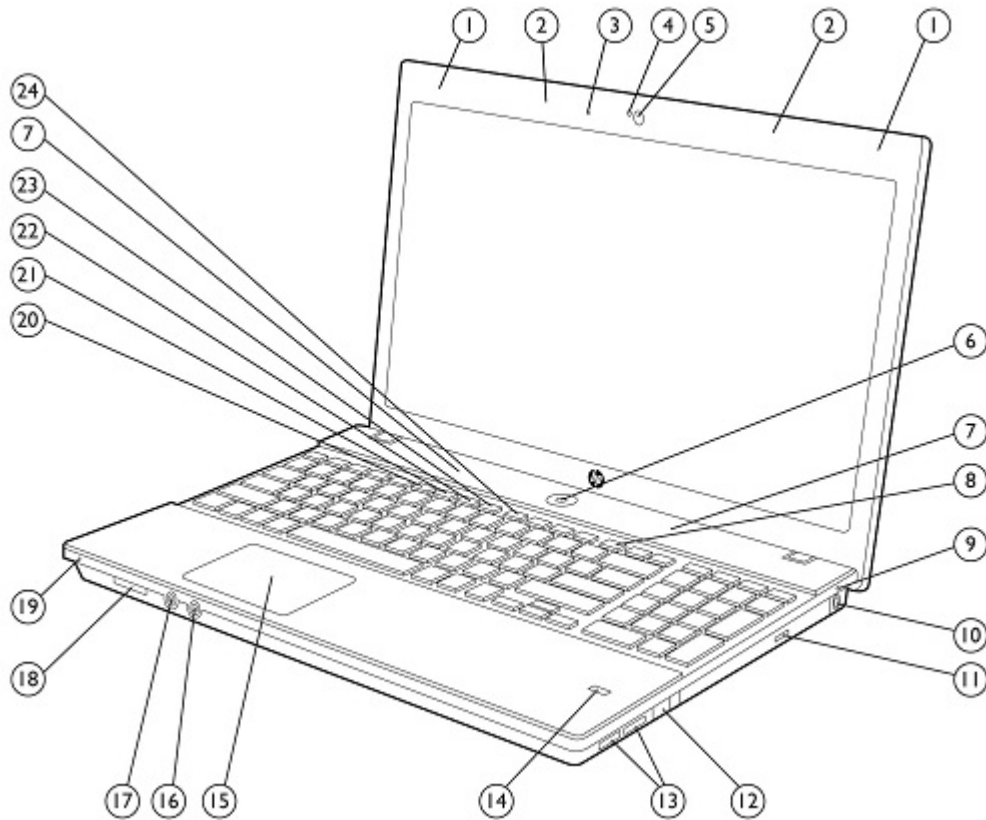
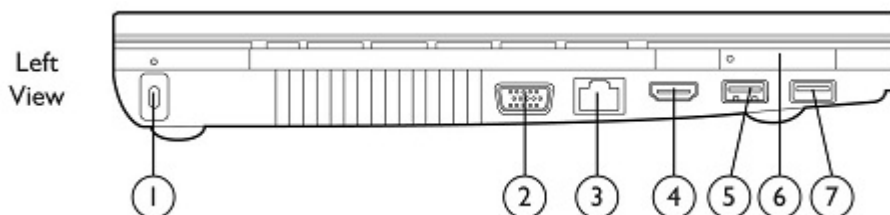


## Overview



- |  |   |
|--|---|
| 1. WWAN antennas                           | 13. (2) USB 2.0 ports                             |
| 2. WLAN antennas                           | 14. Optional HP Fingerprint Sensor                |
| 3. Integrated microphone                   | 15. ClickPad with left and right ClickPad buttons |
| 4. Webcam LED (works with optional webcam) | 16. Stereo microphone in                          |
| 5. Optional 2 MP webcam                    | 17. Stereo headphone/line out                     |
| 6. Power button with LED indicator         | 18. Media Card Reader                             |
| 7. Stereo speakers                         | 19. Hard drive activity LED indicator             |
| 8. Wireless switch with LED indicator      | 20. HP QuickLook 3 button with LED indicator      |
| 9. Battery charging LED indicator          | 21. HP QuickWeb button with LED indicator         |
| 10. Power connector                        | 22. Volume mute button                            |
| 11. Optical drive (select models)          | 23. Volume down button                            |
| 12. Optional RJ-11/modem port              | 24. Volume up button                              |

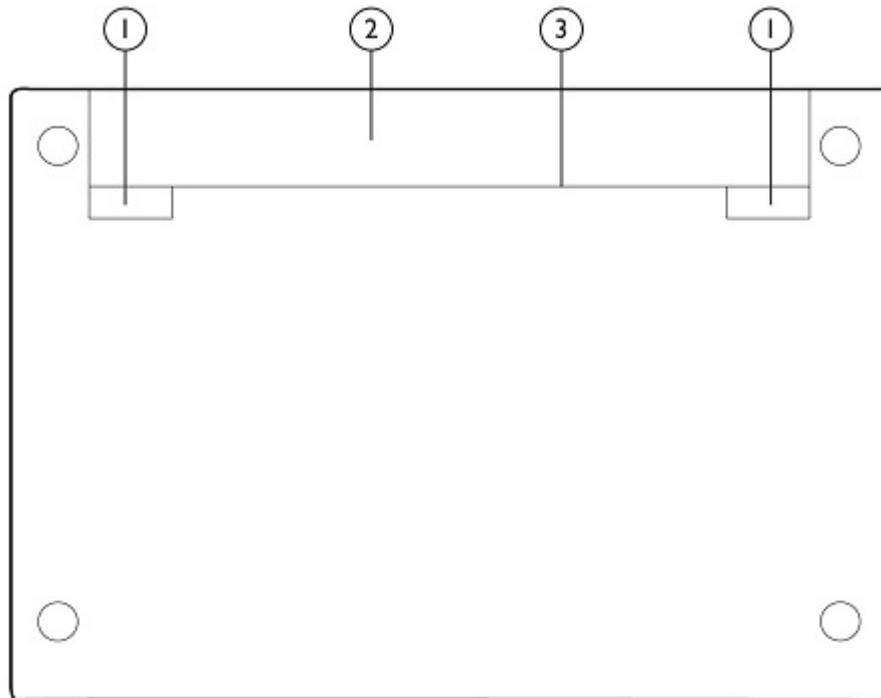


- |                         |                         |
|-------------------------|-------------------------|
| 1. Kensington Lock slot | 5. Combo eSATA/USB port |
|-------------------------|-------------------------|



