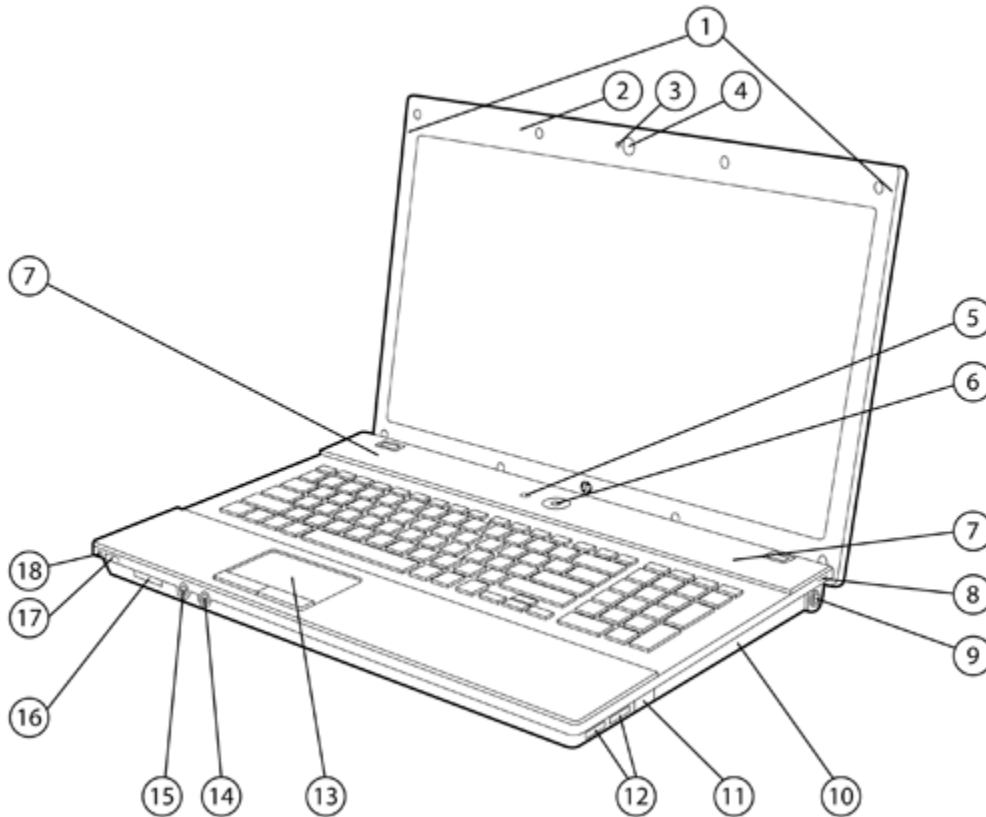
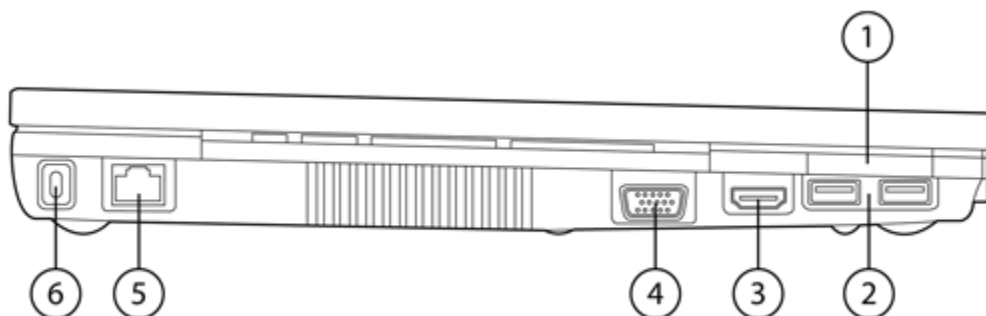


Overview

HP recommends Windows Vista® Business

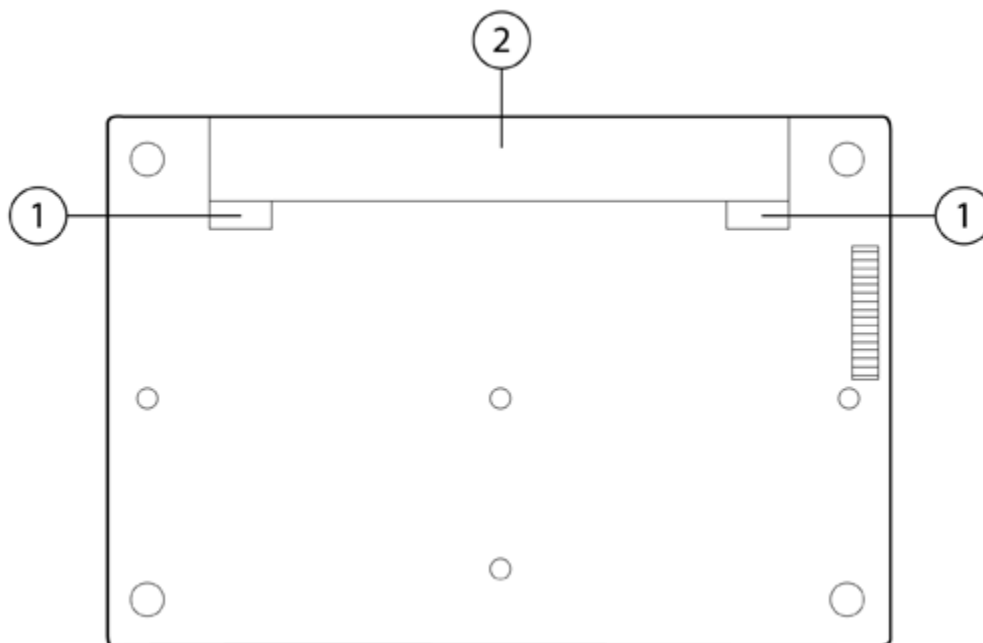


- | | |
|--|--|
| 1. WLAN antennas | 10. Optical drive |
| 2. Integrated microphone | 11. Optional RJ-11/modem port |
| 3. Webcam light (works with optional webcam) | 12. (2) USB 2.0 ports |
| 4. Optional 2 MP webcam | 13. Touchpad with scroll zone |
| 5. Quick Look button | 14. Stereo microphone in |
| 6. Power button with LED indicator | 15. Stereo headphone/line out |
| 7. Stereo speakers | 16. Media Card Reader |
| 8. Battery charging LED indicator | 17. Wireless switch with LED indicator |
| 9. Power connector | 18. Hard drive activity LED indicator |



