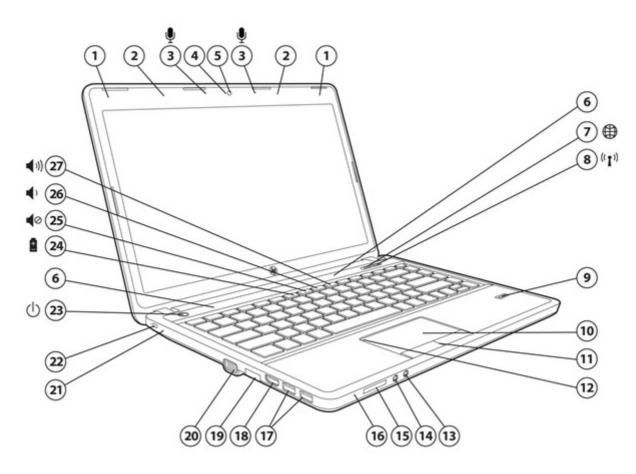
Overview

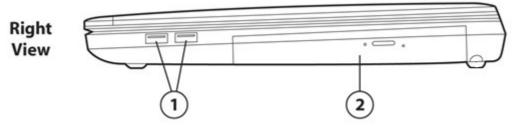


- WWAN antennas (select models) 1.
- 2. WLAN antennas
- 3. Dual-microphone array*
- 4. Webcam LED indicator (with optional webcam)
- 5. Optional 720p HD webcam
- Stereo speakers 6.
- 7. HP WebBrowser button with LED indicator
- 8. Wireless on/off button with LED indicator
- 9. **Optional HP Fingerprint Sensor**
- 10. Touchpad
- Touchpad pick buttons 11.
- Touchpad on/off button with LED indicator 12.
- 13. Stereo microphone in
- 14. Stereo headphone/line out
- * Models without optional webcam have single integrated microphone.

- 15. Media Card Reader
- Hard drive activity LED indicator
- 17. (2) USB 3.0 ports
- 18. HDMI 1.4a port
- 19 RJ-45/Ethernet port
- 20. VGA/external monitor connector
- 21. AC Adapter/battery light
- 22. Security cable slot
- 23. Power button with LED indicator
- 24. HP Power Assistant function key
- 25. Volume mute function key
- 26. Volume down function key
- 27. Volume up function key

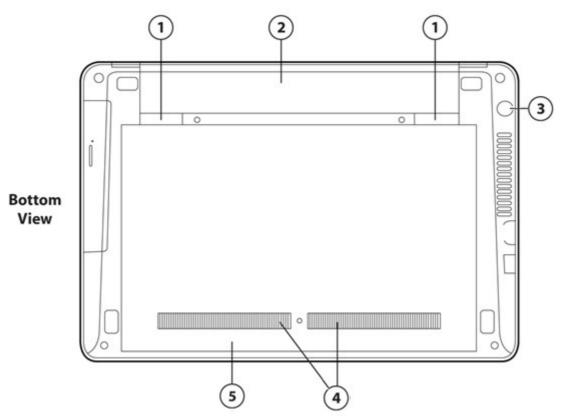


Overview



1. (2) USB 2.0 ports

2. Optical drive (select models)

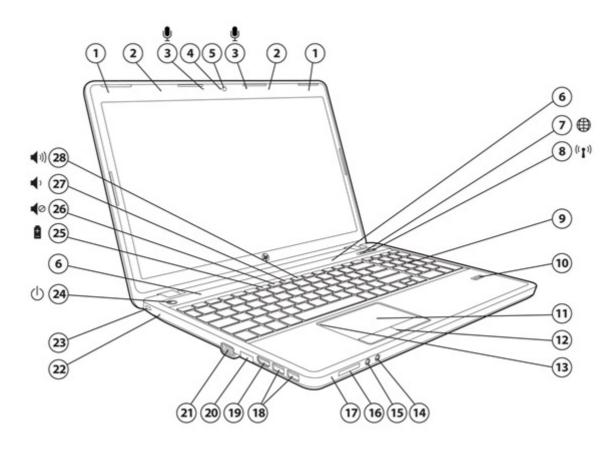


- 1. Battery and service door release latches
- 2. Battery bay
- 3. Power connector

- 4. Vents
- Service door

HP ProBook 4540s Notebook PC HP ProBook 4740s Notebook PC

Overview

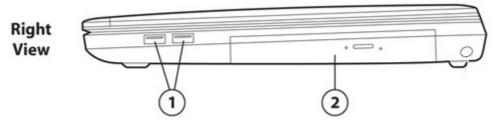


- 1. WWAN antennas (select models)
- 2. WLAN antennas
- 3. Dual-microphone array*
- 4. Webcam LED indicator (with optional webcam)
- 5. Optional 720p HD webcam
- 6. Stereo speakers
- 7. HP WebBrowser button with LED indicator
- 8. Wireless on/off button with LED indicator
- 9. Numeric keypad
- 10. Optional HP Fingerprint Sensor
- 11. Touchpad
- 12. Touchpad pick buttons
- 13. Touchpad on/off button with LED indicator
- 14. Stereo microphone in

- 15. Stereo headphone/line out
- 16. Media Card Reader
- 17. Hard drive activity LED indicator
- 18. (2) USB 3.0 ports
- 19 HDMI 1.4a port
- 20. RJ-45/Ethernet port
- 21. VGA/external monitor connector
- 22. AC adapter/battery light
- 23. Security cable slot
- 24. Power button with LED indicator
- 25. HP Power Assistant function key
- 26. Volume mute function key
- 27. Volume down function key
- 28. Volume up function key

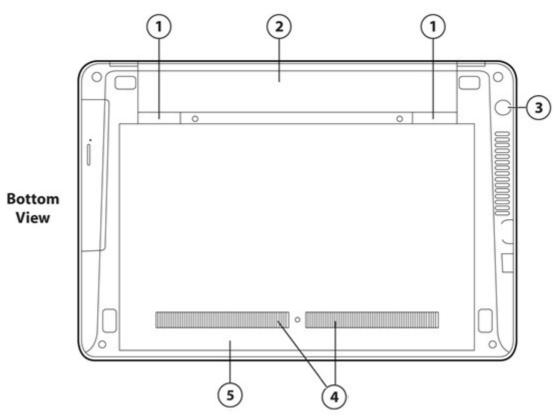
^{*} Models without optional webcam have single integrated microphone.

