE AND SUPPORT

Limited 3-year, 1-year and 90-day warranty options available, depending on country, 1-year limited warranty on primary battery; 3-year limited warranty on HP Long Life Battery (only available with 3-year platform warranty). On-site service and warranty upgrades are also available. HP Care Pack Services extend service contracts beyond the standard warranties. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at: <http://www.hp.com/go/lookuptool>. Additional HP Care Pack Services information by product is available at: <http://www.hp.com/hps/carepack>.

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

Technical Specifications

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)	Nominal Operating Voltage	18.5 V		
	Average Operating Power	Windows 7 (32-bit)	Windows 7 (64-bit)	SuSE Linux
		8.03 W	8.02 W	13.03 W
	Max Operating Power	< 65 W		
Temperature	Operating	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)		
	Non-operating	-4° to 140° F (-20° to 60° C)		
Relative Humidity	Operating	10% to 90%, non-condensing		
	Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature		
Shock	Operating	40 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)		
Planned Industry Standard Certifications	UL	Yes		
	CSA	Yes		
	FCC Compliance	Yes		
	ENERGY STAR®	Select models*		
	EPEAT	Registered Gold in United States**		
	ICES	Yes		
	Australia / NZ A-Tick Compliance	Yes		
	CCC	Yes		
	Japan VCCI Compliance	Yes		
	KC	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 EliteBook 2570p that are ENERGY STAR qualified are identified as HP 2570p 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.

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

DISPLAY

12.5-inch LED-backlit HD anti-glare	Dimensions (W x H)	10.63 x 6.4 in (27.7 x 15.6 cm)	
	Diagonal Size	12.5 in (31.75 cm)	
	Surface Treatment	Anti-glare	
	Contrast Ratio	400:1 (typical)	
	Refresh Rate	60 Hz	
	Brightness	200 nit (typical)	
	Pixel Resolution	Pitch	0.2025 mm
		Format	1366 x 768
		Configuration	RGB Stripe
	Backlight	LED	
	PPI	125	
	Viewing Angle	±30° Horizontal, ±10° Vertical (minimum) SVA 30/30/20/10 (Left/Right/Down/Up) (minimum) or 45/45/35/25 (Left/Right/Down/Up) (typical)	

STORAGE AND DRIVES

Internal Storage

Technical Specifications

750 GB 7200 rpm SATA Hard Drive

Drive Weight	0.22 lb (101 g)	
Capacity	750 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)	300 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	1,465,149,168	
Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
Features	ATA Security	

500 GB 7200 rpm SMART SATA II Self Encrypting Drive

Drive Weight	0.25 lbs (115g)	
Capacity	500 GB	
Height	0.37 in (9.5 mm)	
Width	2.50 in (63.5 mm)	
Interface	ATA-8, SATA 2.6, 3.0 Gb/s	
Transfer Rate	Synchronous (maximum)	300 MB/s (Drive Capability)
Seek Time (typical reads, including settling)	Single Track	1 ms
	Average	12 ms
	Maximum	20 ms
Rotational Speed	7200 rpm	
Logical Blocks	976,773,168	
Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
Features	ATA Security	

Technical Specifications

320 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lbs (115g)
	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) 300 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

SATA 6 Gb/s 256 GB, 2.5-inch SATA SED Solid State Drive	Drive Weight	73 Grams
	Capacity	256 GB
	Height	0.276 in (7 mm)
	Width	2.76 in (70 mm)
	Interface	SATA 3 (6 Gb/s)
	Performance	Maximum Sequential Read
		Up to 460 MB/s
	Maximum Sequential Write	
	Up to 260 MB/s	
	Logical Blocks	500,118,192
	Operating Temperature	32° to 158°F (0° to 70°C) [case temp]
	Features	ATA Security; ATA-8 compliant; SATA 3.0; DIPM; TRIM

180 GB 2.5-inch SATA Solid State Drive	Drive Weight	78 Grams
	Capacity	180 GB
	Height	0.276 in (7 mm)
	Width	2.76 in (70 mm)
	Interface	SATA 3 (6 Gb/s)
	Performance	Maximum Sequential Read
		550 MB/s
	Maximum Sequential Write	
	520 MB/s	
	Logical Blocks	351,651,888
	Operating Temperature	32° to 158°F (0° to 70°C) [case temp]
	Features	ATA Security; ATA-8, SATA 3.0; DIPM; TRIM

