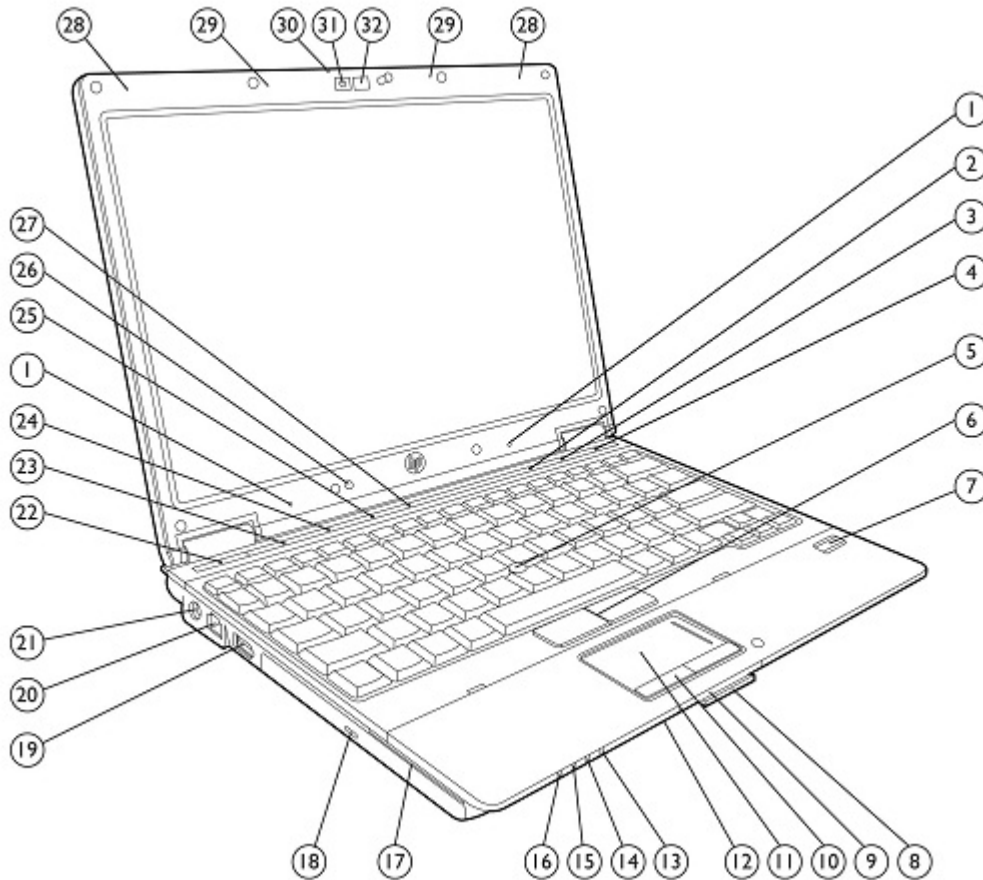


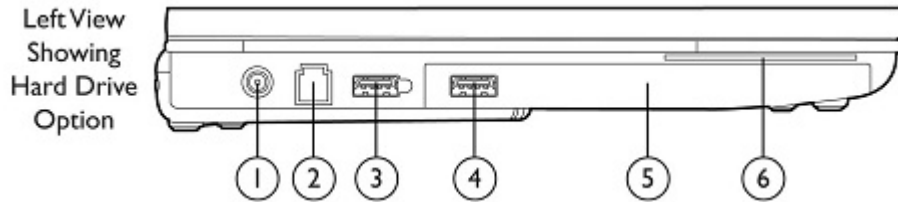
### Overview



- |   |   |
|---|---|
| 1. Dual-microphone array                                  | 17. Integrated Smart Card Reader  |
| 2. Volume mute button with LED indicator                  | 18. Optional optical drive or weight saver* (see below for left view of a 2.5" HDD configuration) |
| 3. Volume down button with LED indicator                  | 19. USB 2.0 Port (powered)  |
| 4. Volume up button with LED indicator                    | 20. RJ-11/modem port  |
| 5. Pointstick   | 21. Power connector   |
| 6. Pointstick buttons (2)                                 | 22. Power button with LED indicator   |
| 7. Optional HP Fingerprint Sensor                         | 23. HP QuickLook 3 button with LED indicator  |
| 8. Display release button                                 | 24. HP QuickWeb button with LED indicator   |
| 9. Business Card slot (for use with Business Card Reader) | 25. Wireless on/off button with LED indicator   |
| 10. Touchpad buttons (2)                                  | 26. Ambient Light Sensor  |
| 11. Touchpad with scroll zone                             | 27. Touchpad on/off button  |
| 12. Speakers  | 28. Two WWAN antennas   |
| 13. Drive activity / HP 3D DriveGuard LED indicator       | 29. Two WLAN antennas   |
| 14. Battery charging LED indicator                        | 30. Webcam LED indicator  |
| 15. Power/standby LED indicator                           | 31. Optional 2 MP Webcam  |
| 16. Wireless on/off LED indicator                         | 32. HP Night Light with on/off button   |

\* Optional optical drive and weight saver are only available with the low voltage processor.

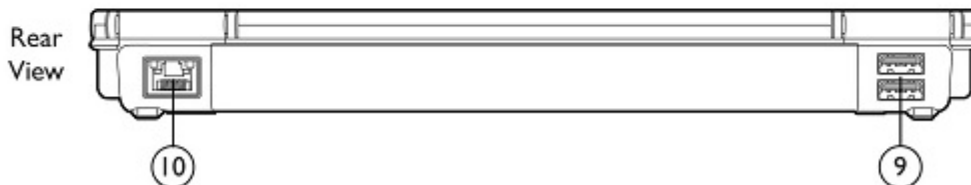
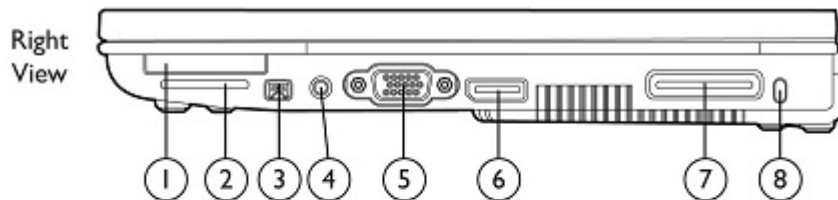
### Overview



1. Power connector
2. RJ-11/modem port
3. USB 2.0 port (powered)
4. USB 2.0 port (not present with weight saver)
5. 2.5-inch internal storage bay\*
6. Integrated Smart Card Reader

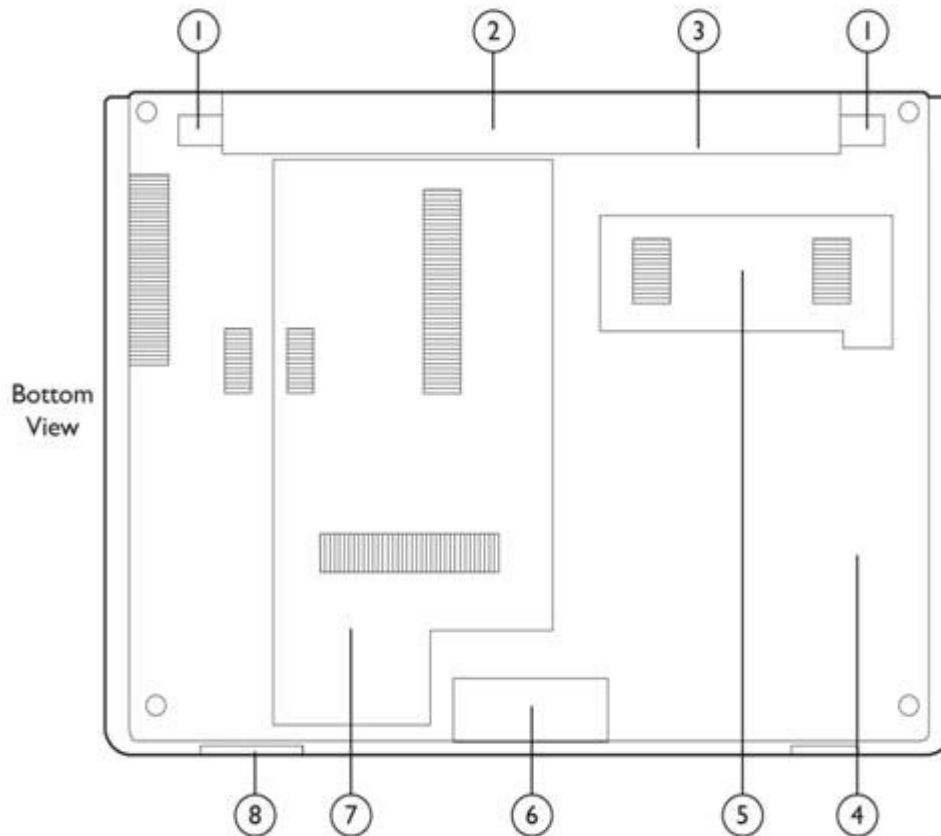
\* With a standard voltage processor, this 2.5-inch bay is used for any available 2.5-inch hard drive or solid state drive; 1.8-inch hard drive bay is not available.