Overview



1. (2) USB 2.0 ports

2. Optical drive (select models)



- 1. Battery and service door release latches
- 2. Battery bay
- 3. Power connector

- 4. Vents
- 5. Service door

QuickSpecs

Overview

At A Glance

- Windows 8 versions, Windows 7 versions, SUSE Linux, or FreeDOS
- Thin, lightweight design with brushed aluminum finish for durability and style, wear-resistant HP DuraFinish
- Full-sized spill-resistant keyboard; full separate numeric keypad on HP ProBook 4540s and 4740s
- Larger Touchpad with gestures support, on/off button with LED indicator
- Enhanced security features including HP ProtectTools (Windows 7) HP Client Security (Windows 8). HP Face Recognition, optional HP Fingerprint Sensor
- Optional HD webcam with dual-microphone array for video conferencing*
- HDMI port for connecting to high-resolution displays; USB 3.0 ports
- ArcSoft TotalMedia Suite (Win7 only) for playing, creating, and editing video and audio files
- Cyberlink Media Suite (Win8 only) for playing, creating, and editing video and audio files.
- SRS Premium Sound optimized for high fidelity audio
- Widescreen LED-backlit HD display with 16:9 aspect ratio
 - HP ProBook 4440s/1s: 14.0-inch diagonal HD, BrightView optional
 - HP ProBook 4540s: 15.6-inch diagonal HD
 - HP ProBook 4740s: 17.3-inch diagonal HD+
- Choice of 3rd generation Intel® Core™ i7, i5 and i3 processors, 2nd generation Core™ i5, i3, and Intel Celeron processor
- HP WebBrowser button for convenient online access without long boot-up times
- Flexible wireless connectivity options controlled by HP Connection Manager:
 - O Integrated HP Mobile Broadband Module*
 - Integrated 802.11 b/g/n wireless LAN module
 - O Integrated 802.11 a/b/g/n or b/g/n with Bluetooth 4.0 High Speed (HS) combo card**
- HP Power Assistant (Win7 only) to conserve power, increase battery run-time, monitor power needs, report workforce power consumption
- Low Halogen***, ENERGY STAR qualified and EPEAT Gold registered in the U.S. EPEAT status varies by country- please see epeat.net.
- * Available only on HP 4440s/1s/4540s with integrated graphics only.
- *** Available on select models.
- **** Meeting the industry definition of 'Low Halogen' per the iNEMI Position Statement on "Low Halogen" Electronics. Plastic parts incorporated into the chassis generally contain < 1000 ppm (0.1%) of bromine or chlorine. Printed circuit board and substrate laminates generally contain < 1500 ppm (0.15%) of total bromine and chlorine. Service parts after purchase may not be Low Halogen External accessories, including power supplies, power cords, and peripherals as well as the following customer-configurable internal components: ATT SIM card are not Low Halogen.



Features

OPERATING SYSTEM

Preinstalled Windows 8 Pro 64*

Windows 7 Professional (available through downgrade rights from Windows 8 Pro)**

Windows 8 64

Windows 7 Professional 64***
Windows 7 Home Premium 64***
Windows 7 Home Basic 64***
SUSE Linux Enterprise Desktop 11

FreeDOS

Supported Windows 8 Pro 32*

Windows 8 32*

Windows 8 Enterprise 32*
Windows 8 Enterprise 64*
Windows 7 Professional 32***
Windows 7 Home Premium 32***
Windows 7 Home Basic 32***

Certified Microsoft WHQL

SUSE Linux

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

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

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

PROCESSOR

3rd Generation Intel® Core™ i7-3632QM (2.2 GHz, 6 MB L3 cache, 4 cores)*

Up to 3.20 GHz with Intel Turbo Boost Technology

3rd Generation Intel® Core™ i7-3612QM (2.1 GHz, 6 MB L3 cache, 4 cores)*

Up to 3.10 GHz with Intel Turbo Boost Technology

3rd Generation Intel® Core™ i5-3380M (2.9 GHz, 3 MB L3 cache, 2 cores)*

Up to 3.60 GHz with Intel Turbo Boost Technology

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

Up to 3.50 GHz with Intel Turbo Boost Technology

3rd Generation Intel® Core™ i5-3340M (2.7 GHz, 3 MB L3 cache, 2 cores)*

Up to 3.40 GHz with Intel Turbo Boost Technology

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

Up to 3.30 GHz with Intel Turbo Boost Technology

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

Up to 3.20 GHz with Intel Turbo Boost Technology

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

Up to 3.10 GHz with Intel Turbo Boost Technology

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

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

3rd Generation Intel® Core™ i3-3110M (2.4 GHz, 3 MB L3 cache, 2 cores)*



QuickSpecs

Features

2nd Generation Intel® Core™ i5-2450M (2.5 GHz, 3 MB L3 cache, 2 cores)* Up to 3.10 GHz with Intel Turbo Boost Technology 2nd Generation Intel® Core™ i3-2370M (2.4 GHz, 3 MB L3 cache, 2 cores)* 2nd Generation Intel® Core™ i3-2350M (2.3 GHz, 3 MB L3 cache, 2 cores)* 2nd Generation Intel® Celeron™ B840 (1.9 GHz, 2 MB L3 cache, 2 cores) Intel® Celeron™ 1000M (1.8 GHz, 2 MB L3 cache, 2 cores)

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

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

CHIPSET

Mobile Intel HM76

GRAPHICS

Integrated:

Intel HD Graphics 4000 (3nd Generation Intel Quad-Core i7; Dual-Core i5 and i3)

Intel HD Graphics 3000 (2nd Generation Intel Dual-Core i5 and i3)

Intel HD Graphics (2nd Generation Intel Celeron configurations)

Discrete:

AMD Radeon™ HD 7650M, with 1 GB and 2 GB dedicated DDR3 video memory

DISPLAY

HP ProBook 4440s/1s:

Internal

14" diagonal LED-backlit HD anti-glare or BrightView (1366 x 768)

External

Up to 32-bit per pixel color depth

VGA

Port supports resolutions up to 2048 x 1536 external resolution @75 Hz

HDMI

Supports direct connection to high-definition displays with up to 1920 x 1200@60Hz resolution and 7-channel audio with one convenient cable (not included)

HP ProBook 4540s:

Internal

15.6" diagonal LED-backlit HD anti-glare (1366 x 768)

External

Up to 32-bit per pixel color depth

VGA

Port supports resolutions up to 2048 x 1536 external resolution @75 Hz



QuickSpecs

Features

HDMI

Supports direct connection to high-definition displays with up to 1920 x 1200@60Hz resolution and 7-channel audio with one convenient cable (not included)

HP ProBook 4740s:

Internal

17.3" diagonal LED-backlit HD+ anti-glare (1600 x 900)

External

Up to 32-bit per pixel color depth

VGA

Port supports resolutions up to 2048 x 1536 external resolution @75 Hz

HDMI

Supports direct connection to high-definition displays with up to 1920 x 1200@60Hz resolution and 7-channel audio with one convenient cable (not included)

NOTE: HD content required to view HD images.

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

STORAGE AND DRIVES

Primary Storage Bay

Hard Drives

320/500/750 GB 7200 rpm SMART SATA II 320/500/640/750 GB 5400 rpm SMART SATA II

HP 3D DriveGuard (Windows only)

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

NOTE: For hard drives, GB = 1 billion bytes. Actual formatted capacity is less. Up to 16 GB (for Windows 7) and 36 GB (for Windows 8) of system disk is reserved for the system recovery software.