- | | |
|------------------------|---|
| 1. ExpressCard/34 slot | 4. VGA connector (external monitor/projector) |
| 2. (2) USB 2.0 ports | 5. RJ-45/Ethernet port |
| 3. HDMI port | 6. Kensington Lock slot |

Overview



1. Battery release latches

2. Battery bay

At A Glance

- Genuine Windows Vista Business 32, Genuine Windows Vista Business with downgrade to Windows XP Professional custom installed, Genuine Windows Vista Home Premium 32, Genuine Windows Vista Home Basic 32, SuSE Linux, Red Flag Linux (PRC only), or FreeDOS
- Thin, lightweight design starting at 6.8 lb/3.08 kg and 1.26 in/32.0 mm thin at front
- Widescreen 17.3-inch diagonal LED-backlit HD+ display with 16:9 aspect ratio BrightView optional
- Flexible wireless connectivity options:
 - Integrated 802.11 a/b/g/n draft 2.0, a/b/g, or b/g wireless LAN module
 - Bluetooth® 2.0
- ATI Mobility Radeon HD 4330 discrete graphics
- HDMI port for connecting to high-resolution displays
- Optional optical drives include Blu-ray ROM DVD+/-RW SuperMulti DL LightScribe Drive for high-definition playback and burning custom labels directly to your discs
- Available with Intel® Core™2 Duo or Intel® Celeron® processor
- Integrated Media Card Reader
- Enhanced security features including HP ProtectTools Security Manager, Disk Sanitizer, and HP SpareKey
- Optional integrated 2 MP webcam
- Full-sized spill-resistant keyboard with separate numeric keypad
- Up to 500 GB 5400 rpm or 250 GB 7200 rpm hard drive with HP 3D DriveGuard protection
- Up to 8 GB of 800 MHz DDR2 SDRAM supported, dual channel memory support

Standard Features

Processors

Intel Core 2 Duo Processor T9600 (2.8 GHz, 6 MB L2 cache, 1066 MHz FSB)*
 Intel Core 2 Duo Processor T9400 (2.53 GHz, 6 MB L2 cache, 1066 MHz FSB)*
 Intel Core 2 Duo Processor P8700 (2.53 GHz, 3 MB L2 cache, 1066 MHz FSB)*
 Intel Core 2 Duo Processor P8600 (2.40 GHz, 3 MB L2 cache, 1066 MHz FSB)*
 Intel Core 2 Duo Processor P7370 (2.0 GHz, 3 MB L2 cache, 1066 MHz FSB)*
 Intel Core 2 Duo Processor T6570 (2.10 GHz, 2 MB L2 cache, 800 MHz FSB)*
 Intel Core 2 Duo Processor T5870 (2.00 GHz, 2 MB L2 cache, 800 MHz FSB)*
 Intel Celeron Dual-Core Processor T1700 (1.83 GHz, 1 MB L2 cache, 667 MHz FSB)*
 Intel Celeron Dual-Core Processor T1600 (1.66 GHz, 1 MB L2 cache, 667 MHz FSB)*
 Intel Celeron Processor 900 (2.20 GHz, 1 MB L2 cache, 800 MHz FSB)*
 Intel Celeron Processor 585 (2.16 GHz, 1 MB L2 cache, 667 MHz FSB)*

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 Vista Business 32*
 Genuine Windows Vista Home Basic 32*
 Genuine Windows Vista Home Premium 32*
 Genuine Windows Vista Business with downgrade to Windows XP Professional custom installed*†
 SuSE Linux
 Red Flag Linux (PRC only)
 FreeDOS

Supported

Genuine Windows Vista Business 64*

Certified

SuSE Linux Enterprise Desktop 10

* 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>.

† Windows Vista Business disk may be included for future upgrade if desired. To qualify for this downgrade an end user must be a business (including governmental or educational institutions) and is expected to order annually at least 25 customer systems with the same custom image.

Chipset

Mobile Intel PM45 Express Chipset with ICHM9, 1066 MHz front side bus

Graphics

ATI Mobility Radeon HD 4330 graphics with 512 MB dedicated video memory
 - up to 1024 MB HyperMemory* in units with Windows XP and 2 GB or more of system memory
 - up to 1280 MB HyperMemory* in units with Windows Vista Business and 2 GB or more of system memory

Microsoft DirectX 10.1 capable

* Indicates 512 MB dedicated video memory and 512 MB shared system memory.

Standard Features

| | | |
|----------------|-----------------|--|
| Display | Internal | 17.3-inch diagonal LED-backlit HD+ anti-glare (1600 x 900 resolution) 17.3-inch diagonal LED-backlit HD+ BrightView (1600 x 900 resolution) |
| | External | Up to 32-bit per pixel color depth VGA port supports resolutions up to 1600 x 1200 at 75 Hz, and lower resolutions at up to 100 Hz. HDMI 1.3 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). NOTE: Resolutions are dependent upon monitor capability, and resolution and color depth settings. |

| | | |
|---------------|---------------------------------------|--|
| Memory | Standard | 800 MHz DDR2 SDRAM; two slots supporting dual channel memory 1024 MB or 2048 MB |
| | Maximum Dual-channel | Upgradeable to 8192 MB with 4096 MB SODIMMs in slots 1 and 2 Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots. |

NOTE: Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed. 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 | Marvell Ethernet (10/100/1000 NIC)* Optional 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 options featuring support for the latest industry standards. Wireless LAN is factory configurable or available 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 options. |
| All 802.11 integrated wireless LAN options | Wi-Fi certified* Wired Equivalent Privacy (WEP) support up to 128-bit keys Wi-Fi Protected Access (WPA) and WPA2 support 802.1x authentication support, including EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, and LEAP Advanced Encryption Standard (AES) support Dual antennas integrated in the display enclosure |
| Intel WiFi Link 5100 | Integrated support for 802.11a, b, g, and n draft 2.0* Cisco Compatible Extensions support Up to 450 mbps data rate |
| Intel WiFi Link 5100 | Integrated support for 802.11 a, b and g Cisco Compatible Extensions support Up to 54 mbps data rate |
| Broadcom 4322AGN 802.11a/b/g/draft-n Wi-Fi Adapter | Integrated support for 802.11a, b, g, and n draft 2.0* Cisco Compatible Extensions support Up to 300 mbps data rate |



Standard Features

| | |
|--|---|
| Broadcom 4312G 802.11b/g WiFi Adapter | Integrated support for 802.11 b and g Cisco Compatible Extensions support Up to 54 mbps data rate |
| HP Integrated Module with Bluetooth Wireless Technology | Bluetooth Specification v2.0 compliant Works with a wide range of Bluetooth devices |

* The specifications for 802.11n draft 2.0 are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11n WLAN devices. In countries where n draft 2.0 is not allowed, this capability is not enabled (Intel 802.11a/b/g only).