## Overview

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



BottomView

1. Battery release latches
2. Battery bay
3. SIM card slot (select units, located inside battery bay)

## At A Glance

- Genuine Windows 7 versions, SUSE Linux
- Thin, lightweight design with brushed aluminum finish for durability and style
- Full-sized spill-resistant keyboard with better spaced keys and full separate numeric keypad
- ATI Mobility Radeon or HD 5470 or HD6370 discrete graphics, or integrated Intel HD Graphics
- ArcSoft TotalMedia Suite for playing, creating, and editing video and audio files
- New keyboard function keys for play, rewind, and fast-forward of video and audio files
- Corel Home Office productivity suite for word processing, spreadsheets, and presentations
- HDMI port for connecting to high-resolution displays; combo eSATA/USB port
- HP Face Recognition for HP ProtectTools for easy logins using the optional integrated 2 MP webcam
- Up to 500 GB 7200 rpm hard drive or 750 GB 5400 rpm hard drive with HP 3D DriveGuard protection
- HP Power Assistant to conserve power, increase battery run-time, monitor power needs, report workforce power consumption
- HP QuickLook 3 (quick access to e-mail, calendar, contacts and tasks), HP QuickWeb, HP DayStarter
- HP Connection Manager 3.1
- Flexible wireless connectivity options:
  - Integrated Intel Centrino® Advanced-N 6200 802.11 a/b/g/n, Atheros 802.11 b/g/n wireless LAN module
  - 802.11 b/g/n with Bluetooth High Speed (HS) combo card\*\*
  - Bluetooth® v2.1



## Overview

- HP ProBook 4520s offers choice of 9-cell or 6-cell battery to customize weight and run-time to your needs
- Integrated Media Card Reader and ExpressCard/34 slot
- Widescreen LED-backlit HD display with 16:9 aspect ratio  
HP ProBook 4520s: 15.6-inch diagonal  
HP ProBook 4720s: 17.3-inch diagonal
- Choice of an Intel® Core™ i7, Core i5, or Core i3, or Celeron processor
- Enhanced security features including HP ProtectTools, HP Face Recognition, Computrace LoJack Pro ready, HP SpareKey, HP Disk Sanitizer, optional HP Fingerprint Sensor, and optional HP Privacy Filter
- Optional optical drives include Blu-ray ROM DVD+/-RW SuperMulti DL Drive for high-definition playback and DVD+/-RW SuperMulti DL LightScribe Drive for burning custom labels directly to your discs

\* Only available with HP ProBook 4520s with Intel HD Graphics.

\*\* Available on select models.



Standard Features (availability may vary by country)

**Processors**

Intel Core i5-520M Processor (2.4 GHz, 3 MB L3 cache)\*  
Up to 2.93 GHz with Intel Turbo Boost Technology

Intel Core i5-480M Processor (2.66 GHz, 3 MB L3 cache)\*  
Up to 3.18GHz Turbo Boost Technology

Intel Core i3-370M Processor (2.4 GHz, 3 MB L3 cache)\*

Intel Core i3-350M Processor (2.26 GHz, 3 MB L3 cache)\*

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

\* Intel's numbering is not a measurement of higher performance.

---

**Operating System**

**Preinstalled**

- Genuine Windows 7 Professional Edition 32\*
- Genuine Windows 7 Professional Edition 64\*
- Genuine Windows 7 Home Premium Edition 32\*
- Genuine Windows 7 Home Premium Edition 64\*
- SUSE Linux Enterprise Desktop 11

**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.mspx> and <http://www.microsoft.com/windowsvista/getready/capable.mspx> 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 HM57 Express Chipset

---

**Graphics**

Integrated graphic:s (HP ProBook 4520s only)

- Intel HD Graphics
- Microsoft DirectX 10 capable

Discrete graphics: (HP ProBook 4720s only)

- ATI Mobility Radeon HD 5470 graphics controller with 512 MB dedicated video memory
- Microsoft DirectX 11 capable
- ATI Mobility Radeon HD 6370 graphics controller with 1GB dedicated video memory
- Microsoft DirectX 11 capable



Standard Features (availability may vary by country)

|         |          |  |
|---------|----------|--|
| Display | Internal | HP ProBook 4520s:<br>15.6-inch diagonal LED-backlit HD anti-glare (1366 x 768 resolution)<br><br>HP ProBook 4720s:<br>17.3-inch diagonal LED-backlit HD+ anti-glare (1600x900 resolution)<br><br>Optional HP Privacy Filter  |
|         | External | Up to 32-bit per pixel color depth<br>VGA port supports resolutions up to 2048 x 1536 at 75 Hz, and lower resolutions at up to 100 Hz.<br>HDMI port supports direct connection to high-definition displays with up to 1920 x 1080 resolution and 7-channel audio with one convenient cable (not included).<br><b>NOTE:</b> Resolutions are dependent upon monitor capability, and resolution and color depth settings. |

|        |                         |  |
|--------|-------------------------|--|
| Memory | Standard                | DDR3 PC3-8500 (1066 MHz)* or PC3-10600 (1333 MHz)* SDRAM<br>Two SODIMM slots supporting dual-channel memory<br>1024 MB, 2048 MB, and 4096 SODIMMs<br>Standard memory up to 8192 MB |
|        | Maximum<br>Dual-channel | Upgradeable to 8192 MB with 4096 MB SODIMMs in slots 1 and 2<br>Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.               |

\* Memory speed is processor dependent.

**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 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.

|                |  |
|----------------|--|
| Communications | Realtek Ethernet (10/100/1000 NIC)*<br>Optional 56K V.92 modem**<br><br>* 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.<br><br>** 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. |
|----------------|--|



## Standard Features (availability may vary by country)

### Wireless Devices

Support for a broad range of secure, integrated wireless LAN options featuring support for the latest industry standards. Integrated Bluetooth is also available (factory configurable only) and can be combined with any of the supported wireless LAN and options.