OPTICAL DRIVES

Weight saver

Fixed 12.7 mm SATA optical drive

Blu-ray ROM DVD+/-RW SuperMulti DL Drive DVD+/-RW SuperMulti DL Drive DVD-ROM Drive (Japan only, not available for 4440s/4441s)



QuickSpecs

Features

MEMORY

Standard

DDR3 PC3-10600 SDRAM (Up to 1600 MHz on select models)*
Two SODIMM slots supporting dual-channel memory
2 GB and 4 GB SODIMMs

Maximum

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

Dual-channel

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

NOTE: Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed. With Windows Starter 32-bit operating systems, the amount of usable memory is dependent upon your configuration, so that above 3 GB all memory may not be available due to system resource requirements.

* Only available when used with 3rd generation processors.

NETWORKING/COMMUNICATIONS

Wireless

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

Broadband Wireless (WWAN)

HP hs2350 HSPA+ Mobile Broadband Module

HP un2430 EV-DO/HSPA/CDMA Mobile Broadband Module

Wireless LAN (WLAN)

Ralink 802.11 b/g/n (1x1)

Atheros 802.11 b/g/n (1x1)

Atheros 802.11 b/g/n (1x1) with Bluetooth® v4.0 combo

Ralink 802.11 b/g/n (1x1) with Bluetooth® v4.0 combo

Atheros 802.11 b/g/n (2x2) with Bluetooth® v4.0 combo

Intel 802.11 b/g/n (2x2) with Bluetooth® v4.0

Intel 802.11 a/b/g/n (2x2) with with Bluetooth® v4.0

Communications

Realtek 10/100/1000* Ethernet Controller

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



Features

AUDIO/MULTIMEDIA

Audio

SRS Premium Sound Integrated stereo speakers

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

Function keys for volume mute, volume up, volume down; play, rewind, and fast-forward of

video and audio files

Stereo headphone/line out

Stereo microphone/line in

Webcam

Optional 720p HD webcam

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

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard

The HP spill-resistant keyboard is designed using a thin layer of Mylar film under the keyboard. The 101/102-key compatible keyboard features a full-pitch key layout with desktop keyboard features, such as editing keys, both left and right control and alt keys, and function keys. US and International key layouts are available. The HP ProBook 4540s and 4740s include a separate numeric keypad.

Pointing Devices

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

Buttons and Function Keys

Separate launch buttons provide easy access to wireless on/off and HP WebBrowser. Function keys provide control of features including: standby mode, display brightness, external display, HP Power Assistant, volume mute, volume down, volume up, and media control.

SOFTWARE AND SECURITY

Preinstalled Software with Windows Operating System

Cyberlink Media Suite (Windows 8 only)

HP Recovery Manager (Windows 7 only)

HP Support Assistant

HP Hotkey Support Software

HP Peak Power Manager (web only)*

HP Power Assistant (Windows 7 only)

HP Connection Manager (Windows 7 only)

HP Wireless Hotspot (Supported on DRDVD)

HP Wireless Assistant

Intel Wireless Display**

ArcSoft Total Media Suite (Windows 7 only)



QuickSpecs

Features

Buy Office

Skype ready***

WinZip (Windows 7 only)

NOTE: HP Recovery Manager enables fast recovery of the factory preinstalled image if the system becomes corrupted or if important system files are accidentally deleted. Up to 19 GB of the hard drive is reserved for the system recovery software. Support in Windows Operating System only.

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

**Integrated Intel Wi-Di feature is available on select configurations only and requires separately purchased projector, tv or computer monitor with an integrated or external Wi-Di receiver. External Wi-Di receivers connect to the projector, tv or computer monitor via a standard HDMI cable, also sold separately.

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

Security

Standard

HP ProtectTools (Windows 7 only)

HP Client Security (Win8 only)

Microsoft Defender

Drive Encryption (will be web-only ready at Win8 GA date)

Credential Manager

HP Security Manager

HP Spare Key

Device Access Manager w/ JITA

One Step Logon

File Sanitizer for HP ProtectTools (Windows 7 only)

Enhanced Pre-Boot Security

HP Face RecognitionSecurity Lock slot

Optional

Security Lock Intel AT (requires a Computrace subscription)* HP Fingerprint reader Microsoft Security Essentials

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

* Intel AT security requires a separately purchased Absolute Computrace service subscription and must be activated and configured. Check with Absolute for availability in your country. Intel and HP assume no liability for lost or stolen data and/or systems or any other damages resulting therefrom. See http://www.intel.com/technology/anti-theft/.

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

POWER

Power Supply

4440s/1s and 4540s

Models with discrete graphics: External 90W HP Smart AC Adapter



Features

Models with integrated graphics:
External 65W HP Smart AC Adapter
Power cord included is 6-foot (1.8 meter).
Total length including external AC adapter is 12 feet (3.66 meter).
HP Fast Charge

4740s

External 90W HP Smart AC Adapter Power cord included is 6-foot (1.8 meter). Total length including external AC adapter is 12 feet (3.66 meter).

Primary Battery

4440s/1s and 4540s

HP 9-cell Lithium-Ion Battery (93 WHr) HP 6-cell Lithium-Ion Battery (47 WHr)

4740s

HP 8-cell Lithium-Ion Battery (73 WHr)

Battery Life*

	Configurations with integrated graphics	Configurations with discrete graphics (1 GB)
HP ProBook 4440s		
9-cell (93 WHr) battery	Up to 14 hours 30 minutes	Up to 14 hours 30 minutes
6-cell (47 WHr) battery	Up to 7 hours 30 minutes	Up to 7 hours 30 minutes
HP ProBook 4540s		
9-cell (93 WHr) battery	Up to 13 hours 45 minutes	Up to 13 hours 45 minutes
6-cell (47 WHr) battery	Up to 7 hours	Up to 7 hours
HP ProBook 4740s		
8-cell (73 Whr) battery	Not applicable	Up to 10 hours 30 minutes
System Standby Time Up to 1 week		

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

** Configurations with integrated graphics.

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

Power Conservation

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

AMD PowerPlay technology (discrete models)

Hibernation

Standby

ACPI compliance



QuickSpecs

Features

ENVIRONMENTAL

ENERGY STAR

IT ECO Declaration

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

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

WEIGHTS & DIMENSIONS

4440s/1s

Weight

Starting at 4.85 lb (2.20 kg) with optical drive Starting at 4.55 lb (2.07 kg) without optical drive (weight will vary by configuration)

Dimensions (w x d x h) 13.35 x 9.27 x 1.10 in 33.9 x 23.5 x 2.8 cm (at front)

4540s

Weight

Starting at 5.45 lb (2.47 kg) with optical drive Starting at 5.14 lb (2.33 kg) without optical drive (weight will vary by configuration)

Dimensions (w x d x h) 14.76 x 10.09 x 1.13 in 37.5 x 25.6 x 2.8 cm (at front)

4740s

Weight

Starting at 6.72 lb (3.05 kg) with optical drive Starting at 6.44 lb (2.92 kg) without optical drive (weight will vary by configuration)

Dimensions (w x d x h) 16.29 x 11.00 x 1.15 in 41.3 x 27.9 x 2.9 cm (at front)

NOTE: Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components. Weight includes 6-cell battery, hard drive, 1 GB memory, and no optical drive. Weight varies by configuration and components.