Technical Specifications

SATA 6 Gb/s 128 GB, 2.5-inch Solid State Drive	Drive Weight	73 Grams	
	Capacity	128 GB	
	Height	0.276 in (7 mm)	
	Width	2.76 in (70 mm)	
	Interface	SATA 3 (6 Gb/s)	
	Performance	Maximum Sequential Read	Maximum Sequential Write
		415 MB/s	175 MB/s
	Logical Blocks	250,069,680	
Operating Temperature		32° to 158°F (0° to 70°C) [case temp]	
Features		ATA Security; ATA-8; SATA 3.0 DIPM; TRIM	

Optical Drives

DVD-ROM Drive	Access Times	Random	< 140 ms CD (typical) < 160 ms DVD (typical)
	Max Data Transfer Rate	24X CD-ROM 8X-DVD	
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
	Supported Media (read)	CD-DA, 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)	8.5GB	
	Transport	Tray Loading	

Technical Specifications

DVD+/-RW SuperMulti DL Drive	Access Times	Random	<140ms CD (typical) < 160 ms DVD (typical)
	Max Data Transfer Rate	24X CD-ROM 8X DVD 24X CD-R 24X CD-RW 8X DVD+R 8X DVD+RW 8X DVD-R 6X DVD-RW 6X - DVD+R Dual Layer 6X - DVD-R Dual Layer 5X DVD-RAM	
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
	Supported Media (read)	CD-DA, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	
	Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM, DVD+R DL, DVD-R DL	
	Max Media Capacity (read)	8.5 GB	
	Max Media Capacity (write)	8.5 GB	
	Transport	Tray Loading	

SECURITY

HP Fingerprint Sensor (optional)	Mobile Voltage Operation	3.0V-3.6V Single Supply
	Operating Temperature	32° - 158°F (0° - 70°C)
	Current Consumption @ 3.3V	Less than 70 mA peak imaging and scrolling Less than 25 mA hardware finger detection Advanced Power Management
	High-Rate Image Capture	Up to 240 image frames /sec
	ESD Resistance	IEC 61000-4-2 Level 4 (±15KV)
	Detection Matrix	192 x 16 Pixels 9.7 mm x 0.81 mm 500 ppi High-Resolution Images

Technical Specifications

NETWORKING/COMMUNICATIONS

Intel® 82579LM Gigabit Network Connection	Ethernet Features	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 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 802.3ab; IEEE 8023. Clauses 40) 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 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE(Energy Efficient Ethernet) Jumbo Frame 9K Auto MDI/MDIX Crossover cable detection
	Power Management Performance Features	ACPI compliant - multiple power modes Energy Detect Low Power Mode(Green Ethernet) TCP/IP/UDP Checksum Offload (configurable) Protocol Offload(ARP & NS) Large send offload and Giant send offload Receiving Side Scaling MACSec Offload (802.3ae) Intel vPro iSCSI Boot
	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 Virtual Cable Doctor for Ethernet cable status
	Interface	PCI Express 1.1 x1 to fully support ASPM L0s/L1 and CLKREQ. NOTE: Intel 82579 PCIe interface is not PCIe compliant. It operates at half of PCIe specification V1.1 (2.5GT/S) speed.
	NIC Device Driver Name	Intel 82579LM/82579V Ethernet Network Connection

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 V.44, 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 T.31
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

Technical Specifications

HP un2430 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), AWS (UTRA FDD Band IV), 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 A, Multi-slot class 10 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-856, IS-2000
	Wireless Parametric Standards	Meets or exceeds TIA/EIA IS-98-D
	Maximum Data Rates	UMTS (HSPA) - 14.4 Mbps (Download), 5.76Mbps (Upload) CDMA (EVDO Release A) - 3.1 Mbps (Download), 1.8Mbps (Upload)
	GPS	Standalone GPS enabled gpsOneXTRATM™
	GPS Bands	L1 - 1575.42 MHz
	Maximum Output Power	GSM/GPRS/EDGE: 32dBm (+/-1) WCDMA: 24dBm (+0.7/-2.3) CDMA: 24dBm (+0.7/-2)
	Maximum Power Consumption	2750mA (peak); 1100mA (average)
	Power Consumption, Idle Not Connected	20 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 158° F (-30° to 70° 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	95% 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