|   |  |
|---|--|
| <b>All 802.11 integrated wireless LAN options</b>                           | Wi-Fi certified*<br>Wired Equivalent Privacy (WEP) support up to 128-bit keys<br>Wi-Fi Protected Access (WPA) and WPA2 support<br>802.1x authentication support, including EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, and LEAP<br>Advanced Encryption Standard (AES) support<br>Dual antennas integrated in the display enclosure |
| <b>Intel Centrino Advanced-N 6200 (2x2)</b>                                 | Integrated support for 802.11 a, b, g, and n*<br>2 transmit, 2 receive antennas<br>Up to 300 mbps data rate  |
| <b>Atheros 9285G 802.11b/g/n (1x1)</b>                                      | Integrated support for 802.11 b, g, and n<br>Up to 300 mbps data rate  |
| <b>Ralink RT3090BC4 802.11b/g/n WiFi and Bluetooth 3.0 HS Combo Adapter</b> | Integrated support for 802.11 b, g, and n<br>Up to 150 mbps data rate<br>Bluetooth Specification 3.0 High Speed (HS) compliant<br>Works with a wide range of Bluetooth devices   |
| <b>HP Integrated Module with Bluetooth 2.1 +EDR Wireless Technology</b>     | Bluetooth Specification v2.1 +EDR compliant<br>Works with a wide range of Bluetooth devices  |

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

### Keyboard

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

### Pointing device

ClickPad with gestures support:  
Two-finger scroll, zoom, pinch and pivot rotate

### Expansion card slots

|                            |   |
|----------------------------|---|
| <b>ExpressCard/34 slot</b> | Supports ExpressCard/34 (34 mm x 75 mm x 5 mm) card sizes   |
| <b>Media Card Reader</b>   | Supports SD (Secure Digital), MMC (MultiMedia Card), Memory Stick, Memory Stick Pro, Memory Stick Duo*, xD-Picture card |

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



Standard Features (availability may vary by country)

|                |  |   |
|----------------|--|---|
| <b>Storage</b> | <b>Internal Storage Device</b>                   | 250/320/500 GB 7200 rpm SMART SATA II Hard Drive<br>640/750 GB 5400 rpm SMART SATA II Hard Drive  |
|                |  | <b>NOTE:</b> Up to 15 GB is reserved for the system recovery software.  |
|                | <b>HP 3D DriveGuard</b><br>(Windows models only) | The hard drive is mounted directly to the notebook frame, reducing the transmission of shock to the hard drive. Uses three-axis digital motion detection with intelligent sensitivity to help protect the hard drive during normal use from shock and vibration. The digital accelerometer temporarily halts all data transfer and parks the hard drive when abrupt motion is detected. |
|                | <b>Fixed optical drives</b>                      | Blu-ray ROM DVD+/-RW SuperMulti DL LightScribe Drive*<br>DVD+/-RW SuperMulti DL LightScribe Drive   |
|                |  | * Support for the Blu-ray DVD drive on configurations with integrated graphics requires Windows 7 or Windows Vista; configurations with discrete graphics support it with any offered Windows operating system.   |

---

|                   |                                  |       |
|-------------------|----------------------------------|-------|
| <b>Interfaces</b> | <b>VGA</b>                       | One   |
|                   | <b>HDMI</b>                      | One   |
|                   | <b>Stereo microphone in</b>      | One   |
|                   | <b>Stereo headphone/line out</b> | One   |
|                   | <b>Power connector</b>           | One   |
|                   | <b>RJ-11/modem (optional)</b>    | One   |
|                   | <b>RJ-45/Ethernet</b>            | One   |
|                   | <b>Combo eSATA/USB 2.0</b>       | One   |
|                   | <b>USB 2.0</b>                   | Three |
|                   | <b>LED status indicators</b>     | Eight |

---

|                     |   |
|---------------------|---|
| <b>Audio/Visual</b> | HD audio (HP Premier Sound)<br>Integrated stereo speakers<br>Integrated digital microphone<br>Stereo headphone/line out<br>Stereo microphone in   |
|                     | Optional 2 MP webcam  |
|                     | <ul style="list-style-type: none"><li>• Supports videoconferencing and still image capture</li><li>• Improved quality for video streaming and still image capture (1600x1200 resolution)</li><li>• Up to 30 frames/sec</li><li>• Fixed focus lens</li><li>• 16-bit true color (camera sensor up to UXGA resolution)</li></ul> |



Standard Features (availability may vary by country)

|          |   |  |
|----------|---|--|
| Software | Preinstalled software with Windows Operating System | HP Recovery Manager (available with Windows 7 only)<br>HP Support Assistant (available with Windows only)<br>HP ProtectTools Security Manager<br>HP Face Recognition<br>HP QuickLaunch Buttons Software<br>HP QuickLook 3<br>HP QuickWeb<br>HP Power Assistant<br>HP Connection Manager 3.1<br>HP Wireless Assistant<br>HP Day Starter<br>Corel Home Office productivity suite 60-day trial<br>Roxio Creator Business (select models)<br>ArcSoft Total Media Suite<br>Antivirus software (may vary by country)*<br>Microsoft Office 2010 preloaded (purchase of a Product Key required to activate a full Office 2010 suite)**<br>Norton Online Backup trial<br>HP Webcam Software (select models)<br>Skype<br>WinZip 14.5 trial |
|          | Additional software available from the web          | HP SoftPaq Download Manager  |

\* Internet access required. May be Norton or McAfee antivirus software. First 60 days included. Subscription required for live updates afterwards.

\*\* 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>.

---

|                     |   |
|---------------------|---|
| HP Recovery Manager | Models shipped with Windows 7 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<br>Face Recognition for HP ProtectTools<br>One Step Login<br>Enhanced Pre-Boot Security<br>HP SpareKey<br>HP Disk Sanitizer<br>Setup Password<br>Kensington Lock Slot<br>Support for Computrace* LoJack Pro for HP ProtectTools |
|          | Optional Features | HP Fingerprint Sensor<br>HP Privacy Filter   |

\* 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** 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 5 seats is completely free.

---

## Power Supply

Models with integrated graphics: External 65-watt Smart AC adapter  
Models with discrete graphics: External 90-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. HP Fast Charge does not apply to the HP 9-cell battery.