QuickSpecs

Features

PORTS/SLOTS

Ports

VGA – One
USB 3.0 – Two
USB 2.0 – Two
HDMI 1.4a – One
Stereo microphone input – One
Headphone/line out – One
RJ-45 (Ethernet) – One
Power connector – One

Digital Media Slots

1 Multi-media Reader Slot supporting SD, SDHC, SDXC, Memory Stick

available at: http://www.hp.com/hps/carepack.

SERVICE AND SUPPORT

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

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



Technical Specifications

SYSTEM UNIT

Stand-Alone Power Nominal Operating 19 V

Requirements (AC Power) Voltage

Average Operating Power Integrated graphics: TBD W

Discrete graphics: TBD W

Max Operating Power < 65 W

or < 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 40 G, 2 ms, half-sine

Non-operating 200 G, 2 ms, half-sine

Random Vibration Operating 0.75 grms

Non-operating 1.50 grms

Altitude (unpressurized) **Operating** -50 to 10,000 ft (-15.24 to 3,048 m)

Non-operating -50 to 40,000 ft (-15.24 to 12,192 m)

Planned Industry Standard Certifications UL Yes
CSA Yes
FCC Compliance Yes

ENERGY STAR® Select models*

EPEAT Registered Gold in United States**

ICES Yes Australia / Yes

NZ A-Tick Compliance

CCC Yes **Japan VCCI Compliance** Yes KC Yes **BSMI** Yes **CE Marking Compliance** Yes **BNCI or BELUS** Yes CIT Yes GOST Yes Saudi Arabian Compliance Yes

(ICCP)

SABS Yes UKRSERTCOMPUTER Yes

^{*} Configurations of the HP ProBook 4440s/1s, HP ProBook 4540s and HP ProBook 4740s that are ENERGY STAR qualified are identified



Technical Specifications

as HP ProBook 4440s/1s ENERGY STAR, HP ProBook 4540s ENERGY STAR, and HP ProBook 4740s ENERGY STAR on HP websites and on www.energystar.gov.

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

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

DISPLAY

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 400:1 typical

Contrast Ratio Refresh Rate

60 Hz

Brightness

200 nit typical

Pixel Resolution

Pitch 0.23868 x 0.23868 mm

Format

1600 x 900

Configuration

RGB Stipe

Backlight LED PPI 107

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)

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)

30/30/20/10 (Left/Right/Down/Up) (minimum) or

45/45/35/25 (Left/Right/Down/Up) (typical)

Technical Specifications

14.0-inch LED HD (1366 x 768) anti-glare **Dimensions** (W x H) 12.74 x 7.56 in (32.4 x 19.2 cm)

Diagonal Size14.0 in (35.6cm)Surface TreatmentAnti-glareContrast Ratio400:1 (typical)

Refresh Rate 60 Hz

Brightness 200 nit (typical)

 Pixel Resolution
 Pitch
 0.227 mm

 Format
 1366 x 768

Configuration RGB Stripe

Backlight LED PPI 112 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)

14.0-inch LED HD (1366 x Active Area (W x H)
768) BrightView Diagonal Size

Active Area (W x H) 12.16 x 6.85 in (30.9 x17.4 cm)

Diagonal Size14.0 in (35.6cm)Surface TreatmentBrightView (glossy)Contrast Ratio500:1 (typical)

Refresh Rate 60 Hz

Brightness 200 nit (typical)

 Pixel Resolution
 Pitch
 0.227 mm

 Format
 1366 x 768

Configuration RGB Stripe

Backlight LED PPI 112 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)

STORAGE AND DRIVES

Internal Storage



Technical Specifications

750 GB 7200 rpm SATA Hard Drive **Drive Weight** 0.25 lbs (115g)

Capacity 750 GB

 Height
 0.37 in (9.5 mm)

 Width
 2.75 in (70 mm)

Interface ATA-8, SATA 2.6, 3.0 Gb/s, NCQ

Transfer Rate Synchronous (maximum) 300 MB/s (Drive Capability)

Seek TimeSingle Track1.5 ms(typical reads, including settling)Average11 msMaximum22 ms

Rotational Speed 7200 rpm **Logical Blocks** 1,465,149,168

Operating Temperature 32° to 140° F (0° to 60° C) [case temp]

Features ATA Security

500 GB 7200 rpm SATA 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 Synchronous (maximum) 300 MB/s (Drive Capability)

Seek TimeSingle Track1.5 ms(typical reads, including
settling)Average11 msMaximum22 ms

Rotational Speed 7200 rpm **Logical Blocks** 976,773,168

Operating Temperature 32° to 140° F (0° to 60° C) [case temp]

Features ATA Security

Technical Specifications

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

Capacity 320 GB

 Height
 0.37 in (9.5 mm)

 Width
 2.75 in (70 mm)

Interface ATA-8, SATA 2.6, 3.0 Gb/s, NCQ

Transfer Rate Synchronous (maximum) 300 MB/s (Drive Capability)

Seek TimeSingle Track1.5 ms(typical reads, including settling)Average11 msMaximum22 ms

Rotational Speed 7200 rpm **Logical Blocks** 625,142,448

Operating Temperature 32° to 140° F (0° to 60° C) [case temp]

Features ATA Security

750 GB 5400 rpm SATA Hard Drive **Drive Weight** 0.27 lb (125 g) or 0.22 lb (101 g)

Capacity 750 GB

Height 0.50 in (12.7 mm) or 0.37 in (9.5 mm)

Width 2.75 in (70 mm)

Interface ATA-8, SATA 2.6, 3.0 Gb/s, NCQ

Transfer Rate Synchronous (maximum) 300 MB/s (Drive Capability)

Seek TimeSingle Track3 ms(typical reads, including
settling)Average13 msMaximum24 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

Technical Specifications

640 GB 5400 rpm SATA Hard Drive Drive Weight 0.22 lb (101 g)
Capacity 6400 GB

 Height
 0.37 in (9.5 mm)

 Width
 2.75 in (70 mm)

Interface ATA-8, SATA 2.6, 3.0 Gb/s, NCQ

Transfer Rate Synchronous (maximum) 300 MB/s (Drive Capability)

Seek TimeSingle Track3 ms(typical reads, including
settling)Average13 msMaximum24 ms

Rotational Speed 5400 rpm **Logical Blocks** 1,250,263,728

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 (maximum) 300 MB/s (Drive Capability)

Seek TimeSingle Track3 ms(typical reads, including
settling)Average13 msMaximum24 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 (maximum) 300 MB/s (Drive Capability)

Seek TimeSingle Track3 ms(typical reads, including
settling)Average13 msMaximum24 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

Optical Drives

DVD+/-RW SuperMulti DL Access Times

Drive

Random

<140ms CD (typical)

< 160 ms DVD (typical)