Keyboard

The HP spill-resistant keyboard is designed using a Mylar film that minimizes the risk of damage to sensitive components underneath. 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, and 12 function keys. US and International key layouts are available. Other features include a full numeric keypad, hotkeys for instant access to power conservation and brightness, and 19.05 x 19.05 mm key pitch (center-to-center spacing).

Pointing device

Touchpad with scroll zone, two pick buttons

Expansion card slots

| | |
|----------------------------|---|
| ExpressCard/34 slot | Supports ExpressCard/34 (34 mm x 75 mm x 5 mm) card sizes |
| Media Card Reader | 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.

Storage

Internal Storage Device 160/250/320/500 GB 5400 rpm, 160/250 GB 7200 rpm SMART SATA II Hard Drive

NOTE: Up to 10 GB is reserved for the system recovery software.

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

Fixed optical drives Blu-ray ROM DVD+/-RW SuperMulti DL LightScribe Drive
DVD+/-RW SuperMulti DL LightScribe Drive
DVD-ROM Drive

Standard Features

| | | |
|-------------------|----------------------------------|---------------------|
| Interfaces | External monitor | One (VGA) |
| | HDMI | One - 1.3 compliant |
| | Stereo microphone in | One |
| | Stereo headphone/line out | One |
| | Power connector | One |
| | RJ-11/modem (optional) | One |
| | RJ-45/Ethernet | One |
| | USB 2.0 | Four |
| | LED status indicators | Seven |

Audio/Visual

High Definition Audio support
Integrated stereo speakers
Integrated microphone
Stereo headphone/line out
Stereo microphone in

Optional 2 MP webcam

- Supports videoconferencing and still image capture
- Improved quality for video streaming and still image capture (1600x1200 resolution)
- Up to 30 frames/sec
- Fixed focus lens
- 16-bit true color (camera sensor up to UXGA resolution)

Software

Preinstalled software with Windows Vista

HP Recovery Manager
HP Help and Support Center
HP ProtectTools Security Manager
HP QuickLaunch Buttons Software
HP QuickLook 2
HP Wireless Assistant
HP 3D DriveGuard
Microsoft Office Ready with 60-day Office Professional 2007 Trial Edition (select models)
PDF Complete SE
Intervideo WinDVD - DVD Player
Roxio Creator Business (for optional DVD+/-RW and DVD/CDRW drives)
McAfee Total Protection*
Synaptics Touchpad Driver
Microsoft Windows Live Messenger (select models)
Webcam Software (with optional 2 MP webcam)

Additional software available from the web

HP SoftPaq Download Manager

* 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.

Standard Features

HP Recovery Manager Models shipped with 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 10 GB of the hard drive is reserved for the system recovery software.

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:

- BIOS Configuration for HP ProtectTools
- 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

| | | |
|-----------------|--------------------------|---|
| Security | Standard Features | HP ProtectTools Security Manager Easy Setup Wizard One Step Login Enhanced Pre-Boot Security HP SpareKey Disk Sanitizer Configuration Control Hardware Memory Change Alert Ownership Tag Setup Password Power-On Password HP 3D DriveGuard (Windows models only) Kensington Lock Slot Support for Computrace / LoJack for Laptops (must be purchased separately) HP Privacy Filter (must be purchased separately) |
|-----------------|--------------------------|---|

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

Power Supply 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.

| | | |
|----------------|------------------------|--------------------------------|
| Battery | Primary battery | 8-cell (63 WHr) Li-Ion battery |
|----------------|------------------------|--------------------------------|

Standard Features

Battery Life

Primary battery Up to 4 hours and 30 minutes

NOTE: The listed battery life measurements were taken on models running Microsoft Windows Vista. Battery life will vary depending on the product configuration, product model, applications loaded on the product, power management settings of the product, and the product features used by the customer. As with all batteries, the maximum capacity of this battery will decrease with time and usage.

System Standby Time Up to 1 week

Power Conservation

Supports enhanced Intel SpeedStep technology with Intel Core 2 Duo (allows Battery Optimized Mode, Maximum Performance Mode, or Automatic mode)

ATI PowerPlay technology

Hibernation

Standby

ACPI compliance

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. 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

| | | |
|-----------------------------|--|-------------|
| Memory | HP 1 GB (DDR2 800 MHz) SODIMM | KT292AA |
| | HP 2 GB (DDR2 800 MHz) SODIMM | KT293AA |
| | HP 4 GB (DDR2 800 MHz) SODIMM | KT294AA |
| Storage | HP Notebooks USB Diskette Drive | DC361B |
| | HP Primary SATA 250 GB 5400 rpm Hard Drive | AK072AA |
| | HP Primary SATA 120 GB 7200 rpm Hard Drive | AH920AA |
| | HP 250 GB USB Pocket Media Hard Drive | FE477AA |
| | HP External USB CD/DVD R/RW Drive | FS943AA |
| | HP External MultiBay II | PA509A#xxx |
| Communication | HP WLAN 802/11 a/b/g/draft-n Mini-card Kit | KM591AA#xxx |
| Expansion | HP USB 2.0 Docking Station | FQ834AA |
| | HP Basic Adjustable Stand | AL549AA |
| Power | HP 90W Smart AC Adapter | ED495AA#xxx |
| | HP 90W Smart Combo Adapter | AJ652AA#xxx |
| | HP 90W Smart Auto/Truck Adapter | ED493AA |
| Carrying Cases | HP Basic Carrying Case | AJ078AA |
| | HP Basic Backpack | AM863AA |
| | HP Basic Messenger | AP355AA |
| | HP Value Nylon Case | RR314AA |
| | HP Universal Nylon Case | RR315AA |
| | HP Executive Leather Case | RR316AA |
| | HP Deluxe Nylon Backpack | RR317AA |
| | HP Deluxe Roller Case | GD405AA |
| Security | HP/Kensington MicroSaver Security Lock | PC766A |
| Input/Output Devices | HP USB Keyboard & Mouse Bundle | RC465AA#xxx |
| | HP USB/PS2 Optical 2-Button Scroll Mouse | DC369A |
| | HP USB Optical Travel Mouse | RH304AA |
| | HP Mobile Audio Speakers | FS944AA |