With the low voltage processor and 1.8-inch 250 GB hard drive in 1.8-inch hard drive bay, this 2.5-inch bay can be used for a 2.5-inch 250 GB secondary hard drive, for RAID configuration.



1. ExpressCard/34 slot
2. Secure Digital (SD) slot
3. 1394a port
4. Combo headphone/microphone jack
5. VGA connector (external monitor/projector)
6. DisplayPort
7. Docking connector
8. Kensington Lock slot
9. (2) USB 2.0 ports
10. RJ-45/Ethernet port

### Overview



- |   |  |
|---|--|
| 1. Battery release latch                                  | 5. Wireless module compartment                           |
| 2. Battery bay  | 6. Speakers  |
| 3. SIM slot for WWAN (select models) – inside battery bay | 7. 1.8-inch hard drive bay and memory module compartment |
| 4. 2.5-inch bay   | 8. Bluetooth compartment                                 |

### At A Glance

- Genuine Windows 7 versions, Genuine Windows Vista versions, or FreeDOS
- Choice of an Intel® Core™ i7 or Core i5 standard voltage processor for maximum performance with a fast 7200rpm HDD or an Intel® Core™ i7 low voltage processor with option for an optical drive or secondary hard drive
- 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
- Industrial, business rugged HP DuraCase construction features a full magnesium alloy chassis, magnesium/aluminum display enclosure, metal alloy hinges, and improved display latch; designed to meet the military standard Mil-Std-810G for vibration, dust, humidity, altitude, and high temperature operation\*
- HP Power Assistant to conserve power, increase battery run-time, monitor power needs, report workforce power consumption
- Choice of 9-cell, 6-cell, or 3-cell battery, including HP Long Life batteries, to customize weight, run-time, and battery life to your needs
- Touch-sensitive controls for HP QuickLook 3 (instant access to e-mail, calendar, contacts and tasks), HP QuickWeb, wireless on/off, touchpad on/off, mute, volume down, and volume up
- Flexible wireless connectivity options:
  - Integrated HP un2420 EV-DO/HSPA Mobile Broadband Module provides worldwide Gobi mobile Internet technology with GPS

### Overview

- Integrated Intel Centrino® Advanced-N 6200 802.11 a/b/g/n or Broadcom 802.11 a/b/g/n or b/g wireless LAN module
- Bluetooth® v2.1
- Choice of hard drive: up to 250 GB 7200rpm (2.5-inch) or up to 320 GB (1.8-inch) with HP 3D DriveGuard protection, or 80/160 GB Solid State Drive
- Optional fixed optical drive or secondary hard drive for RAID support available with low voltage processor
- 30.7 cm / 12.1-inch diagonal LED-backlit WXGA display, Ambient Light Sensor
- Intel HD Graphics with dynamic frequency
- Enhanced security features including integrated Smart Card Reader, HP ProtectTools, Computrace LoJack Pro ready, HP SpareKey, HP Disk Sanitizer, TPM 1.2 ;\*\* optional HP Fingerprint Sensor, and optional HP Privacy Filter
- New central management software for HP ProtectTools to manage the security of multiple notebooks from a single point
- DisplayPort for sharper, deeper images
- Optional HP 2540 Docking Station provides additional DisplayPort, eSATA port, four additional USB ports, audio in/out ports, RJ-45, VGA, and new HP Docking Station Cable Lock
- Optional 2 MP Webcam with Business Card Reader Software
- Dual pointing devices (touchpad with scroll zone and pointstick)
- Spill-resistant keyboard with drains, DuraKeys
- HP Night Light
- ExpressCard/34 slot
- Secure Digital (SD) slot

\* 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.

\*\* TPM module disabled where not permitted by law (for example, Russia and China).

### Standard Features (availability may vary by country)

#### Processors

##### Intel Standard Voltage Processor, soldered

Intel Core i5-540M Processor (2.53 GHz, 3 MB L3 cache)\*  
Up to 3.06 GHz with Intel Turbo Boost Technology

##### Intel Low Voltage Processor, soldered

Intel Core i7-640LM Processor (2.13 GHz, 4 MB L3 cache)\*  
Up to 2.93 GHz with Intel Turbo Boost Technology

\* 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.

#### Operating System

##### Preinstalled

Genuine Windows 7 Professional Edition 32\*  
Genuine Windows 7 Professional Edition 64\*  
Genuine Windows 7 Home Premium Edition 32\*  
Genuine Windows 7 Home Basic 32 (select countries)\*  
Genuine Windows Vista Business 32\*\*  
Genuine Windows Vista Home Basic 32\*\*  
FreeDOS

##### Supported

Genuine Windows 7 Home Premium Edition 64\*  
Genuine Windows Vista Business 64\*\*  
Genuine Windows Vista Enterprise 32\*\*  
Genuine Windows Vista Enterprise 64\*\*  
Genuine Windows 7 Enterprise 32\*  
Genuine Windows 7 Enterprise 64\*  
Genuine Windows 7 Ultimate 32\*  
Genuine Windows 7 Ultimate 64\*

##### Certified

SuSE Linux Enterprise Desktop 11

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

\*\* Certain Windows Vista product features require advanced or additional hardware. See: <http://www.microsoft.com/windowsvista/getready/hardwarereqs.msp> and <http://www.microsoft.com/windowsvista/getready/capable.msp> for details. Windows Vista Upgrade Advisor can help you determine which features of Windows Vista will run on your computer. To download the tool, visit: <http://www.windowsvista.com/upgradeadvisor>.

#### Chipset

Mobile Intel QM57 Express Chipset

### Standard Features (availability may vary by country)

#### 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 an Intel Centrino® Advanced-N 6200 series 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 (AMT) 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 3rd 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 3rd party software providers. Compatibility with future "virtual appliances" is yet to be determined.

#### Graphics

Intel HD Graphics with dynamic frequency  
Microsoft DirectX 10.1 (Shader Model 4.1)

#### Display

**Internal** 30.7 cm / 12.1-inch diagonal LED-backlit WXGA anti-glare (1280 x 800)  
Ambient Light Sensor  
Optional HP Privacy Filter

**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.

#### Memory

**Standard** DDR3 PC3-10600 SDRAM (1333 MHz)\*  
Two SODIMM slots supporting dual-channel memory  
1024 MB, 2048 MB and 4096 MB SODIMMs

**Maximum** Upgradeable to 8192 MB with 4096 MB SODIMMs in slots 1 and 2

**Dual-channel** Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory channels.

\* Memory bus runs at a maximum of 1066 MHz.

**NOTE:** Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed. Full availability of 4 GB or more of memory requires a Windows 64-bit operating system 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.

### Standard Features (availability may vary by country)

#### Communications

Integrated Intel Gigabit Ethernet (10/100/1000 NIC)\*  
56K V.92 modem\*\*

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

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

#### Wireless Devices

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

#### HP un2420 EV-DO/HSPA Mobile Broadband Module

Integrated mobile broadband module with Gobi global mobile Internet technology that provides connectivity to both CDMA (EVDO) and UMTS (HSPA) networks. It also provides GPS functionality for various mapping applications and security applications such as Computrace LoJack Pro Premium for HP ProtectTools.

**NOTE:** Separately purchased mobile network operator service is required.

Two 850/900/1575/1800/1900/2100 MHz antennas integrated in the top of the display panel support current and future WWAN technologies.

#### All 802.11 integrated wireless LAN options

Wi-Fi Certified\*

Cisco Compatible Extensions support

Wired Equivalent Privacy (WEP) support up to 128-bit keys

Wi-Fi Protected Access (WPA) and WPA2 support

802.1x authentication support, including EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, and LEAP

Advanced Encryption Standard (AES) support

Two antennas integrated in the display enclosure

#### Intel Centrino Advanced-N 6200 (2x2)

Integrated support for 802.11a, b, g, and n\*

2 transmit, 2 receive antennas

Up to 300 mbps data rate

#### Broadcom 4322AGN 802.11a/b/g/n Wi-Fi Adapter

Integrated support for 802.11a, b, g, and n

Up to 300 mbps data rate

#### Broadcom 4312G 802.11b/g WiFi Adapter

Integrated support for 802.11 b and g

Up to 54 mbps data rate

#### HP Integrated Module with Bluetooth Wireless Technology

Bluetooth Specification v2.1 compliant

Works with a wide range of Bluetooth devices

\* In countries where 802.11n is not allowed, this capability is not enabled (802.11a/b/g only).

### Standard Features (availability may vary by country)

#### 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 DuraKeys is a clear coating applied over the notebook keyboard that helps protect the finish and the printed characters on the keys. HP DuraFinish helps protect the finish on the keyboard deck, graphics, and icons from normal wear and tear.