---

## Battery

### Primary battery

HP ProBook 4520s:  
HP 9-cell (93 WHr) Li-Ion battery  
HP 6-cell (47 WHr) Li-Ion battery

HP ProBook 4720s:  
HP 8-cell (73 WHr) Li-Ion battery



Standard Features (availability may vary by country)

| Battery Life |                  | Configurations with integrated Intel HD Graphics | Configurations with discrete ATI Mobility Radeon HD 5470 graphics | Configurations with ATI Mobility Radeon HD 6370 |
|--------------|------------------|--|---|---|
|              | HP ProBook 4520s |  |   |   |
|              | 9-cell battery   | Up to 10 hours                                   | Up to 6 hours and 30 minutes                                      | Up to 6 hours and 30 minutes                    |
|              | 6-cell battery   | Up to 5 hours                                    | Up to 4 hours   | Up to 3 hours and 30 minutes                    |
|              | HP ProBook 4720s |  |   |   |
|              | 8-cell battery   | N/A  | Up to 6 hours   | Up to 5 hours and 15 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)  
ATI PowerPlay technology  
Hibernation  
Standby  
ACPI compliance

**Service and Support** HP Services offers limited 1-year warranty.  
1-year limited warranty on primary battery. 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 250 GB USB Pocket Media Hard Drive      | FE477AA     |
|                      | HP External USB CD/DVD R/RW Drive          | FS943AA     |
| <hr/>                |  |             |
| <b>Communication</b> | HP WLAN 802/11 a/b/g/draft-n Mini-card Kit | KM591AA#xxx |
| <hr/>                |  |             |
| <b>Expansion</b>     | HP Basic Adjustable Stand                  | AL549AA     |
|                      | 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>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*          | BQ350AA     |
|                      | * Only available on the ProBook 4520s.     |             |



*Options (availability may vary by country)*

|                            |                                      |         |
|----------------------------|--------------------------------------|---------|
| <b>Carrying Cases</b>      | HP Deluxe Nylon Backpack             | RR317AA |
|                            | HP Value Nylon Case                  | RR314AA |
|                            | HP Universal Nylon Case              | RR315AA |
|                            | HP Executive Leather Case            | RR316AA |
|                            | HP Deluxe Roller Case                | GD405AA |
|                            | HP Basic Backpack                    | AM863AA |
|                            | HP Basic Messenger                   | AP355AA |
|                            | HP Basic Carrying Case               | AJ078AA |
|                            | 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 Series Quick Case | AT892AA                              |         |

---

|                 |  |         |
|-----------------|--|---------|
| <b>Security</b> | HP/Kensington MicroSaver Security Lock | PC766AA |
|                 | HP Notebook Cable Lock                 | AY475AA |
|                 | HP Privacy Filter For 15.6 in          | AU103AA |
|                 | HP Privacy Filter For 17.3 in          | AU650AA |

---

|                             |  |         |
|-----------------------------|--|---------|
| <b>Input/Output Devices</b> | HP USB/PS2 Optical 2-Button Scroll Mouse | DC369A  |
|                             | HP USB Keyboard & Mouse Bundle           | RC465AA |
|                             | HP USB Optical Travel Mouse              | RH304AA |
|                             | HP Wireless Mouse                        | AR085AA |
|                             | HP BT Headset                            | AR084AA |
|                             | HP Mobile Audio Speakers                 | FS944AA |
|                             | HP Mobile Productivity Bundle            | AQ729AA |
|                             | HP Notebook Companion Projector          | AX325AA |
|                             | HP Special Edition Optical Mouse         | AU094AA |
|                             | HP Premium Autofocus Webcam              | KQ245AA |
|                             | Premium Digital Headset                  | KJ270AA |
|                             | HP Promo USB Graphics Adapter            | NL571AT |



## Memory

DDR3 PC3--8500 (1066 MHz)\* or DDR3 PC3-10600 (1333 MHz)\* SDRAM  
Two SODIMM slots supporting dual-channel memory  
SODIMM sizes supported: 1024 MB, 2048 MB and 4096 MB

- Standard Memory**
- 1024 MB (1024 MB x 1)
  - 2048 MB (2048 MB x 1)
  - 2048 MB (1024 MB x 2)
  - 3072 MB (2048 MB + 1024 MB)
  - 4096 MB (2048 MB x 2)
  - 4096 MB (4096 MB x 1)
  - 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  |
|---------|---------|---------|
| 2048 MB | 1024 MB | 1024 MB |
| 2048 MB | 2048 MB | empty   |
| 3072 MB | 2048 MB | 1024 MB |
| 4096 MB | 2048 MB | 2048 MB |
| 4096 MB | 4096 MB | empty   |
| 8192 MB | 4096 MB | 4096 MB |

\* Memory speed is processor dependent.

**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.

|                        |                                |         |
|------------------------|--------------------------------|---------|
| <b>Memory Upgrades</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 |



## Storage

### Removable Media Drive Support

---

|   | Quantity Supported | Drive Bay               |
|---|--------------------|-------------------------|
| Blu-ray ROM DVD+/-RW SuperMulti DL LightScribe Drive* | One                | Fixed optical drive bay |
| DVD+/-RW SuperMulti DL LightScribe Drive              | One                | Fixed optical drive bay |

\* Support for the Blu-ray DVD drive on configurations with integrated graphics requires Windows7 or Windows Vista; configurations with discrete graphics support it with any offered Windows operating system.

---

### Internal Storage Device

---

|  | Quantity Supported | Drive Bay                |
|--|--------------------|--------------------------|
| <b>Hard Drives</b>                       |                    |                          |
| 500 GB 7200 rpm SMART SATA II Hard Drive | One                | Dedicated hard drive bay |
| 320 GB 7200 rpm SMART SATA II Hard Drive | One                | Dedicated hard drive bay |
| 250 GB 7200 rpm SMART SATA II Hard Drive | One                | Dedicated hard drive bay |
| 750 GB 5400 rpm SMART SATA II Hard Drive | One                | Dedicated hard drive bay |
| 640 GB 5400 rpm SMART SATA II Hard Drive | One                | Dedicated hard drive bay |



## Technical Specifications

|   |                                  |   |
|---|----------------------------------|---|
| <b>System Unit</b>  | <b>Dimensions (HxWxD)</b>        | HP ProBook 4520s:<br>1.09 in (at front) x 14.64 in x 9.83 in<br>27.7 mm (at front) x 371.8 mm x 249.6 mm          |
|   |                                  | HP ProBook 4720s:<br>1.11 in (at front) x 16.17 in x 10.49 in<br>28.2 mm (at front) x 410.6 mm x 266.4 mm         |
|   | <b>Weight</b>                    | HP ProBook 4520s:<br>Starting at 5.26 lb (2.39 kg) without optical drive<br>or 5.5 lb (2.5 kg) with optical drive |
|   |                                  | HP ProBook 4720s:<br>Starting at 6.51 lb (2.97 kg) without optical drive<br>or 6.8 lb (3.1 kg) with optical drive |
| <p><b>NOTE:</b> Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components. Weight includes 6-cell battery, no optical drive. Weight varies by configuration and components.</p> |                                  |   |
| <b>Stand-Alone Power Requirements (AC Power)</b>  | Nominal Operating Voltage        | 18.5 V  |
|   | Average Operating Power          | with integrated graphics: 18 W<br>with discrete graphics: 21 W  |
|   | Max Operating Power              | < 90 W or < 65W   |
| <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)                  |
|   | Non-operating                    | -4° to 140° F (-20° to 60° C)   |
| <b>Relative Humidity</b>  | Operating                        | 10% to 90%, non-condensing  |
|   | 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  |
|   | Non-operating                    | 200 G, 2 ms, half-sine  |
| <b>Random Vibration</b>   | Operating                        | 0.75 grms   |
|   | Non-operating                    | 1.50 grms   |
| <b>Altitude (unpressurized)</b>   | 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)   |
| <b>Industry Standard Certifications</b>   | UL                               | Yes   |
|   | CSA                              | Yes   |
|   | FCC Compliance                   | Yes   |
|   | ENERGY STAR®                     | Select models*  |
|   | EPEAT                            | Registered TBD in United States**   |
|   | ICES                             | Yes   |
|   | Australia / NZ A-Tick Compliance | Yes   |
|   | CCC                              | Yes   |
|   | Japan VCCI Compliance            | Yes   |