Technical Specifications

HP hs2350 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 II), 1900MHz (UTRA FDD Band II), 900MHz(UTRA FDD Band VIII), 850 MHz (UTRA FDD Band V)
	Wireless Protocol Standards	GSM/GPRS/EDGE: Class B, Multi-slot class 10 operation, coding schemes CS1 - CS4 and MSC1 - MSC9. UMTS/WCDMA: Release 99 and Release 7 Advanced Receiver Type 3i
	Wireless Parametric Standards	Complies with 3GPP specifications
	Maximum Data Rates	UMTS (HSPA) - 21 Mbps (Download), 5.76Mbps (Upload)
	GPS	Standalone, A-GPS (Internet- and Network assisted)
	GPS Bands	1575.42 MHz (± 1.023 MHz)
	Maximum Output Power	GSM/EDGE GSM850 & GSM900 bands GPRS: +33 dBm ± 2 dBm (class 4) EGPRS: +27 dBm ± 3 dBm (class E2) DCS1800 & PCS1900 bands GPRS: +30 dBm ± 2 dBm (class 1) EGPRS: +26 dBm +4 / -3 dBm (class E2) UMTS UTRA FDD Bands +24 dBm +4 / -3 dBm (class 3)
	Maximum Power Consumption	2000mA (peak); 600mA (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	< 12 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 +/- 9%
	Temperature, Operating	14° to 149° F (-10° to 65° C) (full RF performance) 14° to 167° F (-10° to 75° C) (reduced RF performance)
	Temperature, Non-operating, 96 hours (from MIL-STD 202 Method 108)	-22° to 185° F (-30° to 85° C)
	Humidity, Non-operating	85% relative humidity for 48 hours @ 185° F (85° C) (non-condensing)
	Configuration Utilities	HP Connection Manager

Technical Specifications

LED Activity

LED Off - Radio Off;
Solid LED On - Radio On

Intel Centrino Advanced-N Wireless LAN Standards 6205 (2x2)

IEEE 802.11a
IEEE 802.11b
IEEE 802.11g
IEEE 802.11n

Interoperability

Wi-Fi certified
Cisco Compatible Extensions Program compliant with Microsoft Windows 7, Windows Vista and XP (details at: <http://www.hp.com/go/notebooks/WLAN>)

Frequency Band

2.4 GHz and 5GHz

Antenna Structure

2 transmit; 2 receive (2x2)

Data Rates

802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
802.11b: 1, 2, 5.5, 11 Mbps
802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
802.11n: 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 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

17 dBm max

Power Consumption

Transmit: 2.3 Watts (max, with two spatial streams)
Receive: 1 Watt (max with two spatial streams)
Idle mode³: 35 mW (average)
Radio off: 20 mW (max)

Power Management

ACPI compliant power management
802.11 compliant power saving mode

Receiver Sensitivity⁴

54 Mbps: -76 dBm, 6 Mbps: -92 dBm

Antenna Connections

2 U.FL type connectors, 50 ohm nominal impedance

Technical Specifications

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%	
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)
LED Activity	LED Off - Radio OFF; Solid LED On - Radio ON	

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. In Power Save Polling mode 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 BCM943228HM4L 802.11 a/b/g/n WiFi Adapter (2x2)

Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n
Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliant with Microsoft Windows 7, Windows Vista and 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: 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 Version 4) with Microsoft Windows Vista and XP only.
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.

Technical Specifications

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/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 Connections	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. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.