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

#### Touch-sensitive controls

Touch-sensitive controls provide easy access to the following features: HP QuickLook 3, HP QuickWeb, wireless on/off, touchpad on/off, volume mute, volume down, volume up.

#### Dual Pointing devices

Touchpad with scroll zone, two pick buttons  
Pointstick, two additional pick buttons

#### Expansion card slots

##### ExpressCard/34 slot

Supports ExpressCard/34

##### Integrated Smart Card Reader

Compatible with ISO 7816 compliant Smart Cards  
PC/SC interface support

##### Secure Digital slot

Supports SD (Secure Digital), MultiMediaCard

#### Internal Storage

##### Standard Voltage Processor Configurations

##### 2.5-inch storage bay

2.5-inch 250GB 7200 rpm SMART SATA II Hard Drive  
-or-  
2.5-inch 80/160 GB Solid State Drive

**NOTE:** 1.8-inch hard drive bay is not available with a standard voltage processor.

##### Low Voltage Processor Configurations

##### 1.8-inch hard drive bay

1.8-inch 160/250/320 GB 5400 rpm SMART SATA II Hard Drive  
-or-  
1.8-inch 80/160 GB Solid State Drive

##### 2.5-inch secondary hard drive for RAID support\*

2.5-inch 250 GB 7200 rpm SMART SATA II Hard Drive

\* Requires 1.8-inch 250 GB 5400 rpm hard drive in 1.8" hard drive bay.

**NOTE:** These hard drives are customer removable and will withstand multiple insertion/removal cycles. Up to 15 GB is reserved for the system recovery software.

### Standard Features (availability may vary by country)

|   |   |
|---|---|
| <b>HP 3D DriveGuard</b><br>(Windows models with hard drives 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. |
|---|---|

---

|   |                                  |  |
|---|----------------------------------|--|
| <b>Fixed Optical Bay</b><br>(low voltage processor configurations only) | <b>9.5 mm SATA optical drive</b> | DVD+/-RW SuperMulti DL Drive<br>DVD-ROM Drive                      |
|   | -or-                             |  |
|   | <b>Secondary hard drive*</b>     | 2.5-inch 250 GB 7200 rpm SMART SATA II Hard Drive for RAID support |
|   | -or-                             |  |
|   | <b>Weight Saver</b>              |  |

\* Requires 1.8-inch 250 GB 5400 rpm hard drive in 1.8-inch hard drive bay and a low voltage processor.

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|                               |  |
|-------------------------------|--|
| <b>External Optical Drive</b> | Optional HP External USB CD/DVD R/RW Drive |
|-------------------------------|--|

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|                   |  |   |
|-------------------|--|---|
| <b>Interfaces</b> | <b>ExpressCard/34 slot</b>             | One   |
|                   | <b>Smart Card Reader</b>               | One   |
|                   | <b>External monitor</b>                | Two – (1) DisplayPort, (1) VGA  |
|                   | <b>Secure Digital slot</b>             | One   |
|                   | <b>1394a</b>                           | One   |
|                   | <b>Combo headphone/microphone jack</b> | One   |
|                   | <b>Power connector</b>                 | One   |
|                   | <b>RJ-11/modem</b>                     | One   |
|                   | <b>RJ-45/Ethernet</b>                  | One   |
|                   | <b>USB 2.0</b>                         | Three (including one powered)<br>Fourth USB 2.0 port available on configurations with 2.5-inch hard drive |
|                   | <b>Docking connector</b>               | For HP 2540 Docking Station   |

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### Standard Features (availability may vary by country)

#### Audio/Visual

HD audio (HP Premier Sound)  
Integrated dual-microphone array  
Integrated speakers  
Touch-sensitive controls for volume up, volume down, and mute  
Combo headphone/microphone jack

Optional 2 MP webcam with Business Card Reader software

- Supports videoconferencing and still image capture
- Large image sensor for excellent color matching and good low light sensitivity
- Up to 30 frames/sec
- AutoMacro focus lens
- Video capture at VGA, 1.3 Mpixel, and 2 Mpixel resolutions
- 16-bit true color (camera sensors output YCrCb format among others)

#### Software

##### Preinstalled software with Windows operating system

HP Recovery Manager (available with Windows 7 or Vista only)  
HP Support Assistant (available with Windows 7 or Vista only)  
HP ProtectTools Security Manager  
HP QuickLaunch Buttons Software  
HP QuickLook 3  
HP QuickWeb  
HP Power Assistant  
HP Connection Manager 3.1  
HP Wireless Assistant  
HP DayStarter  
Microsoft Office 2010 preloaded (purchase of a Product Key required to activate a full Office 2010 suite)\*  
McAfee Total Protection\*\*  
PDF Complete Special Edition\*\*\*  
Roxio Creator Business 10 (select models)  
InterVideo WinDVD (select models)  
Synaptics Touchpad Driver  
HP Webcam Software  
WinZip 14.5 (trial version)

##### Additional software available from the web

HP SoftPaq Download Manager  
HP Client Manager Software  
HP Client Management Solutions  
Java Card Security for HP ProtectTools

\* Microsoft Office 2010 Preloaded includes reduced functionality versions of Word and Excel. Purchase of Product Key required to activate full Office 2010 suite available at participating resellers/retailers and <http://www.office.com>.

\*\* 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.

\*\*\* 60 day trial; purchase license afterwards for full functionality

### Standard Features (availability may vary by country)

**HP Recovery Manager** Models shipped with Windows 7 or Windows Vista include HP Recovery Manager. HP Recovery Manager enables fast recovery of the factory preinstalled image if the system becomes corrupted or if important system files are accidentally deleted. Up to 15 GB of the hard drive is reserved for the system recovery software.

### Security

#### Standard Features

HP ProtectTools Security Manager  
Integrated Smart Card Reader  
Enhanced Pre-Boot Security  
HP SpareKey  
One-Step Logon  
Setup Password  
DriveLock Password  
TPM 1.2 Embedded Security Chip\*  
TPM Enhanced DriveLock\*  
HP Disk Sanitizer  
Kensington Lock slot  
Support for Computrace\*\* LoJack Pro for HP ProtectTools

#### Optional Features

**HP Fingerprint Sensor** Enhanced sensor scans the fingerprint to uniquely identify and authenticate a person.

**HP Privacy Filter** Narrows viewing area so that screen data is visible only to persons directly in front of the monitor.

**Computrace\*\* LoJack Pro Premium for HP ProtectTools with GPS Tracking** Subscription based security solution providing the ability to track, initiate physical recovery, conduct asset management, and perform remote data delete by utilizing GPS technology. GPS functionality requires HP un2420 EV-DO/HSPA Mobile Broadband Module.

\* TPM module disabled where use is restricted by law; for example, Russia and China.

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

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

### Standard Features (availability may vary by country)

#### **HP ProtectTools Security Manager with Central Management**

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

- Credential Manager for HP ProtectTools
- Device Access Manager for HP ProtectTools
- Drive Encryption for HP ProtectTools
- File Sanitizer for HP ProtectTools
- Privacy Manager for HP ProtectTools (Chat & Sign)
- Embedded Security for HP ProtectTools
- Computrace LoJack Pro for HP ProtectTools

HP ProtectTools is now centrally manageable with the capability to manage notebooks from a single point. Security is management ready out of the box, in partnership with Digital Persona. New features address requirements that customers expect from a centrally managed security solution such as user provisioning, credential reset, and credential revocation.

HP ProtectTools provides two separate management solutions, targeted at the enterprise and the SMB:

- **Digital Persona Pro AD:** Designed for the enterprise customer. Integrates with Active Directory and gives IT Managers the ability to provision users, create login policies based on passwords, biometrics or smartcards. Management features also include remote credential recovery in case the user forgets the password, loses the smartcard or cannot use the fingerprint reader for any reason. In addition, advanced auditing capabilities are also built in. Digital Persona Pro AD is available now.
- **Digital Persona Pro Workgroup:** Designed for the small business customer. Provides features similar to the Active Directory version, but for workgroups. Workgroup activation is built into HP ProtectTools, and activation of up to five seats are completely free.

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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. Fast Charge Technology does not apply to 9- cell primary batteries.