Memory

800 MHz DDR2 SDRAM
 Two DIMM slots supporting dual channel memory
 DIMM sizes supported: 1024 MB and 2048 MB

- Standard Memory**
- 1024 MB (1024 MB x 1)
 - 2048 MB (2048 MB x 1 or 1024 MB x 2)
 - 3072 MB (2048 MB x 1024 MB)
 - 4096 MB (2048 MB x 2)

Optional Memory Upgrades Support for up to 8192 MB of memory with the installation of optional DDR2 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 |
|---------|---------|---------|
| 1024 MB | 1024 MB | Empty |
| 2048 MB | 1024 MB | 1024 MB |
| 3072 MB | 2048 MB | 1024 MB |
| 4096 MB | 2048 MB | 2048 MB |
| 8192 MB | 4096 MB | 4096 MB |

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. 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.

| | | |
|------------------------|-------------------------------|---------|
| Memory Upgrades | HP 1 GB (DDR2 800 MHz) SODIMM | KT292AA |
| | HP 2 GB (DDR2 800 MHz) SODIMM | KT293AA |
| | HP 4 GB (DDR2 800 MHz) SODIMM | KT294AA |

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 |
| DVD-ROM Drive | One | Fixed optical drive bay |

Internal Storage Device

| | Quantity Supported | Drive Bay |
|--|--------------------|--------------------------|
| Hard Drives | | |
| 500 GB 5400 rpm SMART SATA II Hard Drive | One | Dedicated hard drive bay |
| 320 GB 5400 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 |
| 250 GB 5400 rpm SMART SATA II Hard Drive | One | Dedicated hard drive bay |
| 160 GB 7200 rpm SMART SATA II Hard Drive | One | Dedicated hard drive bay |
| 160 GB 5400 rpm SMART SATA II Hard Drive | One | Dedicated hard drive bay |

Technical Specifications

| | | |
|--------------------|---|--|
| System Unit | Dimensions (HxWxD) | 1.26 in (at front) x 16.17 in x 10.63 in 32.0 mm (at front) x 410.6 mm x 270 mm |
| | Weight | Starting at 6.8 lb (3.08 kg) |
| | NOTE: Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components. Weight includes 8-cell battery, hard drive, and optical drive. Weight varies by configuration and components. | |
| | Stand-Alone Power Requirements (AC Power) | Nominal Operating Voltage 18.5 V Average Operating Power 23.36 W Max Operating Power < 90 W |
| | Temperature | Operating 32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical) Non-operating -4° to 140° F (-20° to 60° C) |
| | Relative Humidity | Operating 10% to 90%, non-condensing Non-operating 5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature |
| | Shock | Operating 125 G, 2 ms, half-sine Non-operating 200 G, 2 ms, half-sine |
| | Random Vibration | Operating 0.75 grms Non-operating 1.50 grms |
| | Altitude (unpressurized) | Operating -50 to 10,000 ft (-15.24 to 3,048 m) Non-operating -50 to 40,000 ft (-15.24 to 12,192 m) |
| | Industry Standard Certifications | UL Yes CSA Yes FCC Compliance Yes ENERGY STAR® Yes* EPEAT Gold** ICES Yes Australia / NZ A-Tick Compliance Yes CCC Yes Japan VCCI Compliance Yes 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 4710s that are ENERGY STAR qualified are identified as HP ProBook 4710s ENERGY STAR on HP websites and on www.energystar.gov.

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

Technical Specifications

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

| | | | | |
|--------------------------------------|---|--|---|--|
| HP 90W Smart AC Adapter | Dimensions | 5.00 x 1.97 x 1.1 in (12.7 x 5.0 x 2.9 cm) | | |
| | Weight | 0.82 lb (370 g) | | |
| | Input | 100 to 240 VAC | | |
| | | Input Efficiency | 83% min at 115 VAC | |
| | | Input frequency range | 47 to 63 Hz | |
| | Output | Input AC current | 1.5 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 | |
| | | Output power 65W | 90W | |
| | | DC output | 19.0V | |
| | | Hold-up time | 5 msec at 115 VAC input | |
| | Connector | Output current limit <11A, Over voltage protection- 29V max automatic shutdown | | |
| | | 3 pin/grounded, mates with interchangeable cords | | |
| | Environmental Design | Operating temperature | 32° to 104° F (0° to 40° C) | |
| | | Non-operating (storage) temperature | -4° to 149° F (-20° to 65° C) | |
| | | Altitude | 0 to 10,000 ft (0 to 3,048 m) | |
| Humidity | | 20% to 80% | | |
| Storage Humidity | | 10% to 90% | | |
| EMI and Safety Certifications | 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. | | | |

| | | | | |
|--|-------------------------------|---|---|-----------------------------|
| 8-Cell (63 WHr) Lithium-Ion battery | Dimensions (H x W x L) | 0.8 x 2.3 x 10.6 in (2.0 x 5.8 x 27.0 cm) | | |
| | Weight | 0.35 lb (0.427 kg) | | |
| | Cells/Type | 8-cell Lithium-Ion | | |
| | Energy | Watt-hour Capacity | 63 WHr | |
| | | Temperature | Operating (Charging) | 32° to 113° F (0° to 45° C) |
| | Operating (Discharging) | | 14° to 140° F (-10° to 60° C) | |
| | Non-operating | | -4° to 140° F (-20° to 60° C) | |
| | Battery Re-Charge Time | System in OFF mode or Standby | 2.5 hours | |
| | | System ON | 3 to 5 hours (depending on system power consumption) | |
| | | HP Fast Charge Technology | Charges the battery up to 90% within 1.5 hours when system is OFF | |