## Technical Specifications

|                                 |     |
|---------------------------------|-----|
| MIC                             | Yes |
| BSMI                            | Yes |
| CE Marking Compliance           | Yes |
| BNCI or BELUS                   | Yes |
| CIT                             | Yes |
| GOST                            | Yes |
| Saudi Arabian Compliance (ICCP) | Yes |
| SABS                            | Yes |
| UKRSERTCOMPUTER                 | Yes |

\* Configurations of the HP ProBook 4520s and HP Probook 4720s that are ENERGY STAR qualified are identified as HP ProBook 4520s ENERGY STAR and HP Probook 4720s ENERGY STAR on HP websites and on [www.energystar.gov](http://www.energystar.gov).

\*\* EPEAT registration varies by country. See [www.epeat.net](http://www.epeat.net) for registration status by country. EPEAT status listed above applies to U.S.

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

### HP 90W Smart AC Adapter

|                             |  |
|-----------------------------|--|
| <b>Dimensions</b>           | 5.00 x 1.97 x 1.1 in (12.7 x 5.0 x 2.9 cm)                                     |
| <b>Weight</b>               | 0.82 lb (370 g)  |
| <b>Input</b>                | 100 to 240 VAC   |
|                             | Input Efficiency 87% min at 115 VAC  |
|                             | Input frequency range 47 to 63 Hz  |
|                             | Input AC current 1.5 A at 90 VAC, 0.75 A at 180 VAC PFC Version                |
|                             | 2.4 A at 90 VAC, 1.2 A at 180 VAC NON PFC Version                              |
| <b>Output</b>               | Output power 90W   |
|                             | DC output 19.0V  |
|                             | Hold-up time 5 msec at 115 VAC input   |
|                             | Output current limit <11A, Over voltage protection- 29V max automatic shutdown |
| <b>Connector</b>            | 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%  |



## Technical Specifications

|                                |                                      |  |   |
|--------------------------------|--------------------------------------|--|---|
|                                | <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.  |   |
| <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>                         | Input  | 100 to 240 VAC  |
|                                |                                      | Input Efficiency   | 87% min at 115 VAC  |
|                                |                                      | Input frequency range  | 47 to 63 Hz   |
|                                | <b>Output</b>                        | 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 |
|                                | <b>Connector</b>                     | 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. |   |

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

## Displays



## Technical Specifications

|                              |                     |   |                      |  |
|------------------------------|---------------------|---|----------------------|--|
| 17.3-inch LED HD+ anti-glare | Active Area (W x H) | 15.0 x 8.5 in (38.2 x 21.5 cm)  |                      |  |
|                              | Diagonal Size       | 17.3 in (43.9 cm)   |                      |  |
|                              | Surface Treatment   | Anti-glare  |                      |  |
|                              | Contrast Ratio      | 400:1 typical   |                      |  |
|                              | Refresh Rate        | 60 Hz   |                      |  |
|                              | Brightness          | 200 nit typical   |                      |  |
|                              | Pixel Resolution    | Pitch   | 0.23868 x 0.23868 mm |  |
|                              |                     | Format  | 1600 x 900           |  |
|                              |                     | Configuration   | RGB Stripe           |  |
|                              | Backlight           | LED   |                      |  |
|                              | PPI                 | 107   |                      |  |
|                              | Viewing Angle       | ±30° Horizontal, ±10° Vertical (minimum)<br>30/30/20/10 (Left/Right/Down/Up) (minimum) or<br>45/45/35/25 (Left/Right/Down/Up) (typical) |                      |  |

---

|  |                    |   |            |  |
|--|--------------------|---|------------|--|
| 15.6-inch LED HD (1366 x 768) anti-glare | Dimensions (W x H) | 13.54 x 7.59 in (34.4 x 19.4 cm)  |            |  |
|  | Diagonal Size      | 15.6 in (39.6cm)  |            |  |
|  | Surface Treatment  | Anti-glare  |            |  |
|  | Contrast Ratio     | 400:1 (min)   |            |  |
|  | Refresh Rate       | 60 Hz   |            |  |
|  | Brightness         | 210 nit (typical)   |            |  |
|  | Pixel Resolution   | Pitch   | 0.252 mm   |  |
|  |                    | Format  | 1366 x 768 |  |
|  |                    | Configuration   | RGB Stripe |  |
|  | Backlight          | LED   |            |  |
|  | PPI                | 101 ppi   |            |  |
|  | Viewing Angle      | ±30° Horizontal, ±10° Vertical (minimum)<br>30/30/20/10 (Left/Right/Down/Up) (minimum) or<br>45/45/35/25 (Left/Right/Down/Up) (typical) |            |  |