Atheros AR9485 802.11 b/g/n WiFi Adapter (1x1)	Wireless LAN Standards	IEEE 802.11b IEEE 802.11g IEEE 802.11n
	Interoperability	Wi-Fi certified
	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 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	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.
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
Output²	13.5 dBm, nominal
Power Consumption	Transmit: 2.0 W (max) Receive: 1.6 W (max) Associated to Access Point, Idle: 250 mW nominal Wireless Button Off: 100 mW nominal Radio disabled: 75 mW nominal
Power Management	ACPI compliant power management 802.11 compliant power saving mode
Receiver Sensitivity³	72.2 Mbps: -70 dbm, 54 Mbps: -74 dBm, 11 Mbps: -88 dBm , 1 Mbps: -95 dBm
Antenna Connections	High efficiency antenna with spatial diversity, mounted in the display enclosure
Form Factor	PCI-Express Half-MiniCard 1.2
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%
Temperature	Operating 14° to 158° F (-10° to 70° 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).

HP Integrated Module **Bluetooth Specification** 4.0+EDR Compliant



Technical Specifications

with Bluetooth 4.0+EDR 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	-1.5 dBm to 4 dBm (Bluetooth Class II)
	Receiver Sensitivity	Better than -20 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 -14° to 158° F (-10° to 70° C) Non-operating -40° to 212° F (-40° to 100° C)
	Humidity	Operating 0% to 90% Non-operating 0% 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)

Technical Specifications

Synchronization Profile (SYNC)
 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

AUDIO/MULTIMEDIA

Hardware	Implementation	IDT 92HD87 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, dual digital microphone array when equipped with optional webcam

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 Stereo Speaker	Power Rating	2 Watts
	Impedance	4 ohms

POWER

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 87% 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
		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.	

HP 9-cell (100 WHr) Lithium-Ion Primary battery	Dimensions (H x W x L)	0.8 x 2.4 x 8.1in (2 x 6.6 x 20.5cm)
	Weight (max)	1.1lb, (.488kg)
	Cells/Type	Lithium-Ion
	Energy	Voltage 11.25V
		Amp-hour capacity 8.85Ah
		Watt-hour capacity 100Wh
	Temperature	Operating (Charging) 32° to 113° F (0° to 45° C)
		Operating (Discharging) 14° to 122° F (-10° to 50° C)
		Non-operating -4° to 122° F (-20° to 50° C)
	Battery Re-Charge Time	System in OFF or Standby Mode 3.5 to 5 hours
		System ON 4 to 7 hours
	Fuel Gauge LED	No
	Warranty	1 year
	Compatible with optional Travel Battery	Yes

Technical Specifications

HP 6-cell (62 WHr) Lithium-Ion Primary battery

Dimensions (H x W x L)	0.8 x 2.0 x 8.3 in (2.0 x 5.1 x 21.1 cm)
Weight (max)	0.72 lb (0.325 kg)
Cells/Type	6-cell Lithium-Ion
Energy	Watt-hour capacity 62Wh
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 or Standby Mode 2.5 hours
Warranty	1 year
Compatible with optional Travel Battery	Yes

HP 6-cell (55 WHr) Long Life Primary Battery

Dimensions (H x W x L)	0.8 x 1.8 x 8.0in (2.0 x 4.7 x 20.5cm)
Weight (max)	.72lb, (.323kg)
Cells/Type	Lithium-Ion
Energy	Voltage 10.8V
	Amp-hour capacity 5.1Ah
	Watt-hour capacity 55Wh
Temperature	Operating (Charging) 32° to 113° F (0° to 45° C)
	Operating (Discharging) 14° to 122° F (-10° to 50° C)
	Non-operating -4° to 122° F (-20° to 50° C)
Battery Re-Charge Time	System in OFF or Standby Mode 2.5 hours
	System ON 3 to 5 hours
Fuel Gauge LED	No
Warranty	3 years
Compatible with optional Travel Battery	Yes

Technical Specifications

HP 3-cell (31 WHr) Lithium-Ion Primary battery	Dimensions (H x W x L)	0.8 x 1.2 x 8.1 in (2 x 3 x 20.5cm)	
	Weight (max)	0.37lb, (0.166kg)	
	Cells/Type	Lithium-Ion	
	Energy	Voltage	11.1V
		Amp-hour capacity	2.8Ah
		Watt-hour capacity	31Wh
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 122° F (-10° to 50° C)
		Non-operating	-4° to 122° F (-20° to 50° C)
	Battery Re-Charge Time	System in OFF or Standby Mode	2.5 hours
		System ON	3 to 5 hours
	Fuel Gauge LED	No	
	Warranty	1 year	
	Compatible with optional Travel Battery	Yes	