Displays

Technical Specifications

| | | |
|--|----------------------------|---|
| 17.3-inch LED-backlit HD+ (1600 x 900) anti-glare | Active Area (W x H) | 15.00 x 8.46 in (38.1 x 21.5 cm) |
| | Diagonal Size | 17.3 in (43.9cm) |
| | Surface Treatment | Anti-glare |
| | Contrast Ratio | 300:1 (typical) |
| | Refresh Rate | 60 Hz |
| | Brightness | 200 nit (typical) |
| | Pixel Resolution | Pitch 0.239 mm |
| | | Format 1600 x 900 |
| | | Configuration RGB Stripe |
| | Backlight | LED |
| | PPI | 106 ppi |
| | Viewing Angle | ±30° Horizontal, ±10° Vertical (minimum) 30/30/20/10 (Left/Right/Down/Up) (minimum) or 45/45/35/25 (Left/Right/Down/Up) (typical) |

| | | |
|--|----------------------------|---|
| 17.3-inch LED-backlit HD+ (1600 x 900) BrightView | Active Area (W x H) | 15.00 x 8.46 in (38.1 x 21.5 cm) |
| | Diagonal Size | 17.3 in (43.9cm) |
| | Surface Treatment | BrightView (glossy) |
| | Contrast Ratio | 300:1 (typical) |
| | Refresh Rate | 60 Hz |
| | Brightness | 200 nit (typical) |
| | Pixel Resolution | Pitch 0.239 mm |
| | | Format 1600 x 900 |
| | | Configuration RGB Stripe |
| | Backlight | LED |
| | PPI | 106 ppi |
| | Viewing Angle | ±30° Horizontal, ±10° Vertical (minimum) 30/30/20/10 (Left/Right/Down/Up) (minimum) or 45/45/35/25 (Left/Right/Down/Up) (typical) |

Hard Drives

Technical Specifications

| | | | | |
|--|-------------------------------------|---|-----------------------------|--|
| 250 GB 7200 rpm SATA Hard Drive | Drive Weight | 0.25 lbs (115g) | | |
| | Capacity | 250 GB | | |
| | Height | 0.37 in (9.5 mm) | | |
| | Width | 2.75 in (70 mm) | | |
| | Interface | ATA-8, SATA 2.6, 3.0 Gb/s, NCQ | | |
| | Transfer Rate | Synchronous | 100 MB/s (Drive Capability) | |
| | | (maximum) | | |
| | Seek Time | Single Track | 1.5 ms | |
| | (typical reads, including settling) | Average | 11 ms | |
| | | Maximum | 22 ms | |
| | Rotational Speed | 7200 rpm | | |
| | Logical Blocks | 488,397,168 | | |
| | Operating Temperature | 32° to 140° F (0° to 60° C) [case temp] | | |
| Features | ATA Security | | | |

| | | | | |
|--|-------------------------------------|---|-----------------------------|--|
| 160 GB 7200 rpm SATA Hard Drive | Drive Weight | 0.25 lb (115 g) | | |
| | Capacity | 160 GB | | |
| | Height | 0.37 in (9.5 mm) | | |
| | Width | 2.75 in (70 mm) | | |
| | Interface | ATA-8, SATA 2.6, 3.0 Gb/s, NCQ | | |
| | Transfer Rate | Synchronous | 100 MB/s (Drive Capability) | |
| | | (maximum) | | |
| | Seek Time | Single Track | 1.5 ms | |
| | (typical reads, including settling) | Average | 11 ms | |
| | | Maximum | 22 ms | |
| | Rotational Speed | 7200 rpm | | |
| | Logical Blocks | 312,581,808 | | |
| | Operating Temperature | 32° to 140° F (0° to 60° C) [case temp] | | |
| Features | ATA Security | | | |

| | | | | |
|--|-------------------------------------|---|-----------------------------|--|
| 500 GB 5400 rpm SATA Hard Drive | Drive Weight | 0.22 lb (101 g) | | |
| | 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 | Synchronous | 100 MB/s (Drive Capability) | |
| | | (maximum) | | |
| | Seek Time | Single Track | 3 ms | |
| | (typical reads, including settling) | Average | 13 ms | |
| | | Maximum | 24 ms | |
| | Rotational Speed | 5400 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 5400 rpm SATA Hard Drive | Drive Weight | 0.22 lb (101 g) | | |
| | Capacity | 320 GB | | |
| | Height | 0.37 in (9.5 mm) | | |
| | Width | 2.75 in (70 mm) | | |
| | Interface | ATA-8, SATA 2.6, 3.0 Gb/s, NCQ | | |
| | Transfer Rate | Synchronous | 100 MB/s (Drive Capability) | |
| | | (maximum) | | |
| | Seek Time | Single Track | 3 ms | |
| | (typical reads, including settling) | Average | 13 ms | |
| | | Maximum | 24 ms | |
| | Rotational Speed | 5400 rpm | | |
| | Logical Blocks | 625,142,448 | | |
| | Operating Temperature | 32° to 140° F (0° to 60° C) [case temp] | | |
| Features | ATA Security | | | |

| | | | | |
|--|-------------------------------------|---|-----------------------------|--|
| 250 GB 5400 rpm SATA Hard Drive | Drive Weight | 0.22 lb (101 g) | | |
| | Capacity | 250 GB | | |
| | Height | 0.37 in (9.5 mm) | | |
| | Width | 2.75 in (70 mm) | | |
| | Interface | ATA-8, SATA 2.6, 3.0 Gb/s, NCQ | | |
| | Transfer Rate | Synchronous | 100 MB/s (Drive Capability) | |
| | | (maximum) | | |
| | Seek Time | Single Track | 3 ms | |
| | (typical reads, including settling) | Average | 13 ms | |
| | | Maximum | 24 ms | |
| | Rotational Speed | 5400 rpm | | |
| | Logical Blocks | 488,397,168 | | |
| | Operating Temperature | 32° to 140° F (0° to 60° C) [case temp] | | |
| Features | ATA Security | | | |

| | | | | |
|--|-------------------------------------|---|-----------------------------|--|
| 160 GB 5400 rpm SATA Hard Drive | Drive Weight | 0.22 lb (101 g) | | |
| | Capacity | 160 GB | | |
| | Height | 0.37 in (9.5 mm) | | |
| | Width | 2.75 in (70 mm) | | |
| | Interface | ATA-8, SATA 2.6, 3.0 Gb/s, NCQ | | |
| | Transfer Rate | Synchronous | 100 MB/s (Drive Capability) | |
| | | (maximum) | | |
| | Seek Time | Single Track | 3 ms | |
| | (typical reads, including settling) | Average | 13 ms | |
| | | Maximum | 24 ms | |
| | Rotational Speed | 5400 rpm | | |
| | Logical Blocks | 312,581,808 | | |
| | Operating Temperature | 32° to 140° F (0° to 60° C) [case temp] | | |
| Features | ATA Security | | | |