---

## Internal Storage

---



## Technical Specifications

|                                    |   |  |       |
|------------------------------------|---|--|-------|
| 750 GB 5400 rpm SATA<br>Hard Drive | Drive Weight  | 0.27 lb (125 g)  |       |
|                                    | Capacity  | 750 GB   |       |
|                                    | Height  | 0.50 in (12.7 mm)  |       |
|                                    | Width   | 2.75 in (70 mm)  |       |
|                                    | Interface   | ATA-8, SATA 2.6, 3.0 Gb/s, NCQ                           |       |
|                                    | Transfer Rate                                       | <b>Synchronous</b> (maximum) 150 MB/s (Drive Capability) |       |
|                                    | Seek Time<br>(typical reads, including<br>settling) | <b>Single Track</b>                                      | 2 ms  |
|                                    |   | <b>Average</b>   | 12ms  |
|                                    |   | <b>Maximum</b>   | 22 ms |
|                                    | Rotational Speed                                    | 5400 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 SATA<br>Hard Drive | Drive Weight  | 0.25 lbs (115g)  |       |
|                                    | Capacity  | 500 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                                       | <b>Synchronous</b> (maximum) 150 MB/s (Drive Capability) |       |
|                                    | Seek Time<br>(typical reads, including<br>settling) | <b>Single Track</b>                                      | 1.5ms |
|                                    |   | <b>Average</b>   | 11ms  |
|                                    |   | <b>Maximum</b>   | 22ms  |
|                                    | 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<br>Hard Drive | Drive Weight  | 0.25 lbs (115g)  |       |
|                                    | Capacity  | 250 GB   |       |
|                                    | Height  | 0.37 in (9.5 mm) or on some models 0.28 in (7 mm)        |       |
|                                    | Width   | 2.75 in (70 mm)  |       |
|                                    | Interface   | ATA-8, SATA 2.6, 3.0 Gb/s, NCQ                           |       |
|                                    | Transfer Rate                                       | <b>Synchronous</b> (maximum) 150 MB/s (Drive Capability) |       |
|                                    | Seek Time<br>(typical reads, including<br>settling) | <b>Single Track</b>                                      | 1.5ms |
|                                    |   | <b>Average</b>   | 11ms  |
|                                    |   | <b>Maximum</b>   | 22ms  |
|                                    | Rotational Speed                                    | 7200 rpm   |       |
|                                    | Logical Blocks                                      | 625,142,448  |       |
|                                    | Operating Temperature                               | 32° to 140° F (0° to 60° C) [case temp]                  |       |
| Features                           | ATA Security  |  |       |

---

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

---

## Optical Drives

---



## Technical Specifications

|   |  |                       |  |
|---|--|-----------------------|--|
| DVD+/-RW SuperMulti<br>DL LightScribe Drive | <b>Access Times</b>  | Random                | < 150ms CD (typical)<br>< 160 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                              |
|   |  | 8X DVD+RW             | Up to 10,800 KB/s                              |
|   |  | 8X DVD-R              | Up to 10,800 KB/s                              |
|   |  | 6X DVD-RW             | Up to 8100KB/s                                 |
|   |  | 4X - DVD+R Dual Layer | Up to 5,400 KB/s                               |
|   |  | 4X - DVD-R Dual Layer | Up to 5,400 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, LightScribe  |                       |  |
| <b>Max Media Capacity (read)</b>            | 8.5 GB   |                       |  |
| <b>Max Media Capacity (write)</b>           | 8.5 GB   |                       |  |
| <b>Transport</b>                            | Tray Loading   |                       |  |

---

|  |                               |                       |  |
|--|-------------------------------|-----------------------|--|
| Blu-ray ROM DVD+/-RW<br>SuperMulti DL LightScribe<br>Drive | <b>Access Times</b>           | Random                | < 190 ms CD-ROM (typical)<br>< 190ms DVD-ROM (typical)<br><230 ms BD-ROM (typical) |
|  | <b>Max Data Transfer Rate</b> | 24X CD-ROM            | Up to 3600KB/s   |
|  |                               | 8X DVD-ROM            | Up to 10800 KB/s   |
|  |                               | 16X CD-R              | Up to 1,200KB/s  |
|  |                               | 10X CD-RW             | Up to 1500 KB/s  |
|  |                               | 8X DVD+R              | Up to 10800 KB/s   |
|  |                               | 8X DVD+RW             | Up to 10,800KB/s   |
|  |                               | 8X DVD-R              | Up to 10800 KB/s   |
|  |                               | 6X DVD-RW             | Up to 8,100 KB/s   |
|  |                               | 4X - DVD+R Dual Layer |  |
|  |                               | 4X - DVD-R Dual Layer | Up to 5400 KB/s  |
|  | 5X DVD-RAM                    | Up to 6750 KB/s       |  |



## Technical Specifications

|                                   |   |                  |
|-----------------------------------|---|------------------|
|                                   | 4X BD-ROM   | Up to 18,000KB/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, BD-ROM, BD-R, BD-RE |                  |
| <b>Supported Media (write)</b>    | CD-R, CD-RW, DVD+R, DVD+R(9), DVD+RW, DVD-R, DVD-R(9), DVD-RW, DVD-RAM, LightScribe   |                  |
| <b>Max Media Capacity (read)</b>  | 50.0 GB   |                  |
| <b>Max Media Capacity (write)</b> | 8.5GB   |                  |
| <b>Transport</b>                  | Tray Loading  |                  |

---

## Security

|   |                                   |  |
|---|-----------------------------------|--|
| <b>HP Fingerprint Sensor (optional)</b> | <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>Microphone In</b>                   | Stereo                            |
|                 | <b>Headphone/Line Out</b>              | Stereo                            |
|                 | <b>Integrated Microphone</b>           | Yes                               |



## Technical Specifications

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

---

|                            |              |           |
|----------------------------|--------------|-----------|
| Integrated Stereo Speakers | Power Rating | 1.5 Watts |
|                            | Impedance    | 4 Ohms    |

---

## Communications

---

|   |                               |  |
|---|-------------------------------|--|
| Integrated Realtek RTL8151DH-GR 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 802.1q VLAN 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<br>Advanced link down power saving for reducing link down power consumption   |
|   | <b>Performance Features</b>   | TCP/IP/UDP Checksum Offload (configurable)<br>Large send offload and Giant send offload<br>Receiving Side Scaling  |
|   | <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>Virtual Cable Doctor for Ethernet cable status   |
|   | <b>Interface</b>              | PCI Express 1.1 x1 to fully support ASPM L0s/L1 and CLKREQ   |
|   | <b>NIC Device Driver Name</b> | Realtek PCIe Gb Ethernet Family Controller   |

---



## Technical Specifications

|                         |                          |   |
|-------------------------|--------------------------|---|
| V.92 56K Data/Fax Modem | Form Factor              | MDC 1.5 Daughtercard  |
|                         | Power Management Support | APM Revision 1.2, ACPI  |
|                         | Approvals/Certifications | UL, CSA, NEMKO, CCIB, Industry Canada, FCC Part 68, CTR21, FCC Part 15 Class B, Canadian ICES-003 Class B, C.I.S.P.R.22, Australian ACA, CE Mark, Other Countries   |
|                         | Data Mode Capabilities   | V.92 data<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 |
|                         | Fax Mode Capabilities    | 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   |
|                         | Command Set              | 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  |