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#### **Battery**

##### **Primary Battery**

HP 9-cell 93 WHr Li-Ion Primary Battery  
HP 6-cell 62 WHr Li-Ion Primary Battery  
HP 3-cell 31 WHr Li-Ion Primary Battery  
HP Long Life 6-cell 55 WHr Li-Ion Primary Battery

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### Standard Features (availability may vary by country)

#### Battery Life

|  | Intel Standard Voltage Processor | Intel Low Voltage Processor |
|--|----------------------------------|-----------------------------|
| <b>HP 9-cell Primary Battery</b>           | Up to 11 hours 30 minutes        | Up to 12 hours 30 minutes   |
| <b>HP 6-cell Primary Battery</b>           | Up to 7 hours 30 minutes         | Up to 8 hours               |
| <b>HP Long Life 6-cell Primary Battery</b> | Up to 7 hours                    | Up to 7 hours 30 minutes    |
| <b>HP 3-cell Primary Battery</b>           | Up to 3 hours 45 minutes         | Up to 4 hours               |
| <b>HP Long Life 3-cell Primary Battery</b> | Up to 3 hours 15 minutes         | Up to 3 hours 30 minutes    |

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

#### System Standby Time

Up to 1 week

#### 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

#### Docking and Stands

HP 2540 Docking Station  
HP USB 2.0 Docking Station  
HP Essential USB 2.0 Port Replicator  
HP Dual Hinge Notebook Stand  
HP Display and Notebook Stand  
HP Basic Adjustable Stand  
HP Adjustable Display Stand  
HP Adjustable Dual Display Stand

**NOTE:** Some HP Docking stations may not support every feature of some HP Notebook models. Please refer to the individual docking station documentation for specific information about supported features.

#### Service and Support

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

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

Options (availability may vary by country)

**NOTE:** Options/capabilities listed in the QuickSpecs represent those capabilities available through Base Units or Build to Order configurations. The various product features and capabilities will vary in terms of configurable vs. aftermarket options (AMOs). There may be options and capabilities available through CTO that are not available as AMOs.

|                            |   |         |
|----------------------------|---|---------|
| <b>Memory</b>              | HP 1 GB (DDR3 1333 MHz) SODIMM              | AT911AA |
|                            | HP 2 GB (DDR3 1333 MHz) SODIMM              | AT912AA |
|                            | HP 4 GB (DDR3 1333 MHz) SODIMM              | AT913AA |
| <hr/>                      |   |         |
| <b>Storage</b>             | HP External USB Drive CD/DVD R/RW           | FS943AA |
| <hr/>                      |   |         |
| <b>Expansion Solutions</b> | HP 2540 Docking Station                     | VU895AA |
|                            | HP USB 2.0 Docking Station                  | FQ834AA |
|                            | HP Essential USB 2.0 Port Replicator        | AQ731AA |
|                            | HP Dual Hinge Notebook Stand                | AW661AA |
|                            | HP Display & Notebook Stand                 | AW662AA |
|                            | HP Adjustable Display Stand                 | AW663AA |
|                            | HP Adjustable Dual Display Stand            | AW664AA |
| <hr/>                      |   |         |
| <b>Communications</b>      | HP un2420 EVDO/HSPA Mobile Broadband Module | WD301AA |
| <hr/>                      |   |         |
| <b>Power</b>               | 65W Smart AC Adapter                        | ED494AA |
|                            | 90W Smart AC/Auto/Air Combo Adapter         | AJ652AA |
|                            | HP 65W Slim Adapter                         | AX727AA |
|                            | HP Smart 65W Travel AC Adapter              | AU155AA |
|                            | 90W Smart AC Adapter                        | ED495AA |
|                            | HP 6-Cell Li-Ion Primary Battery            | EH767AA |
|                            | HP 9-Cell Li-Ion Primary Battery            | BJ803AA |

### Options (availability may vary by country)

|                               |  |         |
|-------------------------------|--|---------|
| <b>Carrying Cases</b>         | HP Executive Leather Case                | RR316AA |
|                               | HP Deluxe Roller Case                    | GD405AA |
|                               | HP Professional Series Carrying Case     | AT886AA |
|                               | HP Professional Series Backpack          | AT887AA |
|                               | HP Professional Series Messenger         | AT888AA |
|                               | HP Professional Series Designer Tote     | AT889AA |
|                               | HP Professional Series Slip Case         | AT890AA |
|                               | HP Elite Professional Series Quick Case  | AT892AA |
|                               | HP Elite 12.1 Slip Case                  | AY520AA |
|                               | HP Elite Leather Messenger Case          | AX676AA |
|                               | HP Elite Slim Top Load Case              | AX680AA |
| HP Elite Series Designer Tote | AT891AA                                  |         |
| <hr/>                         |  |         |
| <b>Security</b>               | HP/Kensington MicroSaver Cable Lock      | PC766A  |
|                               | HP Notebook Cable Lock                   | AY475AA |
|                               | HP Docking Station Cable Lock            | AU656AA |
|                               | HP 12.1" Display Privacy Filter          | AJ356AA |
| <hr/>                         |  |         |
| <b>Input/Output Devices</b>   | USB PS/2, optical, 2-Button scroll Mouse | DC369A  |
|                               | HP USB Optical Travel Mouse              | RH304AA |
|                               | HP Mobile Audio Speakers                 | FS944AA |

### Memory

DDR3 PC3-10600 SDRAM (1333 MHz)\*

Two SODIMM slots supporting dual-channel memory

SODIMM sizes supported: 1024 MB, 2048 MB and 4096 MB

#### Standard Memory

- 2048 MB (2048 MB x 1)
- 3072 MB (2048 MB + 1024 MB)
- 4096 MB (4096 MB x 1)
- 4096 MB (2048 MB x 2)
- 6144 MB (4096 MB + 2048 MB)
- 8192 MB (4096 MB x 2)

#### Optional Memory Upgrades

Support for up to 8192 MB of memory with the installation of optional DDR3 SDRAM memory kits. Both memory slots are user accessible. Please refer to the Hardware and Software Guide for installation procedures. Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

| Up to   | Slot 1  | Slot 2  |
|---------|---------|---------|
| 3072 MB | 2048 MB | 1024 MB |
| 4096 MB | 2048 MB | 2048 MB |
| 4096 MB | 4096 MB | empty   |
| 6144 MB | 4096 MB | 2048 MB |
| 8192 MB | 4096 MB | 4096 MB |

\* Memory bus runs at a maximum of 1066 MHz.

**NOTE:** This chart does not represent all possible memory configurations. Due to the non-industry standard nature of some third-party memory modules, we strongly recommend using only HP branded memory modules to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed. Availability of 4 GB or more of memory requires Windows Vista Business 64-bit or Linux. With Windows 32-bit operating systems, memory above 3 GB may not all be available due to system resource requirements.

#### Memory Upgrades

HP 1 GB (DDR3 1333 MHz) SODIMM

AT911AA

HP 2 GB (DDR3 1333 MHz) SODIMM

AT912AA

HP 4 GB (DDR3 1333 MHz) SODIMM

AT913AA

### Storage

#### Internal Storage Device

##### Standard Voltage Processor Configurations

| Hard Drives (2.5-inch SMART SATA II) | Quantity Supported | Drive Bay            |
|--------------------------------------|--------------------|----------------------|
| 250 GB 7200 rpm                      | One                | 2.5-inch storage bay |
| - or -                               |                    |                      |
| Solid State Drive (2.5-inch)         |                    |                      |
| 80 GB Solid State Drive              | One                | 2.5-inch storage bay |
| 160 GB Solid State Drive             |                    |                      |

**NOTE:** 1.8-inch hard drive bay is not available with a standard voltage processor.

##### Low Voltage Processor Configurations

| Hard Drives (1.8-inch SMART SATA II) | Quantity Supported | Drive Bay                     |
|--------------------------------------|--------------------|-------------------------------|
| 160 GB 5400 rpm                      | One                | Dedicated 1.8" hard drive bay |
| 250 GB 5400 rpm                      |                    |                               |
| - or -                               |                    |                               |
| Solid State Drive (1.8-inch)         |                    |                               |
| 80 GB Solid State Drive              | One                | Dedicated 1.8" hard drive bay |
| 160 GB Solid State Drive             |                    |                               |

#### Secondary Hard Drive for RAID\*

(2.5-inch SMART SATA II)

|                 |     |                      |
|-----------------|-----|----------------------|
| 250 GB 7200 rpm | One | 2.5-inch storage bay |
|-----------------|-----|----------------------|

\* Requires 1.8-inch 250 GB 5400 rpm hard drive in 1.8-inch hard drive bay.