Technical Specifications

Removable Storage Drives

| | | | |
|----------------------|----------------------------------|--|---|
| DVD-ROM Drive | Access Times | Random | < 110 ms CD (typical) < 110 ms DVD (typical) |
| | Max Data Transfer Rate | 24X CD-ROM | Up to 3,600 KB/s |
| | | 8X-DVD | Up to 10,800 KB/s |
| | Transfer Mode | UDMA Mode 5 | |
| | Interface | Gen 1 SATA | |
| | Supported Media (read) | 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 | |
| | Supported Media (write) | None | |
| | Max Media Capacity (read) | 8.5 GB | |
| Transport | Tray Loading | | |

| | | | |
|---|--------------------------------|--|--|
| DVD+/-RW SuperMulti DL LightScribe Drive | Access Times | Random | < 150ms CD (typical) < 160 ms DVD (typical) |
| | Max Data Transfer Rate | 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 |
| | Transfer Mode | UDMA Mode 5 | |
| | Interface | Gen 1 SATA | |
| | Supported Media (read) | 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 | |
| | Supported Media (write) | CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM, LightScribe | |
| Max Media Capacity (read) | 8.5 GB | | |
| Max Media Capacity (write) | 8.5 GB | | |
| Transport | Tray Loading | | |

Technical Specifications

| | | |
|--|---|---------------------------|
| Blu-ray ROM DVD+/-RW Access Times | Random | <190 ms CD-ROM (typical) |
| SuperMulti DL | | < 190ms DVD-ROM (typical) |
| LightScribe Drive | | <230 ms BD-ROM (typical) |
| Max Data Transfer Rate | 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 |
| | 4X BD-ROM | Up to 18,000KB/s |
| Transfer Mode | UDMA Mode 5 | |
| Interface | Gen 1 SATA | |
| Supported Media (read) | 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 | |
| Supported Media (write) | CD-R, CD-RW, DVD+R, DVD+R(9), DVD+RW, DVD-R, DVD-R(9), DVD-RW, DVD-RAM, LightScribe | |
| Max Media Capacity (read) | 50.0 GB | |
| Max Media Capacity (write) | 8.5 GB | |
| Transport | Tray Loading | |

Audio

| | | |
|-----------------|--|-------------------------------------|
| Hardware | Implementation | ADI 1984AJCPZ High Definition CODEC |
| | Touch-Sensitive Volume Controls | Volume up, volume down, and mute |
| | Full Duplex | Yes |
| | Microphone In | Stereo |
| | Headphone/Line Out | Stereo |
| | Integrated Microphone | Yes |

Technical Specifications

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

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

Communications

| | | |
|---|-------------------------------|--|
| Integrated Marvell 10/100/1000 NIC | Ethernet Features | 10 Mbit/s operation (10BASE-T; IEEE 802.3j; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3z and 802.3ab; IEEE 802.3 clauses 34-42) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s IEEE 802.1p QoS (Quality of Service) Support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) |
| | Power Management | ACPI compliant – multiple power modes Situation-sensitive features reduce power consumption |
| | Performance Features | TCP/IP/UDP Checksum Offload (configurable) |
| | Manageability | Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite |
| | Interface | PCI Express x1 |
| | NIC Device Driver Name | Marvell Yukon 88E8072 PCI-E Gigabit Ethernet Controller |

Technical Specifications

| | | |
|--------------------------------|---------------------------------|---|
| V.92 56K Data/Fax Modem | Form Factor | MDC 1.5 Daughtercard |
| | Power Management Support | APM Revision 1.2, ACPI |
| | Approvals/Certifications | UL, CSA, NEMKO, CCIB, Industry Canada, FCC Part 68, CTR21, FCC Part 15 Class B, Canadian ICES-003 Class B, C.I.S.P.R.22, Australian ACA, CE Mark, Other Countries |
| | Data Mode Capabilities | V.92 data V.8bis V.80 V44, V.42bis, MNP5 (Compression) V.42 (LAPM, MNP2-4) (Error Correction) Optional symbol rates: 2800, 3429 Asymmetric Symbol rates Synchronous primary channel data signaling rates: 3600, 31200 Automatic rate re-negotiation V.34 V.32bis V.32 V.23 V.22bis V.22 V.21 Bell 212A Bell 103J |
| | Fax Mode Capabilities | TIA/EIA-578-B (Class 1) T.30, T.4 (Group 3) V.17 V.29 V.27ter V.21 Channel 2 |
| | Command Set | V.250 (Partial) TIA-602 Identification: +GMI, +GMM, +GMR Port control: +IPR, +ICF, +IFC, +ILRR Modulation: +MS, +MR, +MA Error control: +ES, +ER, +EB, +ESR, +ETBM Data compression: +DS, +DR V.251 |

| | | |
|-----------------------------|-------------------------------|---|
| Intel WiFi Link 5100 | Wireless LAN Standards | IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n (draft 2.0)* |
|-----------------------------|-------------------------------|---|

* The specifications for 802.11n draft 2.0 are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11n WLAN devices. In countries where n draft 2.0 is not allowed, this capability is not enabled.