Max Data Transfer Rate 24X CD-ROM

8X DVD 24X CD-R 24X CD-RW 8X DVD+R 8X DVD+RW 8X DVD-R 6X DVD-RW

6X - DVD+R Dual Layer 6X - DVD-R Dual Layer

5X DVD-RAM

Transfer Mode UDMA Mode 5
Interface Gen 1 SATA

Supported Media (read) CD-DA, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge

(Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R,

DVD-RW, DVD+R, DVD+RW, DVD-RAM

Supported Media (write) CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM, DVD+R DL, DVD-R

DL

Max Media Capacity (read) 8.5 GB
Max Media Capacity 8.5 GB

(write)

0.5 00

Transport Tray Loading



Technical Specifications

Blu-ray ROM DVD+/-RW SuperMulti DL Drive

Access Times Random <190 ms CD-ROM (typical)

< 180ms DVD-ROM (typical)

<230 ms BD-ROM (typical)

Max Data Transfer Rate 24X CD-ROM

> 8X DVD-ROM 24X CD-R 16X CD-RW 8X DVD+R 8X DVD+RW 8X DVD-R **6X DVD-RW**

4X - DVD+R Dual Layer 4X - DVD-R Dual Layer

5X DVD-RAM 6X BD-ROM

Transfer Mode UDMA Mode 5 Interface Gen 1 SATA

Supported Media (read) CD-DA, , CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge

(Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R,

DVD-RW, DVD+R, DVD+RW. DVD-RAM, BD-ROM, BD-R, BD-RE

CD-R, CD-RW, DVD+R, DVD+R DL, DVD+RW, DVD-R, DVD-R DL, DVD-RW, DVD-**Supported Media** (write)

RAM

Max Media Capacity (read) 50.0 GB **Max Media Capacity**

(write)

8.5GB

Transport Tray Loading

SECURITY



Technical Specifications

HP Fingerprint Sensor

(optional)

Mobile Voltage Operation 3.0V-3.6V Single Supply Operating Temperature 32° - 158°F (0° - 70°C)

Current Consumption @ Les

3.3V

Less than 70 mA peak imaging and scrolling Less than 25 mA hardware finger detection

Advanced Power Management

High-Rate Image Capture Up to 240 image frames /sec

ESD Resistance IEC 61000-4-2 Level 4 (±15KV)

Detection Matrix 192 x 16 Pixels

9.7 mm x 0.81 mm

500 ppi High-Resolution Images

NETWORKING/COMMUNICATIONS

Integrated Realtek RTL8151FH-CG 10/100/1000 NIC **Ethernet Features**

10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023 clauses 40)

Auto-Negotiation (Automatic Speed Selection)

Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100

Mbit/s

IEEE 802.1p QoS (Quality of Service) Support

IEEE 802.1q VLAN support

IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable)

IEEE 802.3az EEE (Energy Efficient Ethernet)

Jumbo Frame 9K

Auto MDI/MDIX Crossover cable detection ACPI compliant - multiple power modes

Power Management

Support

Situation-sensitive features reduce power consumption

Advanced link down power saving for reducing link down power consumption

Performance TCP/IP/UDP Checksum Offload (configurable)

Features

Protocol Offload (ARP & NS)

Large send offload and Giant send offload

Receiving Side Scaling

Manageability

Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft

Wake-Up Frame); Wake-on-LAN from off (Magic Packet only)

PXE 2.1 Remote Boot

Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x,

clause 30))

Comprehensive diagnostic and configuration software suite

Virtual Cable Doctor for Ethernet cable status

Interface

PCI Express 1.1 x1 to fully support ASPM LOs/L1 and CLKREQ

NIC Device Driver Name Realtek PCIe GBE Ethernet Family Controller



Technical Specifications

HP un2430 EV-DO/HSPA Mobile Broadband Module Technology/Operating

Bands

GSM/GPRS/EDGE: 850MHz(Cell), 900MHz(EGSM), 1800MHz(DCS), 1900MHz

(PCS)

UMTS/WCDMA with receive diversity: 2100MHz (UTRA FDD Band I), 1900MHz (UTRA FDD Band II), AWS (UTRA FDD Band IV), 900MHz(UTRA FDD Band VIII),

850MHz (UTRA FDD Band V)

1xEVDO/1xRTT with receive diversity: 850MHz (Band Classo-Cell), 1900MHz

(Band Class 1-PCS)

Wireless Protocol Standards GSM/GPRS/EDGE: Class A, Multi-slot class 10 operation, coding schemes CS1 -

CS4 and MSC1 - MSC9.

UMTS/WCDMA: Release 99 and Release 6

CDMA: 1xEVDO Release 0 and Release A, IS-95A, IS-95B, IS-856, IS-2000

Wireless Parametric

Standards

Meets or exceeds TIA/EIA IS-98-D

Maximum Data Rates UMTS (HSPA) - 14.4 Mbps (Download), 5.76Mbps (Upload)

CDMA (EVDO Release A) - 3.1 Mbps (Download), 1.8 Mbps (Upload)

GPS Standalone GPS enabled

gps0neXTRATM™

GPS Bands L1 - 1575.42 MHz

Maximum Output Power GSM/GPRS/EDGE: 32dBm (+/-1)

WCDMA: 24dBm (+0.7/-2.3) CDMA: 24dBm (+0.7/-2)

Maximum Power Consumption

2750mA (peak); 1100mA (average)

Power Consumption, Idle 20 mA

Not Connected

Power Management

USB selective suspend

Integrated notebook wireless button

Antenna Type Dual high efficiency 5 band antennae with spatial diversity, mounted in the

display enclosure

Form Factor PCI-Express MiniCard, USB 2.0 interface

Weight 11.5 g

Dimensions (Length x Width x Thickness)

2.01 x 1.18 x 0.18 in (51 x 30 x 5 mm)

Voltage, Operating 3.3v +/- 10%

Temperature, Operating -22° to 158° F (-30° to 70° C) (full RF performance) (from TIA/EIA/IS-98-D) -22° to 167° F (-30° to 75° C) (reduced RF performance)

Temperature, Non- -40° to 185° F (-40° to 85° C)

operating, 96 hours (from MIL-STD 202 Method 108)

Humidity, Non-operating 95% relative humidity for 48 hours @ 185° F (85° C) (non-condensing)

Configuration Utilities HP Connection Manager

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

Technical Specifications

HP hs2350 HSPA+ Mobile Technology/Operating **Broadband Module**

Bands

GSM/GPRS/EDGE: 850MHz(Cell), 900MHz(EGSM), 1800MHz(DCS), 1900MHz

(PCS)

UMTS/WCDMA with receive diversity: 2100MHz (UTRA FDD Band I), 1900Mhz (UTRA FDD Band II), 900Mhz(UTRA FDD Band VIII), 850 MHz (UTRA FDD Band V)

GSM/GPRS/EDGE: Class B, Multi-slot class 10 operation, coding schemes CS1 -

Standards

Wireless Protocol

CS4 and MSC1 - MSC9.