#### Optical Drive Support

**NOTE:** Internal optical drive supported on low voltage processor configurations only.

| Fixed optical drives (95mm SATA)              | Quantity Supported | Drive Bay         |
|---|--------------------|-------------------|
| DVD+/-RW SuperMulti DL Drive<br>DVD-ROM Drive | One                | Fixed optical bay |

| External Optical Drives | Quantity Supported | Optional Expansion Unit           |
|-------------------------|--------------------|-----------------------------------|
| CD/DVD R/RW Drive       | One                | HP External USB CD/DVD R/RW Drive |

### Technical Specifications

|                    |  |   |
|--------------------|--|---|
| <b>System Unit</b> | <b>Dimensions (HxWxD)</b>  | 1.10 in (at front) x 11.1 in x 8.4 in<br>28 mm (at front) x 282.2 mm x 213.4 mm<br>1.34 in (34 mm) height at rear   |
|                    | <b>Weight</b>  | Starting at 3.38 lb (1.53 kg) with weight saver (no optical drive)<br>Starting at 3.64 lb (1.65 kg) with optical drive  |
|                    | <b>NOTE:</b> Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components. Weight includes 1.8-inch hard drive, 3-cell battery, and wireless LAN. |   |
|                    | <b>Stand-Alone Power Requirements (AC Power)</b>   | Nominal Operating Voltage 18.5 V<br>Average Operating Power Standard Voltage: 14.0 W<br>Low Voltage: 13.5 W<br>Max Operating Power < 65 W   |
|                    | <b>Temperature</b>   | Operating 32° to 95° F (0° to 35° C) (not writing optical)<br>41° to 95° F (5° to 35° C) (writing optical)<br>Non-operating -4° to 140° F (-20° to 60° C)   |
|                    | <b>Relative Humidity</b>   | Operating 10% to 90%, non-condensing<br>Non-operating 5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature  |
|                    | <b>Shock</b>   | Operating 125 G, 2 ms, half-sine<br>Non-operating 200 G, 2 ms, half-sine  |
|                    | <b>Random Vibration</b>  | Operating 0.75 grms<br>Non-operating 1.50 grms  |
|                    | <b>Altitude (unpressurized)</b>  | Operating -50 to 10,000 ft (-15.24 to 3,048 m)<br>Non-operating -50 to 40,000 ft (-15.24 to 12,192 m)   |
|                    | <b>Industry Standard Certifications</b>  | UL Yes<br>CSA Yes<br>FCC Compliance Yes<br>ENERGY STAR® Select models*<br>EPEAT Registered Gold in United States**<br>ICES Yes<br>GS Yes<br>Australia / NZ A-Tick Compliance Yes<br>CCC Yes<br>Japan VCCI Compliance Yes<br>KCC Yes<br>BSMI Yes<br>CE Marking Compliance Yes<br>BNCI or BELUS Yes<br>CIT Yes<br>GOST Yes<br>Saudi Arabian Compliance (ICCP) Yes |

### Technical Specifications

|                 |     |
|-----------------|-----|
| SABS            | Yes |
| UKRSERTCOMPUTER | Yes |

\* Configurations of the HP EliteBook 2540p that are ENERGY STAR qualified are identified as HP EliteBook 2540p ENERGY STAR on HP websites and on [www.energystar.gov](http://www.energystar.gov).

\*\* EPEAT Gold Registered in U.S. EPEAT registration varies by country. See [www.epeat.net](http://www.epeat.net) for registration status by country.

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

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|                                      |  |  |   |
|--------------------------------------|--|--|---|
| <b>HP 65W Smart AC Adapter</b>       | <b>Dimensions</b>  | 4.17 x 1.85 x 1.1 in (10.6 x 4.7 x 2.8 cm)       |   |
|                                      | <b>Weight</b>  | 0.62 lb (280 g)                                  |   |
|                                      | <b>Input</b>   | 100 to 240 VAC                                   |   |
|                                      |  | Input Efficiency                                 | 87% min at 115 VAC  |
|                                      | <b>Output</b>  | 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                                   |
|                                      | <b>Connector</b>   | Output current limit                             | <11A, Over voltage protection- 29V max automatic shutdown |
|                                      |  | 3 pin/grounded, mates with interchangeable cords |   |
|                                      | <b>Environmental Design</b>  | 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%  |
| Storage Humidity                     |  | 10% to 90%                                       |   |
| <b>EMI and Safety Certifications</b> | 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. |  |   |

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### Displays

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### Technical Specifications

|  |   |                                |            |
|--|---|--------------------------------|------------|
| <b>12.1-inch LED-backlit<br/>WXGA anti-glare</b> | <b>Active Area (W x H)</b>  | 10.3 x 6.4 in (26.1 x 16.3 cm) |            |
|  | <b>Diagonal Size</b>  | 12.1 in (30.7 cm)              |            |
|  | <b>Surface Treatment</b>  | Anti-glare                     |            |
|  | <b>Contrast Ratio</b>   | 400:1 (typical)                |            |
|  | <b>Refresh Rate</b>   | 60 Hz                          |            |
|  | <b>Brightness</b>   | 200 nit (typical)              |            |
|  | <b>Pixel Resolution</b>   | <b>Pitch</b>                   | 0.204 mm   |
|  |   | <b>Format</b>                  | 1280 x 800 |
|  |   | <b>Configuration</b>           | RGB Stripe |
|  | <b>Backlight</b>  | LED                            |            |
| <b>PPI</b>                                       | 125   |                                |            |
| <b>Viewing Angle</b>                             | ±30° Horizontal, ±10° Vertical (minimum) SVA<br>30/30/20/10 (Left/Right/Down/Up) (minimum) or<br>45/45/35/25 (Left/Right/Down/Up) (typical) |                                |            |

### Internal Storage

|  |  |   |                             |
|--|--|---|-----------------------------|
| <b>320 GB 7200 rpm SATA<br/>Hard Drive</b> | <b>Drive Weight</b>  | 0.25 lbs (115g)                                   |                             |
|  | <b>Capacity</b>  | 320 GB  |                             |
|  | <b>Height</b>  | 0.37 in (9.5 mm) or on some models 0.28 in (7 mm) |                             |
|  | <b>Width</b>   | 2.75 in (70 mm)                                   |                             |
|  | <b>Interface</b>   | ATA-8, SATA 2.6, 3.0 Gb/s, NCQ                    |                             |
|  | <b>Transfer Rate</b>                                       | <b>Synchronous (maximum)</b>                      | 150 MB/s (Drive Capability) |
|  | <b>Seek Time</b><br>(typical reads, including<br>settling) | <b>Single Track</b>                               | 1.5ms                       |
|  |  | <b>Average</b>                                    | 11ms                        |
|  |  | <b>Maximum</b>                                    | 22ms                        |
|  | <b>Rotational Speed</b>                                    | 7200 rpm  |                             |
|  | <b>Logical Blocks</b>                                      | 625,142,448                                       |                             |
|  | <b>Operating Temperature</b>                               | 32° to 140° F (0° to 60° C) [case temp]           |                             |
| <b>Features</b>                            | ATA Security   |   |                             |

### Technical Specifications

|  |  |  |       |
|--|--|--|-------|
| <b>250 GB 7200 rpm SATA<br/>Hard Drive</b> | <b>Drive Weight</b>  | 0.25 lbs (115g)  |       |
|  | <b>Capacity</b>  | 250 GB   |       |
|  | <b>Height</b>  | 0.37 in (9.5 mm) or on some models 0.28 in (7 mm)        |       |
|  | <b>Width</b>   | 2.75 in (70 mm)  |       |
|  | <b>Interface</b>   | ATA-8, SATA 2.6, 3.0 Gb/s, NCQ                           |       |
|  | <b>Transfer Rate</b>                                       | <b>Synchronous</b> (maximum) 150 MB/s (Drive Capability) |       |
|  | <b>Seek Time</b><br>(typical reads, including<br>settling) | <b>Single Track</b>                                      | 1.5ms |
|  |  | <b>Average</b>   | 11ms  |
|  |  | <b>Maximum</b>   | 22ms  |
|  | <b>Rotational Speed</b>                                    | 7200 rpm   |       |
|  | <b>Logical Blocks</b>                                      | 488,397,168  |       |
|  | <b>Operating Temperature</b>                               | 32° to 140° F (0° to 60° C) [case temp]                  |       |
|  | <b>Features</b>  | ATA Security   |       |

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|   |  |  |      |
|---|--|--|------|
| <b>320 GB 5400 rpm<br/>1.8" SATA Hard Drive</b> | <b>Drive Weight</b>  | 0.13 lbs (62 g)  |      |
|   | <b>Capacity</b>  | 320 GB   |      |
|   | <b>Height</b>  | 0.31 in (8 mm)   |      |
|   | <b>Width</b>   | 2.12 in (54 mm)  |      |
|   | <b>Interface</b>   | ATA-8, SATA 2.6, 3.0 Gb/s                              |      |
|   | <b>Transfer Rate</b>                                       | <b>Synchronous</b> (maximum) 150 MB/s (Drive Capacity) |      |
|   | <b>Seek Time</b><br>(typical reads, including<br>settling) | <b>Single Track</b>                                    | 3ms  |
|   |  | <b>Average</b>   | 15ms |
|   |  | <b>Maximum</b>   | 26ms |
|   | <b>Rotational Speed</b>                                    | 5400 rpm   |      |
|   | <b>Logical Blocks</b>                                      | 625,142,448  |      |
|   | <b>Operating Temperature</b>                               | 32° to 140° F (0° to 60° C) [case temp]                |      |
|   | <b>Features</b>  | ATA Security   |      |