---

|  |                        |  |
|--|------------------------|--|
| Atheros 9285G<br>802.11b/g/n 1x1 WiFi<br>Adapter | Wireless LAN Standards | IEEE 802.11b<br>IEEE 802.11g<br>IEEE 802.11n |
|  | Interoperability       | Wi-Fi certified                              |
|  | Frequency Band         | 2.4 GHz                                      |



## Technical Specifications

|   |   |
|---|---|
| <b>Data Rates</b>   | 802.11b: 1, 2, 5.5, 11 Mbps<br>802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>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 |
| <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.  |
| <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>  | Transmit: 1.5 W (max)<br>Receive: 1.0 W (max)<br>Associated to Access Point, Idle: 300 mW nominal<br>Wireless Button Off: 75 mW nominal   |
| <b>Power Management</b>   | ACPI compliant power management<br>802.11 compliant power saving mode   |
| <b>Receiver Sensitivity<sup>3</sup></b>                               | 54 Mbps: -75 dBm, 11 Mbps: -88 dBm, 1 Mbps: -93 dBm   |
| <b>Antenna type</b>   | High efficiency 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 +/- 9%   |
| <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).



## Technical Specifications

|                                |  |  |
|--------------------------------|--|--|
| Intel Centrino Advanced-N 6200 | Wireless LAN Standards                       | IEEE 802.11a<br>IEEE 802.11b<br>IEEE 802.11g<br>IEEE 802.11n*  |
|                                |  | * In countries where 802.11n is not allowed, this capability is not enabled.   |
|                                | Interoperability                             | 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> )  |
|                                | 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<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  |
|                                | Modulation                                   | Direct Sequence Spread Spectrum<br>DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM   |
|                                | Security <sup>1</sup>                        | Authentication: WPA and WPA2, 802.1x (EAP_TLS, TTLS, PEAP, LEAP, EAP-FAST)<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. |
|                                | 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)<br>Infrastructure (Access Point Required)  |
|                                | Roaming                                      | IEEE 802.11 compliant roaming between 2.4GHz band Access Points  |
|                                | Output Power (for CCK and OFDM) <sup>2</sup> | 17 dBm max   |
|                                | Power Consumption                            | 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)  |
|                                | Power Management                             | ACPI compliant power management<br>802.11 compliant power saving mode  |
|                                | Receiver Sensitivity <sup>4</sup>            | 54 Mbps: -76 dBm, 6 Mbps: -92 dBm  |
|                                | Antenna Connections                          | 2 U.FL type connectors, 50 ohm nominal impedance   |
|                                | Form Factor                                  | PCI-Express Half-MiniCard  |
|                                | Weight                                       | 0.0075 lb (3.4 g)  |
|                                | Dimensions                                   | 0.12 x 1.06 x 1.18 in (3.1 x 26.8 x 30.0 mm)   |
|                                | Operating Voltage                            | 3.3V +/- 9%  |



## Technical Specifications

|                     |  |                                |
|---------------------|--|--------------------------------|
| <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 |                                |

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.

|   |   |   |
|---|---|---|
| <b>Ralink RT3090BC4<br/>802.11b/g/n WiFi and<br/>Bluetooth 3.0 HS Combo<br/>Adapter</b> | <b>Wireless LAN Standards</b>   | IEEE 802.11b<br>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   |
|   | <b>Data Rates</b>   | 802.11b: 1, 2, 5.5, 11 Mbps<br>802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>802.11n: 15, 30, 45, 60, 90, 120, 135, 150 Mbps  |
|   | <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 7, Windows Vista and XP. |
|   | <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  |



## Technical Specifications

|   |   |
|---|---|
| <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: -81 dBm , 1 Mbps: -90 dBm  |
| <b>Antenna type</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>                             | 0.22 x 1.06 x 1.18 in (4.1 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>Configuration Utility<sup>4</sup></b>      | Microsoft Windows XP<br>Choice of Configuration Utility: <ul style="list-style-type: none"><li>● Microsoft Windows XP Wireless Network Connection Manager</li><li>● Microsoft Windows Vista &amp; Windows 7 Wireless Network Connection Manager</li></ul>   |
| <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. 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/n (OFDM modulation).</li><li>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.</li></ol> |
| <b>Bluetooth 3.0 + HS Wireless Technology</b> | <b>Bluetooth Specification</b> BT 3.0 + HS<br><b>Dimensions</b> 0.22 x 1.06 x 1.18 in (4.1 x 26.8 x 30 mm)<br><b>Frequency Band</b> 2402 to 2480 MHz<br><b>Number of Available Channels</b> 79 (1 MHz) available channels<br><b>Data Rates and Throughput</b> BT 2.1 + EDR<br>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<br>BT 3.0 + HS<br>Throughput up to 25 Mbps  |



## Technical Specifications

|                                     |  |                                |
|-------------------------------------|--|--------------------------------|
| <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) 350 mW<br>Peak (Rx) 250 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> | Motorola Bluetooth Profiles and Stack  |                                |
| <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)  |
|                                     | Non-operating  | -40° to 176° F (-40° to 80° C) |
| <b>Humidity</b>                     | Operating  | 10% to 90%                     |
|                                     | Non-operating  | 5% to 95%                      |
| <b>Altitude</b>                     | Operating  | 15,000 ft (4,572 m)            |
|                                     | 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><br>Generic Object Exchange Profile (GOEP) <sup>1,2</sup><br>Object Push Profile (OPP) <sup>1,2</sup><br>File Transfer Profile (FTP)<br>Synchronization Profile (SYNC)<br>Hard Copy Cable Replacement (HCRP) <sup>1,2</sup><br>Personal Area Networking Profile (PAN) <sup>1,2</sup><br>Human Interface Device Profile (HID) <sup>1,2,3</sup><br>FAX Profile (FAX)<br>Basic Imaging Profile (BIP) <sup>2</sup><br>Headset Profile (HSP)<br>Hands Free Profile (HFP)<br>Advanced Audio Distribution Profile (A2DP) |                                |