UMTS/WCDMA: Release 99 and Release 7

Advanced Receiver Type 3i

Wireless Parametric

Standards

GPS Bands

Complies with 3GPP specifications

Maximum Data Rates

UMTS (HSPA) - 21 Mbps (Download), 5.76Mbps (Upload) Standalone, A-GPS (Internet- and Network assisted)

GPS

1575.42 MHz (± 1.023 MHz)

Maximum Output Power

GSM/EDGE

GSM850 & GSM900 bands

GPRS: +33 dBm ± 2 dBm (class 4) EGPRS: +27 dBm ± 3 dBm (class E2)

DCS1800 & PCS1900 bands GPRS: +30 dBm ± 2 dBm (class 1) EGPRS: +26 dBm +4 / -3 dBm (class E2)

UMTS

UTRA FDD Bands

+24 dBm +4 / -3 dBm (class 3)

Maximum Power

Consumption

2000mA (peak); 600mA (average)

Power Consumption,

Sleep Mode

5 mA

Power Management

USB selective suspend

Integrated notebook wireless button

Antenna Type

Dual high efficiency 5 band antennae with spatial diversity, mounted in the

display enclosure

Form Factor

PCI-Express MiniCard, USB 2.0 interface

Weight

< 12 g

Dimensions (Length x Width x Thickness)

2.01 x 1.18 x 0.18 in (51 x 30 x 5 mm)

3.3v +/- 9% Voltage, Operating

Temperature, Operating

14° to 149° F (-10° to 65° C) (full RF performance)

14° to 167° F (-10° to 75° C) (reduced RF performance)

Temperature, Non-

-22° to 185° F (-30° to 85° C)

operating, 96 hours (from MIL-STD 202 Method 108)

Humidity, Non-operating

85% relative humidity for 48 hours @ 185° F (85° C) (non-condensing)

Configuration Utilities

HP Connection Manager



Technical Specifications

LED Activity LED Off - Radio Off;

Solid LED On - Radio On

Intel Centrino Advanced - Wireless LAN Standards

N 6235 802.11a/q/n (2x2) Bluetooth v4.0 combo

IEEE 802.11a

IEEE 802.11b IEEE 802.11q IEEE 802.11n

Interoperability Wi-Fi certified

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

Frequency Band 2.4 GHz and 5 GHz

Data Rates 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps

802.11b: 1, 2, 5.5, 11 Mbps

802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps

802.11n: 66 possible data rates, ranging from 6 Mbps to 300 Mbps, depending on the combination of Bandwidth, Modulation Coding Scheme, and Guard

Interval used, as defined in IEEE 802.11n specification

Modulation **Direct Sequence Spread Spectrum**

DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM

Security¹ 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 5) with Microsoft Windows 7, 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

Ad-hoc (Peer to Peer) Models

Infrastructure (Access Point Required)

Roaming IEEE 802.11 compliant roaming between access points

Output Power² 13.5 dBm, nominal **Power Consumption** Idle associated: 250 mW Idle unassociated: 100 mW

Radio disabled: 75mW Transmit: 2.0 W (max) Receive: 1.6 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 Connections High efficiency dual band antenna with spatial diversity, mounted in the

display enclosure

Form Factor PCI-Express Half-MiniCard 1.2

Weight 0.013 lb (6 g)



Technical Specifications

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 158° F (-10° to 70° C)

Non-operating -40° to 176° F (-40° to 80° C)

Humidity Operating 10% to 90% (non-condensing)

Non-operating 5% to 95% (non-condensing)

Altitude Operating 0 to 10,000 ft (3,048 m)

Non-operating 0 to 50,000 ft (15,240 m)

Configuration Utility⁴ Microsoft Windows XP

Choice of Configuration Utility:

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.

Microsoft Windows 7

Microsoft Windows 7 Wireless Network Connection Manager

 Broadcom IHV extensions for Windows 7 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.

Bluetooth 4.0 Wireless Technology

Bluetooth Specification 2.1+EDR, 3.0+HS, 4.0 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 79 (1 MHz) available channels

Channels

Data Rates and 3 Mbps data rate; throughput up to 2.17 Mbps

Throughput 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 Max 4 dBm (Bluetooth Class II)

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



Technical Specifications

Power Consumption Average 230mW

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

Broadcom Bluetooth for Windows

Bluetooth Software

Supported Microsoft Windows Bluetooth Software

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

Security
Full support of Bluetooth Security Provisions
Power Management
Microsoft Windows ACPI, and USB Bus Support

Self configurable to optimize power conservation in all operating modes,

including Standby, Hold, Park, and Sniff

Certifications All necessary regulatory approvals for supported countries, including:

FCC (47 CFR) Part 15C, Section 15.247 & 15.249

ETS 300 328, ETS 300 826 Low Voltage Directive IEC950

UL, CSA, and CE Mark

Temperature Operating -4° to 158° F (-20° to 70° C)

Non-operating -40° to 176° F (-40° to 80° C)

Humidity Operating 10% to 90%

Non-operating 5% to 95%

Altitude Operating 15,000 ft (4,572 m)

Non-operating 40,000 ft (12,192 m)

Bluetooth Profiles

Supported

Serial Port Profile (SPP)¹

Service Discovery Applicaton Profile (SDAP)

Dial-Up Networking (DUN)1,2

Generic Object Exchange Profile (GOEP)1,2

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

Hard Copy Cable Replacement (HCRP)^{1,2} Personal Area Networking Profile (PAN)^{1,2} Human Interface Device Profile (HID)^{1,2,3}

FAX Profile (FAX)

Basic Imaging Profile (BIP)² Headset Profile (HSP) Hands Free Profile (HFP)

Advanced Audio Distribution Profile (A2DP)

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



Technical Specifications

Atheros AR9485 802.11 b/q/n WiFi Adapter (1x1) **Wireless LAN Standards** IEEE 802.11b

> IEEE 802.11g IEEE 802.11n

Interoperability Wi-Fi certified **Frequency Band** 2.4 GHz

Data Rates 802.11b: 1, 2, 5.5, 11 Mbps

802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps

802.11n: many possible data rates, ranging from 6 Mbps to 300 Mbps. depending on the combination of Bandwidth, Modulation Coding Scheme, and

Guard Interval used, as defined in IEEE 802.11n specification

Modulation **Direct Sequence Spread Spectrum**

DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM

Security¹ Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES,

802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2,

LEAP, EAP-FAST.

Sub-channels Multinational support with frequency bands and channels compliant to local

regulations.