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### Technical Specifications

|   |   |  |      |
|---|---|--|------|
| <b>250 GB 5400 rpm<br/>1.8" SATA Hard Drive</b> | <b>Drive Weight</b>                                     | 0.13 lbs (62 g)  |      |
|   | <b>Capacity</b>   | 250 GB   |      |
|   | <b>Height</b>   | 0.31 in (8 mm)   |      |
|   | <b>Width</b>  | 2.12 in (54 mm)  |      |
|   | <b>Interface</b>  | ATA-8, SATA 2.6, 3.0 Gb/s                              |      |
|   | <b>Transfer Rate</b>                                    | <b>Synchronous</b> (maximum) 150 MB/s (Drive Capacity) |      |
|   | <b>Seek Time</b><br>(typical reads, including settling) | <b>Single Track</b>                                    | 3ms  |
|   |   | <b>Average</b>   | 15ms |
|   |   | <b>Maximum</b>   | 26ms |
|   | <b>Rotational Speed</b>                                 | 5400 rpm   |      |
|   | <b>Logical Blocks</b>                                   | 488,397,168  |      |
|   | <b>Operating Temperature</b>                            | 32° to 140° F (0° to 60° C) [case temp]                |      |
|   | <b>Features</b>   | ATA Security   |      |

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|   |   |  |      |
|---|---|--|------|
| <b>160 GB 5400 rpm<br/>1.8" SATA Hard Drive</b> | <b>Drive Weight</b>                                     | 0.13 lbs (62 g)  |      |
|   | <b>Capacity</b>   | 160 GB   |      |
|   | <b>Height</b>   | 0.31 in (8 mm)   |      |
|   | <b>Width</b>  | 2.12 in (54 mm)  |      |
|   | <b>Interface</b>  | ATA-8, SATA 2.6, 1.5 Gb/s                              |      |
|   | <b>Transfer Rate</b>                                    | <b>Synchronous</b> (maximum) 150 MB/s (Drive Capacity) |      |
|   | <b>Seek Time</b><br>(typical reads, including settling) | <b>Single Track</b>                                    | 3ms  |
|   |   | <b>Average</b>   | 15ms |
|   |   | <b>Maximum</b>   | 26ms |
|   | <b>Rotational Speed</b>                                 | 5400 rpm   |      |
|   | <b>Logical Blocks</b>                                   | 312,581,808  |      |
|   | <b>Operating Temperature</b>                            | 32° to 140° F (0° to 60° C) [case temp]                |      |
|   | <b>Features</b>   | ATA Security   |      |

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### Technical Specifications

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

|   |                              |  |                                 |
|---|------------------------------|--|---------------------------------|
| <b>160 GB<br/>1.8-inch SATA Solid State<br/>Drive</b> | <b>Weight</b>                | 0.08 lbs (35 g)                        |                                 |
|   | <b>Capacity</b>              | 160 GB                                 |                                 |
|   | <b>Height</b>                | 0.19 in (5 mm)                         |                                 |
|   | <b>Width</b>                 | 2.12 in (54 mm)                        |                                 |
|   | <b>Interface</b>             | ATA-7 / SATA 2.6                       |                                 |
|   | <b>Performance</b>           | <b>Maximum Sequential<br/>Read</b>     | <b>Maximum Sequential Write</b> |
|   |                              | 250 MB/s                               | 70 MB/s                         |
|   | <b>Logical Blocks</b>        | 312,581,808                            |                                 |
|   | <b>Operating Temperature</b> | 32° to 158°F (32° to 70°C) [case temp] |                                 |
| <b>Features</b>                                       | ATA Security                 |  |                                 |

|  |                              |  |                                 |
|--|------------------------------|--|---------------------------------|
| <b>80 GB<br/>1.8-inch SATA Solid State<br/>Drive</b> | <b>Weight</b>                | 0.08 lbs (35 g)                        |                                 |
|  | <b>Capacity</b>              | 80 GB                                  |                                 |
|  | <b>Height</b>                | 0.19 in (5 mm)                         |                                 |
|  | <b>Width</b>                 | 2.12 in (54 mm)                        |                                 |
|  | <b>Interface</b>             | ATA-7 / SATA 2.6                       |                                 |
|  | <b>Performance</b>           | <b>Maximum Sequential<br/>Read</b>     | <b>Maximum Sequential Write</b> |
|  |                              | 250 MB/s                               | 70 MB/s                         |
|  | <b>Logical Blocks</b>        | 156,301,488                            |                                 |
|  | <b>Operating Temperature</b> | 32° to 158°F (32° to 70°C) [case temp] |                                 |
| <b>Features</b>                                      | ATA Security                 |  |                                 |

### Optical Drives

### Technical Specifications

|                      |                                  |   |   |
|----------------------|----------------------------------|---|---|
| <b>DVD-ROM Drive</b> | <b>Access Times</b>              | Random  | <120 ms CD (typical)<br><130 ms DVD (typical) |
|                      | <b>Max Data Transfer Rate</b>    | 24X-CD-ROM  | Up to 3,600 KB/s                              |
|                      |                                  | 8X-DVD  | Up to 10,800 KB/s                             |
|                      | <b>Transfer Mode</b>             | UDMA Mode 5   |   |
|                      | <b>Interface</b>                 | Gen 1 SATA  |   |
|                      | <b>Supported Media (read)</b>    | CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW |   |
|                      | <b>Supported Media (write)</b>   | None  |   |
|                      | <b>Max Media Capacity (read)</b> | 8.5 GB  |   |
|                      | <b>Transport</b>                 | Tray Loading  |   |

|                                     |  |  |   |
|-------------------------------------|--|--|---|
| <b>DVD+/-RW SuperMulti DL Drive</b> | <b>Access Times</b>                                | Random   | <150 ms CD (typical)<br><145 ms DVD (typical) |
|                                     | <b>Max Data Transfer Rate</b>                      | 24X CD-ROM   | Up to 3,600 KB/s                              |
|                                     |  | 8X DVD   | Up to 10,800 KB/s                             |
|                                     |  | 24X CD-R   | Up to 3,600 KB/s                              |
|                                     |  | 16X CD-RW  | Up to 2,400 KB/s                              |
|                                     |  | 8X DVD+R   | Up to 10,800 KB/s                             |
|                                     |  | 4X DVD+R Dual Layer  | Up to 5,400 KB/s                              |
|                                     |  | 8X DVD+RW  | Up to 10,800 KB/s                             |
|                                     |  | 8X DVD-R   | Up to 10,800 KB/s                             |
|                                     |  | 4X DVD-R Dual Layer  | Up to 5,400 KB/s                              |
|                                     |  | 6X DVD-RW  | Up to 8,100 KB/s                              |
|                                     |  | 5X DVD-RAM   | Up to 6,750 KB/s                              |
|                                     | <b>Transfer Mode</b>                               | UDMA Mode 5  |   |
|                                     | <b>Interface</b>                                   | Gen 1 SATA   |   |
|                                     | <b>Supported Media (read)</b>                      | CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM |   |
| <b>Supported Media (write)</b>      | CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM |  |   |
| <b>Max Media Capacity (read)</b>    | 8.5 GB   |  |   |
| <b>Max Media Capacity (write)</b>   | 8.5 GB   |  |   |
| <b>Transport</b>                    | Tray Loading                                       |  |   |

### Technical Specifications

#### Security

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

#### Audio

|                 |  |                                   |
|-----------------|--|-----------------------------------|
| <b>Hardware</b> | <b>Implementation</b>                  | IDT 92HD75B High Definition CODEC |
|                 | <b>Touch-Sensitive Volume Controls</b> | Volume up, volume down, and mute  |
|                 | <b>Full Duplex</b>                     | Yes                               |
|                 | <b>Combo Microphone /Headphone</b>     |                                   |

| Device Used  | Operation  |
|--|--|
| Stereo Headphone                                     | Headphone works.<br>Integrated microphone works.   |
| External PC Microphone                               | External microphone does not work.<br>Integrated microphone works.   |
| Combo headphone / microphone without "Answer" button | Headphone and microphone in headset work as advertised.  |
| Combo headphone / microphone with "Answer" button    | Headphone and microphone in headset work initially whenever headset is plugged in; integrated microphone in PC is disabled. If "answer" button is pushed, microphone in headset is disabled, integrated microphone in PC is enabled. |

**Integrated Microphone** Yes, dual-microphone array when equipped with optional webcam

### Technical Specifications

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

|                                   |                     |         |
|-----------------------------------|---------------------|---------|
| <b>Integrated Stereo Speakers</b> | <b>Power Rating</b> | 2 Watts |
|                                   | <b>Impedance</b>    | 4 Ohms  |