Technical Specifications

| | |
|--|---|
| Interoperability | Wi-Fi certified (802.11abg only) Cisco Compatible Extensions Program compliant (802.11abg only) with Microsoft Windows Vista and XP (details at: http://www.hp.com/go/notebooks/WLAN) |
| Frequency Band | 2.4 GHz and 5 GHz |
| Data Rates | 802.11b: 1, 2, 5.5, 11 Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n (draft): 66 possible data rates, ranging from 6 Mbps to 300 Mbps, depending on the combination of Bandwidth, Modulation Coding Scheme, and Guard Interval used, as defined in IEEE 802.11n (draft) specification |
| Modulation | Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM |
| Security¹ | Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES (support for key sizes of 128, 192, and 256 bits), 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST. Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only. |
| Sub-channels | Multinational support with frequency bands and channels compliant to local regulations. |
| Media Access Protocol | CSMA/CA (Collision Avoidance) with ACK |
| Network Architecture Models | Ad-hoc (Peer to Peer) Infrastructure (Access Point Required) |
| Roaming | IEEE 802.11 compliant roaming between access points |
| Output Power (for CCK) ² | 15 dBm |
| Output Power (for OFDM; power varies by data rate) ² | 15 dBm |
| Power Consumption | Transmit: 2.3 Watts (average, with one spatial streams) Receive: 1.9 Watts (average with two receive chains) Idle mode ³ : 30 mW (average) Radio off: 20 mW (max) |
| Power Management | ACPI compliant power management 802.11 compliant power saving mode |
| Receiver Sensitivity⁴ | 300 Mbps: -68 dBm, 54 Mbps: -74 dBm, 6 Mbps: -90 dBm |
| Antenna Connections | 3 U.FL type connectors, 50 ohm nominal impedance |
| Form Factor | PCI-Express Half-MiniCard |
| Weight | 0.013 lb (6 g) |
| Dimensions | 0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm) |
| Operating Voltage | 3.3V +/- 9%, 1.5V +/- 5% |
| Temperature | Operating 32° to 176° F (0° to 80° C) Non-operating -40° to 176° F (-40° to 80° C) |
| Humidity | Operating 10% to 90% (non-condensing) Non-operating 5% to 90% (non-condensing) |
| Altitude | Operating 0 to 10,000 ft (3,048 m) Non-operating 0 to 50,000 ft (15,240 m) |
| Configuration Utility⁵ | Microsoft Windows XP |

Technical Specifications

Choice of Configuration Utility:

- Microsoft Windows XP Wireless Network Connection Manager
- Intel PROSet for Microsoft Windows XP (required for Cisco Compatible Extensions support)

Microsoft Windows Vista

- Microsoft Windows Vista Wireless Network Connection Manager.
- Intel IHV extensions for Windows Vista available to support Cisco Compatible Extensions.

LED Activity

LED Off – Radio OFF; Solid LED On – Radio ON

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. In Power Save Polling mode and on battery power.
4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
5. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.

| | | |
|--|--|---|
| Broadcom 4312G 802.11b/g WiFi Adapter | Wireless LAN Standards | IEEE 802.11b IEEE 802.11g |
| | Interoperability | Wi-Fi certified Cisco Compatible Extensions Program compliant with Microsoft Windows Vista and XP (details at: http://www.hp.com/go/notebooks/WLAN) |
| | Frequency Band | 2.4 GHz |
| | Data Rates | 802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps |
| | Modulation | Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM |
| | Security¹ | Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST. Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only. |
| | Sub-channels | Multinational support with frequency bands and channels compliant to local regulations. |
| | Media Access Protocol | CSMA/CA (Collision Avoidance) with ACK |
| | Network Architecture Models | Ad-hoc (Peer to Peer) Infrastructure (Access Point Required) |
| | Roaming | IEEE 802.11 compliant roaming between access points |
| | Output Power (for CCK) ² | 17 dBm , nominal |
| | Output Power (for OFDM; power varies by data rate) ² | 15 dBm , nominal |

Technical Specifications

| | |
|--|---|
| Power Consumption | Idle associated: 250 mW Idle unassociated: 150 mW Transmit: 2.0 W (max) Receive: 2.0 W (max) |
| Power Management | ACPI compliant power management 802.11 compliant power saving mode |
| Receiver Sensitivity³ | 54 Mbps: -71 dBm, 11 Mbps: -85 dBm , 1 Mbps: -95 dBm |
| Antenna type | High efficiency dual band antenna with spatial diversity, mounted in the display enclosure |
| Form Factor | PCI-Express Half-MiniCard |
| Weight | 0.013 lb (6 g) |
| Dimensions | 0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm) |
| Operating Voltage | 3.3v +/- 10% |
| Temperature | Operating 14° to 149° F (-10° to 65° C) Non-operating -40° to 176° F (-40° to 80° C) |
| Humidity | Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing) |
| Altitude | Operating 0 to 10,000 ft (3,048 m) Non-operating 0 to 50,000 ft (15,240 m) |
| Configuration Utility⁴ | Microsoft Windows XP Choice of Configuration Utility: <ul style="list-style-type: none"> ● Microsoft Windows XP Wireless Network Connection Manager ● Broadcom Wireless Configuration Utility (required for Cisco Compatible Extensions support) <p>Microsoft Windows Vista</p> <ul style="list-style-type: none"> ● Microsoft Windows Vista Wireless Network Connection Manager ● Broadcom IHV extensions for Windows Vista available to support Cisco Compatible Extensions. |
| LED Activity | LED Off – Radio OFF; Solid LED On – Radio ON |
| | <ol style="list-style-type: none"> 1. Check latest software/driver release for updates on supported security features. 2. Maximum output power may vary by country according to local regulations. 3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation). 4. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista. |

**Broadcom 4322AGN Wireless LAN
802.11a/b/g/draft-n WiFi Standards
Adapter**

IEEE 802.11a
IEEE 802.11b
IEEE 802.11g
IEEE 802.11n (draft 2.0)*
* The specifications for 802.11n draft 2.0 are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11n WLAN devices.

Interoperability Wi-Fi certified (802.11abg only)
Cisco Compatible Extensions Program compliant (802.11abg only) with Microsoft Windows Vista and XP (details at: <http://www.hp.com/go/notebooks/WLAN>)