## Technical Specifications

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

|   |  |   |
|---|--|---|
| HP Integrated Module with Bluetooth 2.1 Wireless Technology | Bluetooth Specification                      | 2.1 Compliant   |
|   | Dimensions                                   | 1.18 x 0.26 x 0.13 in (30 x 6.5 x 3.25 mm)  |
|   | Frequency Band                               | 2402 to 2480 MHz  |
|   | Number of Available Channels                 | 79 (1 MHz) available channels   |
|   | Data Rates and Throughput                    | 3 Mbps data rate; throughput up to 2.17 Mbps<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 |
|   | Transmit Power                               | -6 dBm to 4 dBm (Bluetooth Class II)  |
|   | Receiver Sensitivity                         | Better than -80 dBm at 0.1 % raw bit error rate   |
|   | Power Consumption                            | Peak (Tx) 264 mW  |
|   |  | Peak (Rx) 231 mW  |
|   |  | Sleep <1 mW   |
|   | Antenna                                      | Internally integrated within module   |
|   | Range  | Up 33 ft (10 m)   |
|   | Electrical Interface                         | USB 2.0 compliant   |
|   |  | Microsoft Windows Plug and Play compliant   |
|   | Bluetooth Software Supported                 | Broadcom Bluetooth for Windows<br>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:<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            |
|   |  | Temperature   |
| Non-operating -40° to 176° F (-40° to 80° C)                |  |   |
| Humidity  |  | Operating 10% to 90%  |
|   | Non-operating 5% to 95%                      |   |
| Altitude  | Operating 15,000 ft (4,572 m)                |   |
|   | Non-operating 40,000 ft (12,192 m)           |   |
| Bluetooth Profiles Supported                                | Serial Port Profile (SPP) <sup>1</sup>       |   |
|   | Service Discovery Application Profile (SDAP) |   |
|   | 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

### Environmental Data

#### HP ProBook 4520s Notebook PC

##### 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 - Silver

##### System Configuration

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Convertible Mini tower Desktop model is based on a "Typically Configured Notebook"

|                                    | 115 VAC   | 230 VAC   | 100 VAC   |
|------------------------------------|-----------|-----------|-----------|
| <b>Energy Consumption</b>          |           |           |           |
| Normal Operation                   | 11.22 W   | 11.86 W   | 11.22 W   |
| Sleep (Energy Star low power mode) | 0.89 W    | 1.04 W    | 0.89 W    |
| Off                                | 0.53 W    | 0.69 W    | 0.52 W    |
| <b>Heat Dissipation*</b>           |           |           |           |
| Normal Operation                   | 38 BTU/hr | 41 BTU/hr | 38 BTU/hr |
| Sleep                              | 3 BTU/hr  | 4 BTU/hr  | 3 BTU/hr  |
| Off                                | 2 BTU/hr  | 2 BTU/hr  | 2 BTU/hr  |

\* Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

##### Declared Noise Emissions

(in accordance with ISO 7779 and ISO 9296)

| System Fan Off | Sound Power (LWAd, bels) | Sound Pressure (LpAm, decibels) |
|----------------|--------------------------|---------------------------------|
| Idle           | 2.9                      | 26.7                            |



## Technical Specifications

|                               |     |      |
|-------------------------------|-----|------|
| Fixed Disk<br>(random writes) | 2.8 | 26.5 |
|-------------------------------|-----|------|

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  
High capacity Lithium-Ion battery

### 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 Silver 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% post consumer recycled plastic (by wt.)

This product is greater than 95% recycle-able when properly disposed of at end of life.

### Packaging Materials

- External:
  - Corrugated 190 g
  - Corrugated carton 485 g
- Internal:
  - Polyethylene low density 38 g
- The Corrugated/Corrugated Carton packaging material is made from 80% recycled content.
- The Polyethylene low density packaging 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 cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging



## Technical Specifications

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.

### HP ProBook 4720s Notebook PC

**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

**System Configuration** The configuration used for the Energy Consumption and Declared Noise Emissions data for the Convertible Mini tower Desktop model is based on a "Typically Configured Notebook"

|                                    | 115 VAC   | 230 VAC   | 100 VAC   |
|------------------------------------|-----------|-----------|-----------|
| <b>Energy Consumption</b>          |           |           |           |
| Normal Operation                   | 11.8 W    | 11.85 W   | 11.80 W   |
| Sleep (Energy Star low power mode) | 0.98 W    | 1.08 W    | 0.98 W    |
| Off                                | 0.61 W    | 0.68 W    | 0.59 W    |
| <b>Heat Dissipation*</b>           | 115 VAC   | 230 VAC   | 100 VAC   |
| Normal Operation                   | 40 BTU/hr | 41 BTU/hr | 40 BTU/hr |
| Sleep                              | 3 BTU/hr  | 4 BTU/hr  | 3 BTU/hr  |
| Off                                | 2 BTU/hr  | 2 BTU/hr  | 2 BTU/hr  |

\* Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

### Declared Noise Emissions

(in accordance with ISO 7779 and ISO 9296)

| System Fan Off             | Sound Power (LWAd, bels) | Sound Pressure (LpAm, decibels) |
|----------------------------|--------------------------|---------------------------------|
| Idle                       | 2.8                      | 24.2                            |
| Fixed Disk (random writes) | 2.8                      | 25.8                            |

System fan is usually off except when charging the battery

**Batteries** This battery(s) in this product comply with EU Directive 2006/66/EC

Batteries used in the product do not contain:

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



## Technical Specifications

### Additional information

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)

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% post consumer recycled plastic (by wt.)

This product is greater than 95% recycle-able when properly disposed of at end of life.

### Packaging Materials

- External:
  - Corrugated Carton 300 g
  - Corrugated 210 g
- Internal:
  - Polyethylene low density 43 g
- The Polyethylene low density packaging material is made from 100% recycled content.
- The Corrugated Carton packaging material is made from 80% recycled content.
- The Corrugated packaging 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 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.



## Technical Specifications

- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

### HP ProBook 4520s Notebook PC and HP ProBook 4720s Notebook PC

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

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants - may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) - except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)
- Nickel finishes that release greater than 0.5  $\mu\text{grams}/\text{cm}^2/\text{week}$ , 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



## Technical Specifications

<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>

---

Copyright © 2011 Hewlett-Packard Development Company, L.P.

All rights reserved. Microsoft, Windows, Windows 7, Windows Vista and Windows XP are registered trademarks or trademarks of Microsoft Corporation in the U.S. and/or other countries. Intel, Core, and Celeron are registered trademarks or trademarks of Intel Corporation in the U.S. and/or other countries. Bluetooth is a registered trademark of Bluetooth SIG, Inc., in the U.S. and other countries. All other product names mentioned herein may be trademarks of their respective companies.

The information contained herein is subject to change without notice and is provided "as is" without warranty of any kind. The warranties for HP products are set forth in the express limited warranty statements accompanying such products. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