Media Access Protocol CSMA/CA (Collision Avoidance) with ACK

Network Architecture

Ad-hoc (Peer to Peer)

Infrastructure (Access Point Required) Models

Roaming IEEE 802.11 compliant roaming between access points

Output2 13.5 dBm, nominal **Power Consumption** Transmit: 2.0 W (max)

Receive: 1.6 W (max)

Associated to Access Point, Idle: 250 mW nominal

Wireless Button Off: 100 mW nominal Radio disabled: 75 mW nominal

Power Management ACPI compliant power management

802.11 compliant power saving mode

Receiver Sensitivity³ 72.2 Mbps: -70 dbm, 54 Mbps: -74 dBm, 11 Mbps: -88 dBm, 1 Mbps: -95 dBm

Antenna Connections High efficiency antenna with spatial diversity, mounted in the display

enclosure

Form Factor PCI-Express Half-MiniCard 1.2

Weight 0.013 lb (6 g)

Dimensions 0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm)

Operating Voltage 3.3v +/- 9%

Temperature Operating 14° to 158° F (-10° to 70° C)

-40° to 176° F (-40° to 80° C) Non-operating

Humidity Operating 10% to 90% (non-condensing)

> Non-operating 5% to 95% (non-condensing)

Altitude Operating 0 to 10,000 ft (3,048 m)

> Non-operating 0 to 50,000 ft (15,240 m)

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



Technical Specifications

- 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 (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

AUDIO/MULTIMEDIA

Hardware Implementation IDT 92HD87 High Definition CODEC

Function Key Volume

Controls

Volume up, volume down, and mute

Full DuplexYesMicrophone InStereoHeadphone/Line OutStereo

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

Audio Output Quality Frequency Response 20 Hz - 20 kHz

Signal to Noise Ratio >85 dB

Total Harmonic Distortion 0.01%

Noise Floor -110 dB

Play/Record Sampling

Rate(s)

8 kHz - 48kHz

DAC 16, 20 or 24-bit **ADC** 16 or 20-bit

Internal Stereo Speaker Power Rating 2 Watts

Impedance 4 ohms

POWER



Technical Specifications

HP 90W Smart AC Adapter Dimensions (discrete configurations) Weight

5.00 x 1.97 x 1.1 in (12.7 x 5.0 x 2.9 cm)

0.82 lb (370 q) Input 100 to 240 VAC

> **Input Efficiency** 87% min at 115 VAC

47 to 63 Hz Input frequency range

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 **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

Connector 3 pin/grounded, mates with interchangeable cords **Environmental Design** Operating 32° to 104° F (0° to 40° C)

temperature

Non-operating (storage) -4° to 149° F (-20° to 65° C)

temperature

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, Class 1, SELV; Agency approvals -C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; MTBF- over 200,000 hours at 25°C ambient condition.

HP 65W Smart AC Adapter Dimensions (Configurations with integrated graphics)

4.17 x 1.85 x 1.1 in (10.6 x 4.7 x 2.8 cm)

Weight 0.62 lb (280 q) Input 100 to 240 VAC

> **Input Efficiency** 87% min at 115 VAC

Input frequency range 47 to 63 Hz

Input AC current 1.7 A at 90 VAC, 0.85 A at 180 VAC

Output Output power 65W

DC output 18.5V

Hold-up time 5 msec at 115 VAC input

Output current limit <11A, Over voltage protection- 29V max

automatic shutdown

Connector 3 pin/grounded, mates with interchangeable cords

Environmental Design Operating 32° to 104° F (0° to 40° C)

temperature

Non-operating (storage) -4° to 149° F (-20° to 65° C)

temperature



Technical Specifications

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.

9-Cell (93 WHr) Lithium-Ion battery **Dimensions** (H x W x L) 0.8 x 2.9 x 8.3 in (2.0 x 7.3 x 21.0 cm)

Weight (max) 1.07 lb (0.488 kg)
Cells/Type 9-cell Lithium-Ion

Energy Watt-hour capacity 93 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 or Standby 3 to 4 hours

Mode

System ON 4 to 6 hours (depending on system power

consumption)

8-Cell (73 Whr) Lithium-Ion Primary battery **Dimensions** (H x W x L) 0.8 x 1.9 x 10.6 in (2.0 x 4.8 x 27.0 cm)

Weight (max) 0.980 lb (0.445 kg)
Cells/Type 8-cell Lithium-Ion

Energy Watt-hour capacity 73 Wh

 Temperature
 Operating (Charging)
 32° to 113° F (0° to 45° C)

 Operating (Discharging)
 14° to 140° F (-10° to 60° C)

Non-operating -4° to 140° F (-20° to 60° C)

Battery Re-Charge Time System in OFF or Standby 2.5 hours

Mode

System ON 3 to 5 hours (depending on system power

consumption)

HP Fast Charge Charges the battery up to 90% within 1.5 hours

Technology when system is OFF

Technical Specifications

6-Cell (47 WHr) Lithium-Ion battery **Dimensions** (H x W x L) 0.8 x 1.8 x 10.4 in (2 x 4.5 x 26.5cm)

Weight (max) .70lb, (.312kg)
Cells/Type Lithium-Ion

Energy Voltage 10.8V

Amp-hour capacity 4.4Ah Watt-hour capacity 47Wh

Temperature Operating (Charging) 32° to 113° F (0° to 45° C)

Operating (Discharging) 14° to 122° F(-10° to 50° C) **Non-operating** -4° to 122° F (-20° to 50° C)

Battery Re-Charge Time System in OFF or Standby 2.5 hours

Mode

System ON 3 to 5 hours

Fuel Gauge LEDNoWarranty1 yearCompatible with optionalNo

Travel Battery

ENVIRONMENTAL

HP ProBook 4440s/1s Notebook PC

Environmental Data

Eco-Label Certifications This product has received or is in the process of being certified to the following

approvals and may be labeled with one or more of these marks:

US ENERGY STAR qualified

IT ECO declaration

EPEAT Gold with a Microsoft OS where HP registers commercial notebook products. See http://www.epeat.net for registration status in your country.

System Configuration The configuration used for the Energy Consumption and Declared Noise

Emissions data is based on a "Typically Configured Notebook"

Energy Consumption	115 VAC	230 VAC	100 VAC
Normal Operation	6.37 W	6.47 W	5.74 W
Sleep (Energy Star low power mode)	0.94 W	1.09 W	0.93 W
Off	0.52 W	0.65 W	0.52 W
Heat Dissipation*	115 VAC	230 VAC	100 VAC
Normal Operation	22 BTU/hr	22 BTU/hr	20 BTU/hr
Sleep	3 BTU/hr	4 BTU/hr	3 BTU/hr
Off	2 BTU/hr	2 BTU/hr	2 BTU/hr



Technical Specifications

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

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)

System Fan Off	Sound Power	Sound Pressure
	(LWAd, bels)	(LpAm, decibels)
Idle	3.4	28
Fixed Disk (random writes)	3.4	29

System fan is usually off except when charging the battery

Batteries

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

Batteries used in the product do not contain:

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

The battery type and chemistry used in the product is:

CR2032 (coin cell), Li-ion

6-cell high capacity Lithium-Ion battery (optional 8 cell available)

Additional information

This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2002/95/EC.

This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive - 2002/96/EC.

This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).