### Communications

|   |                               |  |  |
|---|-------------------------------|--|--|
| <b>Integrated Intel Gigabit Network Connection</b><br>(10/100/1000 NIC) | <b>Ethernet Features</b>      | 10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14)<br>100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30)<br>1000 Mbit/s operation (1000BASE-T; IEEE 802.3z and 802.3ab; IEEE 802.3 clauses 34-42)<br>Auto-Negotiation (Automatic Speed Selection)<br>Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s<br>IEEE 802.1p QoS (Quality of Service) Support<br>IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) |  |
|   | <b>Power Management</b>       | ACPI compliant -- multiple power modes<br>Situation-sensitive features reduce power consumption  |  |
|   | <b>Performance Features</b>   | TCP/IP/UDP Checksum Offload (configurable)   |  |
|   | <b>Manageability</b>          | Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only)<br>PXE 2.1 Remote Boot<br>Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30))<br>Comprehensive diagnostic and configuration software suite<br>Intel Advanced Management Technology 6.0 (iAMT)  |  |
|   | <b>Interface</b>              | PCI Express x1 based, SMBUS dedicated connection with Intel® 5 Series Chipset  |  |
|   | <b>NIC Device Driver Name</b> | Intel 82577 Gigabit Network Connection   |  |
|   |                               |  |  |
|   |                               |  |  |
|   |                               |  |  |
|   |                               |  |  |
|   |                               |  |  |

### Technical Specifications

|  |   |
|--|---|
| <b>V.92 56K Data/Fax Modem Form Factor</b> | MDC 1.5 Daughtercard  |
| <b>Power Management Support</b>            | APM Revision 1.2, ACPI  |
| <b>Approvals/Certifications</b>            | 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   |
| <b>Data Mode Capabilities</b>              | V.92 data<br>V.8bis<br>V.80<br>V44, V.42bis, MNP5 (Compression)<br>V.42 (LAPM, MNP2-4) (Error Correction)<br><b>Optional symbol rates:</b><br>2800, 3429<br>Asymmetric Symbol rates<br><b>Synchronous primary channel data signaling rates:</b><br>3600, 31200<br>Automatic rate re-negotiation<br>V.34<br>V.32bis<br>V.32<br>V.23<br>V.22bis<br>V.22<br>V.21<br>Bell 212A<br>Bell 103J |
| <b>Fax Mode Capabilities</b>               | TIA/EIA-578-B (Class 1)<br>T.30, T.4 (Group 3)<br>V.17<br>V.29<br>V.27ter<br>V.21 Channel 2   |
| <b>Command Set</b>                         | V.250 (Partial)<br>TIA-602<br>Identification: +GMI, +GMM, +GMR<br>Port control: +IPR, +ICF, +IFC, +ILRR<br>Modulation: +MS, +MR, +MA<br>Error control: +ES, +ER, +EB, +ESR, +ETBM<br>Data compression: +DS, +DR<br>V.251  |

### Technical Specifications

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

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|  |                              |
|--|------------------------------|
| <b>Intel Centrino Advanced-N Wireless LAN Standards 6200</b> | IEEE 802.11a<br>IEEE 802.11b |
|--|------------------------------|

### Technical Specifications

|   |  |
|---|--|
|   | IEEE 802.11g<br>IEEE 802.11n*  |
| <b>Interoperability</b>                             | Wi-Fi certified<br>Cisco Compatible Extensions Program compliant with Microsoft Windows Vista and XP (details at: <a href="http://www.hp.com/go/notebooks/WLAN">http://www.hp.com/go/notebooks/WLAN</a> )  |
| <b>Frequency Band</b>                               | 2.4 GHz and 5GHz   |
| <b>Antenna Structure</b>                            | 2 transmit; 2 receive (2x2)  |
| <b>Data Rates</b>                                   | 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>802.11b: 1, 2, 5.5, 11 Mbps<br>802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>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  |
| <b>Modulation</b>                                   | Direct Sequence Spread Spectrum<br>DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM   |
| <b>Security<sup>1</sup></b>                         | Authentication: WPA and WPA2, 802.1x (EAP_TLS, TTLS, PEAP, LEAP, EAP-FAST)<br><br>Authentication Protocols: PAP, CHAP, TLS, GTC, MS-CHAP, MS-CHAPv2<br><br>Encryption: 64 and 128-bit WEP, AES-CCMP, CKIP, TKIP<br><br>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. |
| <b>Sub-channels</b>                                 | Multinational support with frequency bands and channels compliant to local regulations.  |
| <b>Media Access Protocol</b>                        | CSMA/CA (Collision Avoidance) with ACK   |
| <b>Network Architecture Models</b>                  | Ad-hoc (Peer to Peer)<br>Infrastructure (Access Point Required)  |
| <b>Roaming</b>                                      | IEEE 802.11 compliant roaming between 2.4GHz band Access Points  |
| <b>Output Power</b> (for CCK and OFDM) <sup>2</sup> | 17 dBm max   |
| <b>Power Consumption</b>                            | Transmit: 2.3 Watts (max, with two spatial streams)<br>Receive: 1 Watt (max with two spatial streams)<br>Idle mode <sup>3</sup> : 35 mW (average)<br>Radio off: 20 mW (max)  |
| <b>Power Management</b>                             | ACPI compliant power management<br>802.11 compliant power saving mode  |
| <b>Receiver Sensitivity<sup>4</sup></b>             | 54 Mbps: -76 dBm, 6 Mbps: -92 dBm  |
| <b>Antenna Connections</b>                          | 2 U.FL type connectors, 50 ohm nominal impedance   |
| <b>Form Factor</b>                                  | PCI-Express Half-MiniCard  |
| <b>Weight</b>                                       | 0.0075 lb (3.4 g)  |
| <b>Dimensions</b>                                   | 0.12 x 1.06 x 1.18 in (3.1 x 26.8 x 30.0 mm)   |

### Technical Specifications

|                          |  |                                |
|--------------------------|--|--------------------------------|
| <b>Operating Voltage</b> | 3.3V +/- 9%  |                                |
| <b>Temperature</b>       | Operating  | 32° to 176° F (0° to 80° C)    |
|                          | Non-operating  | -40° to 176° F (-40° to 80° C) |
| <b>Humidity</b>          | Operating  | 10% to 90% (non-condensing)    |
|                          | Non-operating  | 5% to 90% (non-condensing)     |
| <b>Altitude</b>          | Operating  | 0 to 10,000 ft (3,048 m)       |
|                          | Non-operating  | 0 to 50,000 ft (15,240 m)      |
| <b>LED Activity</b>      | LED Off - Radio OFF; Solid LED On - Radio ON   |                                |
|                          | <ol style="list-style-type: none"> <li>1. Check latest software/driver release for updates on supported security features.</li> <li>2. Maximum output power may vary by country according to local regulations.</li> <li>3. In Power Save Polling mode and on battery power.</li> <li>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).</li> <li>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 suppliers. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.</li> </ol> |                                |

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

|                               |   |
|-------------------------------|---|
| <b>Wireless LAN Standards</b> | IEEE 802.11a<br>IEEE 802.11b<br>IEEE 802.11g<br>IEEE 802.11n*   |
| <b>Interoperability</b>       | Wi-Fi certified (802.11abg only)<br>Cisco Compatible Extensions Program compliant (802.11abg only) with Microsoft Windows Vista and XP (details at: <a href="http://www.hp.com/go/notebooks/WLAN">http://www.hp.com/go/notebooks/WLAN</a> )   |
| <b>Frequency Band</b>         | 2.4 GHz and 5 GHz   |
| <b>Data Rates</b>             | 802.11b: 1, 2, 5.5, 11 Mbps<br>802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>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   |
| <b>Frequency Support</b>      | 20 MHz: 2.4 GHz and 5 GHz bands<br>40 MHz: 2.4 GHz and 5 GHz bands  |
| <b>Modulation</b>             | Direct Sequence Spread Spectrum<br>DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM  |
| <b>Security<sup>1</sup></b>   | 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.<br><br>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. |
| <b>Sub-channels</b>           | Multinational support with frequency bands and channels compliant to local regulations.   |
| <b>Media Access Protocol</b>  | CSMA/CA (Collision Avoidance) with ACK  |

### Technical Specifications

|  |  |
|--|--|
| <b>Network Architecture</b>  | Ad-hoc (Peer to Peer)  |
| <b>Models</b>  | Infrastructure (Access Point Required)   |
| <b>Roaming</b>   | IEEE 802.11 compliant roaming between access points  |
| <b>Output Power</b> (for CCK) <sup>2</sup>                             | 17 dBm , nominal   |
| <b>Output Power</b> (for OFDM; power varies by data rate) <sup>2</sup> | 15 dBm , nominal   |
| <b>Power Consumption</b>   | Idle associated: 250 mW<br>Idle unassociated: 150 mW<br>Transmit/Receive 20 MHz channel: 2.0 W (max)<br>Transmit/Receive 40 MHz channel: 2.0 W (max) |
| <b>Power Management</b>  | ACPI compliant power management<br>802.11 compliant power saving mode  |
| <b>Receiver Sensitivity</b> <sup>3</sup>                               | 270 Mbps: -61dBm, , 54 Mbps: -72 dBm, 11 Mbps: -85 dBm , 1 Mbps: -92 dBm   |
| <b>Antenna Connections</b>   | High efficiency dual band antenna with spatial diversity, mounted in the display enclosure   |
| <b>Form Factor</b>   | PCI-Express Half-MiniCard  |
| <b>Weight</b>  | 0.013 lb (6 g)   |
| <b>Dimensions</b>  | 0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm)  |
| <b>Operating Voltage</b>   | 3.3v +/- 10%   |
| <b>Temperature</b>   | Operating 14° to 149° F (-10° to 65° C)<br>Non-operating -40° to 176° F (-40° to 80° C)  |
| <b>Humidity</b>  | Operating 10% to 90% (non-condensing)<br>Non-operating 5% to 95% (non-condensing)  |
| <b>Altitude</b>  | Operating 0 to 10,000 ft (3,048 m)<br>Non-operating 0 to 50,000 ft (15,240 m)  |
| <b>LED Activity</b>  | 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.