ENVIRONMENTAL

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 for registration status in your country US Federal Energy Management Program (FEMP)		
System Configuration	The configuration used for the Energy Consumption and Declared Noise Emissions data is based on a "Typically Configured Notebook"		
Energy Consumption	115 VAC	230 VAC	100 VAC
Normal Operation	12.21 W	12.96 W	12.29 W
Sleep (Energy Star low power mode)	0.61 W	0.72 W	0.59 W
Off	0.37 W	0.42 W	0.35 W
Heat Dissipation*	115 VAC	230 VAC	100 VAC
Normal Operation	42 BTU/hr	44 BTU/hr	42 BTU/hr
Sleep	2 BTU/hr	2 BTU/hr	2 BTU/hr
Off	1 BTU/hr	1 BTU/hr	1 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		23
Fixed Disk (random writes)		24

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.

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 22% post consumer recycled plastic (by wt.)

This product is greater than 96.1% recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
 - PAPER/Corrugated 404.4 g
- Internal:
 - PLASTIC/Polyethylene low density 12.1 g
 - PLASTIC/EPE-Expanded Polyethylene 61 g
 - PLASTIC/Polyester 6.5 g

Technical Specifications

- The PAPER/Corrugated packaging material is made from 80% recycled content.
- The PLASTIC/Polyethylene high density packaging material is made from 60% recycled content.
- The PLASTIC/EPE-Expanded Polyethylene packaging material is made from 60% recycled content.
- The PLASTIC/Polyester packaging material is made from 60% recycled content.

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

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

MATERIAL USAGE

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

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

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

Technical Specifications

- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBO)
- 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>

Options and Accessories (sold separately and availability may vary by country)

Type	Description	Part #
Memory	HP 2 GB (DDR3 1333 MHz) SODIMM	AT912AA#xxx
	HP 4 GB (DDR3 1333 MHz) SODIMM	AT913AA#xxx
	HP 8 GB (DDR3 1333 MHz) SODIMM	QP013AA#xxx
	HP 2 GB PC3-12800 (DDR3 1600 MHz) SODIMM	H2P63AA#xxx
	HP 4 GB PC3-12800 (DDR3 1600 MHz) SODIMM	H2P64AA#xxx
	HP 8 GB PC3-12800 (DDR3 1600 MHz) SODIMM	H2P65AA#xxx
	NOTE: Full availability of 4 GB or more of memory requires Windows Vista Business 64-bit or Linux. With Windows 32-bit operating systems, the amount of usable memory is dependent upon your configuration, so that above 3 GB all memory may not be available due to system resource requirements. Due to system limitations, DDR3-1600 MHz memory will only be supported at DDR3-1333 MHz.	
Cases	HP Professional Slim Top Load Case	BP848AA
	HP Professional Series Backpack	BP849AA
Docking	HP 2570p Docking Station	A9B77AA
	HP Dual Hinge Notebook Stand	AW661AA
	HP Display and Notebook Stand	AW662AA
Input/Output - Mice	HP 2.4 GHz Wireless Optical Mobile Mouse	LX732AA
	HP Wireless Mobile Mouse	H2L63AA
	HP USB Essential Keyboard/Mouse	H2S75AA
Adapters	HP 90W Slim Adapter	BT796AA
	HP 90W Smart AC/Auto/Air Combo Adapter	AJ652AA
Storage - External Storage	HP Mobile USB DVDRW	A2U57AA
Batteries	HP SX06XL Long Life Notebook Battery	QK644AA
	HP SX09 Notebook Battery	QK645AA
Health and Education	HP 20-Notebook Managed Charging Cart	QL489AA
	HP 20-Notebook Charging Cart	QL488AA
	HP 30-Notebook Managed Charging Cart	QL490AA
	HP Pocket Whiteboard	A0X37AA
Security	HP Docking Station Cable Lock	AU656AA

Options and Accessories (sold separately and availability may vary by country)

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