This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold level, see www.epeat.net

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

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

This product is greater than 96.3% recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
 - O PAPER/Cardboard & misc 325 g
 - O PAPER/Corrugated 51 g
- Internal:
 - PLASTIC/Polyethylene low density 15 g



Technical Specifications

- PLASTIC/EPE-Expanded Polyethylene 68 g
- O PLASTIC/PET 20 q
- O OTHER/OTHER 20 g
- The PAPER/Cardboard & misc is made from 80% recycled content.
- The PAPER/Corrugated is made from 80% recycled content.
- The PLASTIC/Polyethylene low density is made from 65% recycled content
- The PLASTIC/EPE-Expanded Polyethylene is made from 65% recycled content
- The PLASTIC/PET is made from 65% recycled content
- The OTHER/OTHER is made from 65% 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.

HP ProBook 4540s Notebook PC

Environmental Data

Eco-Label Certifications

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

US ENERGY STAR qualified

IT ECO declaration

EPEAT Gold with a Microsoft OS where HP registers commercial notebook products. See http://www.epeat.net for registration status in your country.

System Configuration

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

Energy Consumption	115 VAC	230 VAC	100 VAC
Normal Operation	6.16 W	6.50 W	6.14 W
Sleep (Energy Star low power mode)	0.92 W	1.08 W	0.92 W
Off	0.56 W	0.69 W	0.55 W
Heat Dissipation*	115 VAC	230 VAC	100 VAC
Normal Operation	21.1 BTU/hr	22.2 BTU/hr	20.9 BTU/hr
Sleep	3.1 BTU/hr	3.6 BTU/hr	3.1 BTU/hr



Technical Specifications

Off 2 BTU/hr 2.3 BTU/hr 1.8 BTU/hr

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

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)

System Fan Off	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Idle	3.4	30
Fixed Disk (random writes)	3.4	30

System fan is usually off except when charging the battery

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

Batteries used in the product do not contain:

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

The battery type and chemistry used in the product is:

CR2032 (coin cell), Li-ion

6-cell high capacity Lithium-Ion battery (optional 8 cell available)

Additional information

This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2002/95/EC.

This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive - 2002/96/EC.

This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).

This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold level, see www.epeat.net

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

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

This product is greater than 96.4% recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
 - O PAPER/Cardboard & misc 411 g
 - PAPER/Corrugated 51 g
- Internal:



Technical Specifications

- PLASTIC/Polyethylene low density 25 q
- O PLASTIC/PET 3 q
- O PLASTIC/EPE-Expanded Polyethylene 60 g
- O OTHER/OTHER 20 g
- The PAPER/Cardboard & misc packaging material is made from 80% recycled content.
- The PAPER/Corrugated packaging material is made from 80% recycled content.
- The PLASTIC/Polyethylene low density packaging material is made from 65% recycled content
- The PLASTIC/PET packaging material is made from 65% recycled content
- The PLASTIC/EPE-Expanded Polyethylene packaging material is made from 65% recycled content
- The OTHER/OTHER packaging material is made from 65% 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.

HP ProBook 4740s Notebook PC

Environmental Data

Eco-Label Certifications

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

US ENERGY STAR qualified

IT ECO declaration

EPEAT Gold with a Microsoft OS where HP registers commercial notebook products. See http://www.epeat.net for registration status in your country.

System Configuration

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

Energy Consumption	115 VAC	230 VAC	100 VAC
Normal Operation	6.35 W	7.12 W	6.35 W
Sleep (Energy Star low power mode)	0.94 W	1.08 W	0.93 W
Off	0.63 W	0.76 W	0.64 W



Technical Specifications

Heat Dissipation*	115 VAC	230 VAC	100 VAC
Normal Operation	21.7 BTU/hr	24.3 BTU/hr	21.7 BTU/hr
Sleep	3.2 BTU/hr	3.6 BTU/hr	3.1 BTU/hr
Off	2.1 BTU/hr	2.5 BTU/hr	2.1 BTU/hr

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

Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)

System Fan Off	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Idle	3.3	30
Fixed Disk (random writes)	3.3	30

System fan is usually off except when charging the battery

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

Batteries used in the product do not contain:

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

The battery type and chemistry used in the product is:

CR2032 (coin cell), Li-ion

6-cell high capacity Lithium-Ion battery (optional 8 cell available)

Additional information

This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2002/95/EC.

This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive - 2002/96/EC.

This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).

This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold level, see www.epeat.net

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

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

This product is greater than 97.2% recycle-able when properly disposed of at end of life.

Packaging Materials



Technical Specifications

- External:
 - PAPER/Cardboard & misc 480 g
- Internal:
 - PLASTIC/Polyethylene low density 26 g
 - O PLASTIC/PET 3 g
 - PLASTIC/EPE-Expanded Polyethylene 55 g
 - O OTHER/OTHER 20 g
- The PAPER/Cardboard & misc packaging material is made from 80% recycled content.
- The PAPER/Corrugated packaging material is made from 80% recycled content.
- The PLASTIC/Polyethylene low density packaging material is made from 65% recycled content
- The PLASTIC/PET packaging material is made from 65% recycled content
- The PLASTIC/EPE-Expanded Polyethylene packaging material is made from 65% recycled content
- The OTHER/OTHER packaging material is made from 65% 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.

ALL MODELS

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



QuickSpecs

Technical Specifications

- 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 µgrams/cm²/week, measured according to EN 1811:1998, are not used on any product surface designed to be frequently handled or touched by users.

END-OF-LIFE MANAGEMENT AND RECYCLING

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

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/recyclers. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

HEWLETT-PACKARD CORPORATE ENVIRONMENTAL INFORMATION

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

Global Citizenship Report

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

Environment website

http://www.hp.com/environment

Eco-label certifications

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

ISO 14001 certificates:

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



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

Type Memory	Description HP 2 GB PC3-12800 (DDR3 1600 MHz) SODIMM HP 4 GB PC3-12800 (DDR3 1600 MHz) SODIMM NOTE: Full availability of 4 GB or more of memory requires Windows Vista Business 64-bit or Linux. With Windows 32-bit operating systems, the amount of usable memory is dependent upon your configuration, so that above 3 GB all memory may not be available due to system resource requirements.	Part # H2P63AA#xxx H2P64AA#xxx
Cases	HP Essential Top Load Case	H2W17AA
	HP Essential Backpack HP Essential Messenger Case	H1D24AA H1D25AA
Docking	HP Dual Hinge Notebook Stand HP Display and Notebook Stand HP 3005pr USB 3.0 Port Replicator HP 2005pr USB 2.0 Port Replicator	AW661AA AW662AA H1L08AA H1L07AA
Input/Output - Mice	HP Wireless Mobile Mouse HP USB Essential Keyboard/Mouse	H2L63AA H2S75AA
Adapters	HP 90W Slim Adapter HP 90W Smart AC/Auto/Air Combo Adapter	BT796AA ED493AA
Storage - External Storage	HP Mobile USB DVDRW	A2U57AA
Batteries	HP PR06 Notebook Battery	QK646AA
Health and Education	HP 20-Notebook Managed Charging Cart HP 20-Notebook Charging Cart HP 30-Notebook Managed Charging Cart HP Pocket Whiteboard	QL489AA QL488AA QL490AA A0X37AA



QuickSpecs

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

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