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#### Broadcom 4312G 802.11b/g WiFi Adapter

|                               |   |
|-------------------------------|---|
| <b>Wireless LAN Standards</b> | IEEE 802.11b<br>IEEE 802.11g  |
| <b>Interoperability</b>       | Wi-Fi certified<br>Cisco Compatible Extensions Program compliant with Microsoft Windows Vista and XP (details at: <a href="http://www.hp.com/go/notebooks/WLAN">http://www.hp.com/go/notebooks/WLAN</a> ) |
| <b>Frequency Band</b>         | 2.4 GHz   |
| <b>Data Rates</b>             | 802.11b: 1, 2, 5.5, 11 Mbps<br>802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps   |

### Technical Specifications

|   |   |                                |
|---|---|--------------------------------|
| <b>Modulation</b>   | Direct Sequence Spread Spectrum<br>DBPSK, DQPSK, CCK, OFDM  |                                |
| <b>Security<sup>1</sup></b>   | 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.<br><br>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. |                                |
| <b>Sub-channels</b>   | Multinational support with frequency bands and channels compliant to local regulations.   |                                |
| <b>Media Access Protocol</b>  | CSMA/CA (Collision Avoidance) with ACK  |                                |
| <b>Network Architecture Models</b>                                    | Ad-hoc (Peer to Peer)<br>Infrastructure (Access Point Required)   |                                |
| <b>Roaming</b>  | IEEE 802.11 compliant roaming between access points   |                                |
| <b>Output Power (for CCK)<sup>2</sup></b>                             | 17 dBm , nominal  |                                |
| <b>Output Power (for OFDM; power varies by data rate)<sup>2</sup></b> | 15 dBm , nominal  |                                |
| <b>Power Consumption</b>  | Idle associated: 250 mW<br>Idle unassociated: 150 mW<br>Transmit: 2.0 W (max)<br>Receive: 2.0 W (max)   |                                |
| <b>Power Management</b>   | ACPI compliant power management<br>802.11 compliant power saving mode   |                                |
| <b>Receiver Sensitivity<sup>3</sup></b>                               | 54 Mbps: -71 dBm, 11 Mbps: -85 dBm , 1 Mbps: -95 dBm  |                                |
| <b>Antenna Connections</b>  | High efficiency dual band antenna with spatial diversity, mounted in the display enclosure  |                                |
| <b>Form Factor</b>  | PCI-Express Half-MiniCard   |                                |
| <b>Weight</b>   | 0.013 lb (6 g)  |                                |
| <b>Dimensions</b>   | 0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm)   |                                |
| <b>Operating Voltage</b>  | 3.3v +/- 10%  |                                |
| <b>Temperature</b>  | Operating   | 14° to 149° F (-10° to 65° C)  |
|   | Non-operating   | -40° to 176° F (-40° to 80° C) |
| <b>Humidity</b>   | Operating   | 10% to 90% (non-condensing)    |
|   | Non-operating   | 5% to 95% (non-condensing)     |
| <b>Altitude</b>   | Operating   | 0 to 10,000 ft (3,048 m)       |
|   | Non-operating   | 0 to 50,000 ft (15,240 m)      |
| <b>LED Activity</b>   | 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](#)

### Technical Specifications

Vista.

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

### Technical Specifications

Generic Object Exchange Profile (GOEP)<sup>1,2</sup>  
 Object Push Profile (OPP)<sup>1,2</sup>  
 File Transfer Profile (FTP)  
 Synchronization Profile (SYNC)  
 Hard Copy Cable Replacement (HCRP)<sup>1,2</sup>  
 Personal Area Networking Profile (PAN)<sup>1,2</sup>  
 Human Interface Device Profile (HID)<sup>1,2,3</sup>  
 FAX Profile (FAX)  
 Basic Imaging Profile (BIP)<sup>2</sup>  
 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

### Eco Data

#### Eco-Label Certifications

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

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

|                                    | 115 VAC   | 230 VAC   | 100 VAC   |
|------------------------------------|-----------|-----------|-----------|
| <b>Energy Consumption</b>          |           |           |           |
| Normal Operation                   | 10.9 W    | 11.49 W   | 10.88 W   |
| Sleep (Energy Star low power mode) | 0.9749 W  | 1.143 W   | 0.9644 W  |
| Off                                | 0.3348 W  | 0.4522 W  | 0.3253 W  |
| <b>Heat Dissipation*</b>           |           |           |           |
| Normal Operation                   | 37 BTU/hr | 39 BTU/hr | 37 BTU/hr |
| Sleep                              | 3 BTU/hr  | 4 BTU/hr  | 3 BTU/hr  |
| Off                                | 1 BTU/hr  | 2 BTU/hr  | 1 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<br>(LWAd, bels) | Sound Pressure<br>(LpAm, decibels) |
|-------------------------------|-----------------------------|------------------------------------|
| Idle                          | 3.5                         | 26.7                               |
| Fixed Disk<br>(random writes) | 3.5                         | 26.7                               |

System fan is usually off except when charging the battery

### Technical Specifications

#### Batteries

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

Batteries used in the product do not contain:

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

The battery type and chemistry used in the product is:

- CR2032 (coin cell), Li-ion
- 6-cell high capacity 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](http://www.epeat.net)

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

This product contains 0.33% post consumer recycled plastic (by wt.)

This product is greater than 85% recycle-able when properly disposed of at end of life.

#### Packaging Materials

- External:
  - Paper – 97 g
- Internal:
  - Polyethylene low density solid – 13 g
  - Molded Pulp – 100 g
  - Polyethylene low density – 4 g
- The paper packaging material is made from 80% recycled content.
- The Polyethylene low density solid material is made from 100% recycled content.
- The Molded Pulp packaging material is made from 80% recycled content.
- The Polyethylene low density material is made from 100% 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

### Technical Specifications

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|   | <ul style="list-style-type: none"><li>cadmium in packaging materials.</li><li>● Eliminate the use of ozone-depleting substances (ODS) in packaging materials.</li><li>● Design packaging materials for ease of disassembly.</li><li>● Maximize the use of post-consumer recycled content materials in packaging materials.</li><li>● Use readily recyclable packaging materials such as paper and corrugated materials.</li><li>● Reduce size and weight of packages to improve transportation fuel efficiency.</li><li>● Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.</li></ul>   |
| <b>Material Usage</b>                       | <p>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 (<a href="http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html">http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html</a>):</p> <ul style="list-style-type: none"><li>● Asbestos</li><li>● Certain Azo Colorants</li><li>● Certain Brominated Flame Retardants – may not be used as flame retardants in plastics</li><li>● Cadmium</li><li>● Chlorinated Hydrocarbons</li><li>● Chlorinated Paraffins</li><li>● Formaldehyde</li><li>● Halogenated Diphenyl Methanes</li><li>● Lead carbonates and sulfates</li><li>● Lead and Lead compounds</li><li>● Mercuric Oxide Batteries</li><li>● Ozone Depleting Substances</li><li>● Polybrominated Biphenyls (PBBs)</li><li>● Polybrominated Biphenyl Ethers (PBBEs)</li><li>● Polybrominated Biphenyl Oxides (PBBOs)</li><li>● Polychlorinated Biphenyl (PCB)</li><li>● Polychlorinated Terphenyls (PCT)</li><li>● Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.</li><li>● Radioactive Substances</li><li>● Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)</li><li>● Nickel finishes that release greater than 0.5 micro-grams/cm<sup>2</sup>/week, measured according to EN 1811:1998, are not used on any product surface designed to be frequently handled or touched by users.</li></ul> |
| <b>End-of-life Management and Recycling</b> | <p>Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: <a href="http://www.hp.com/go/reuse-recycle">http://www.hp.com/go/reuse-recycle</a> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.</p> <p>The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities.</p>   |

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#### **Hewlett-Packard Corporate Environmental Information**

This information (product disassembly instructions) is posted on the Hewlett Packard web site at: <http://www.hp.com/go/recyclers>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

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

Global Citizenship Report

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

Environment website

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

Eco-label certifications

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

ISO 14001 certificates:

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

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