Technical Specifications

| | |
|--|---|
| Frequency Band | 2.4 GHz and 5 GHz |
| Data Rates | 802.11b: 1, 2, 5.5, 11 Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n (draft): 6, 6.5, 9, 12, 13, 13.5, 18, 19.5, 24, 26, 27, 36, 39, 40.5, 48, 52, 54, 58.5, 65, 78, 81, 104, 108, 117, 121.5, 130, 135, 162, 216, 243, 270, 300 Mbps |
| Frequency Support | 20 MHz: 2.4 GHz and 5 GHz bands 40 MHz: 2.4 GHz and 5 GHz bands |
| Modulation | Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM |
| Security¹ | Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST. Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4) with Microsoft Windows Vista and XP only. |
| Sub-channels | Multinational support with frequency bands and channels compliant to local regulations. |
| Media Access Protocol | CSMA/CA (Collision Avoidance) with ACK |
| Network Architecture Models | Ad-hoc (Peer to Peer) Infrastructure (Access Point Required) |
| Roaming | IEEE 802.11 compliant roaming between access points |
| Output Power (for CCK) ² | 17 dBm |
| Output Power (for OFDM; power varies by data rate) ² | 15 dBm |
| Power Consumption | Idle associated: 250 mW Idle unassociated: 150 mW Transmit/Receive 20 MHz channel: 2.0 W (max) Transmit/Receive 40 MHz channel: 2.0 W (max) |
| Power Management | ACPI compliant power management 802.11 compliant power saving mode |
| Receiver Sensitivity³ | 270 Mbps: -61dBm, , 54 Mbps: -72 dBm, 11 Mbps: -85 dBm , 1 Mbps: -92 dBm |
| Antenna type | High efficiency dual band antenna with spatial diversity, mounted in the display enclosure |
| Form Factor | PCI-Express Half-MiniCard |
| Weight | 0.013 lb (6 g) |
| Dimensions | 0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm) |
| Operating Voltage | 3.3v +/- 10% |
| Temperature | Operating 14° to 149° F (–10° to 65° C) Non-operating –40° to 176° F (–40° to 80° C) |
| Humidity | Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing) |
| Altitude | Operating 0 to 10,000 ft (3,048 m) Non-operating 0 to 50,000 ft (15,240 m) |
| Configuration Utility⁴ | Microsoft Windows XP Choice of Configuration Utility: |

Technical Specifications

- Microsoft Windows XP Wireless Network Connection Manager
- Broadcom Wireless Configuration Utility (required for Cisco Compatible Extensions support)

Microsoft Windows Vista

- Microsoft Windows Vista Wireless Network Connection Manager
- Broadcom IHV extensions for Windows Vista available to support Cisco Compatible Extensions.

LED Activity

LED Off – Radio OFF; Solid LED On – Radio ON

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.

HP Integrated Module with Bluetooth Wireless Technology

Bluetooth Specification 2.0 Compliant

Dimensions 1.02 x 0.55 x 0.22 in (26 x 14 x 5.7 mm)

Frequency Band 2402 to 2480 MHz

Number of Available Channels 79 (1 MHz) available channels

Data Rates and Throughput 3 Mbps data rate; throughput up to 2.17 Mbps
Synchronous Connection Oriented links up to 3, 64 kbps, voice channels
Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric

Transmit Power -6 dBm to 4 dBm (Bluetooth Class II)

Receiver Sensitivity Better than -80 dBm at 0.1 % raw bit error rate

Power Consumption Peak (Tx) 264 mW
Peak (Rx) 231 mW
Sleep <1 mW

Antenna Internally integrated within module

Range Up 33 ft (10 m)

Electrical Interface USB 2.0 compliant

Microsoft Windows Plug and Play compliant

OS Support Microsoft Windows XP Professional and Home
Microsoft Windows 2000

Bluetooth Software Supported Broadcom Bluetooth for Windows
Microsoft Windows XP Bluetooth Software

Link Topology Point to Point, Multipoint Pico Nets up to 7 slaves

Security Full support of Bluetooth Security Provisions

Power Management Microsoft Windows ACPI, and USB Bus Support
Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff

Technical Specifications

| | | | |
|-------------------------------------|---|--------------------------------|--|
| Certifications | All necessary regulatory approvals for supported countries, including: FCC (47 CFR) Part 15C, Section 15.247 & 15.249 ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark | | |
| Temperature | Operating | −4° to 158° F (−20° to 70° C) | |
| | Non-operating | −40° to 176° F (−40° to 80° C) | |
| Humidity | Operating | 10% to 90% | |
| | Non-operating | 5% to 95% | |
| Altitude | Operating | 15,000 ft (4,572 m) | |
| | Non-operating | 40,000 ft (12,192 m) | |
| Bluetooth Profiles Supported | (with Bluetooth for Windows 4.0 software) Serial Port Profile (SPP)* Dial-Up Networking (DUN)* Generic Object Exchange Profile (GOEP) Object Push Profile (OPP)* File Transfer Profile (FTP) Synchronization Profile (SYNC) Hard Copy Cable Replacement (HCRP)* Personal Area Networking Profile (PAN)* Human Interface Device Profile (HID)* FAX Profile (FAX) Basic Imaging Profile (BIP) Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP) | | |

* indicates the profile is also supported by Microsoft Windows XP SP2

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: | | |
| | <ul style="list-style-type: none"> ● US Energy Star ● IT ECO declaration ● EPEAT – Gold | | |
| System Configuration | The configuration used for the Energy Consumption and Declared Noise Emissions data for this model is based on a "Typically Configured Notebook" | | |
| Energy Consumption | 115 VAC | 230 VAC | 100 VAC |
| Normal Operation | 14.36 W | 14.79 W | 14.38 W |
| Sleep (Energy Star low power mode) | 0.7 W | 0.72 W | 0.68 W |
| Off | 1 W | 1.1 W | 1 W |
| Heat Dissipation* | 115 VAC | 230 VAC | 100 VAC |
| Normal Operation | 49 BTU/hr | 50 BTU/hr | 49 BTU/hr |
| Sleep | 2 BTU/hr | 2 BTU/hr | 2 BTU/hr |
| Off | 3 BTU/hr | 3 BTU/hr | 3 BTU/hr |



Technical Specifications

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

Declared Noise Emissions

(in accordance with ISO 7779 and ISO 9296)

| | Sound Power (LWAd, bels) | Sound Pressure (LpAm, decibels) |
|-----------|-----------------------------|------------------------------------|
| Idle | 3.4 | 28.7 |
| Operation | 3.6 | 30.7 |

*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:

- 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 Gold level, see www.epeat.net

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

This product contains 0% post consumer recycled plastic (by wt.)

This product is greater than 97.8% recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
 - Corrugated carton 750 g
- Internal:
 - CANON bags – several layers 15 g
 - EPE-Expanded Polyethylene & Cardboard & misc 165 g
- The Corrugated carton packaging material is made from 100% recycled content.
- The CANON bags – several layers packaging materials contains at least 100% recycled content.
- The Cardboard & misc. packaging materials contains at least 100% recycled content.
- The EPE-Expanded Polyethylene packaging materials contains at

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

Material Usage

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

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

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants - may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel - finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) - except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

End-of-life Management and Recycling

Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: <http://www.hp.com/go/reuse-recycle> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment

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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.

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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