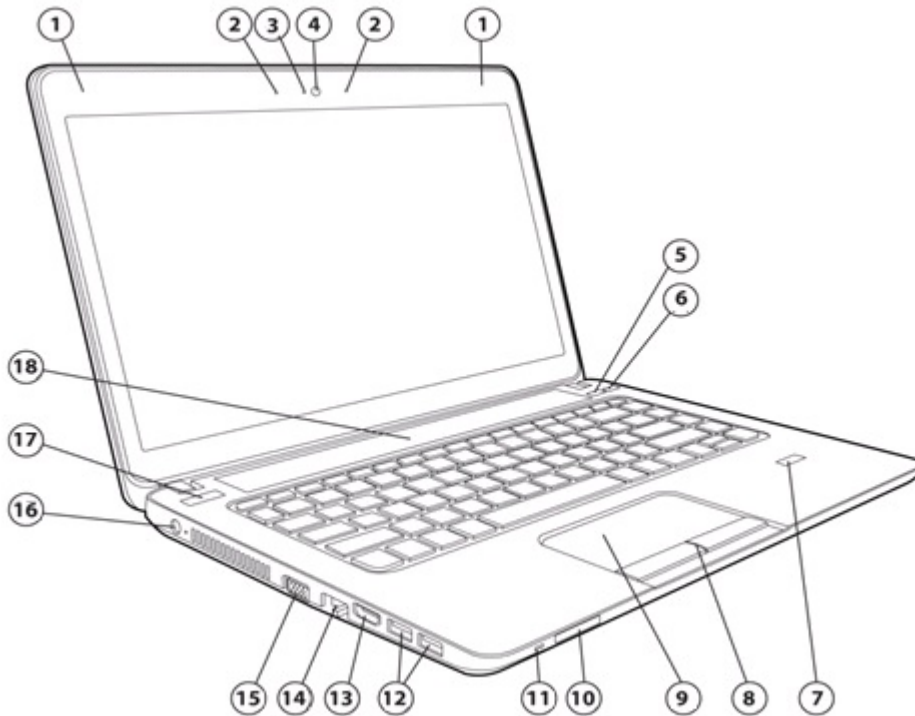


Overview

HP ProBook 445 Notebook PC



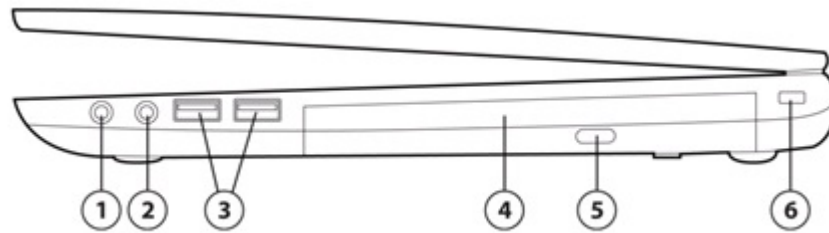
Front

- | | |
|--------------------------------|---------------------------------------|
| 1. WLAN antennas | 10. Media Card Reader |
| 2. Dual-microphone array* | 11. Hard drive activity LED indicator |
| 3. Webcam light* | 12. USB 3.0 ports (2) |
| 4. Optional webcam | 13. HDMI port |
| 5. Wireless on/off button | 14. RJ-45 (network) jack |
| 6. Speaker mute button | 14. RJ-45 (network) lights (2) |
| 7. Optional Fingerprint Reader | 15. VGA monitor port |
| 8. Touchpad pick buttons | 16. Power connector |
| 9. Touchpad | 17. Power button |
| | 18. Speakers (2) |

* Only available with optional webcam.

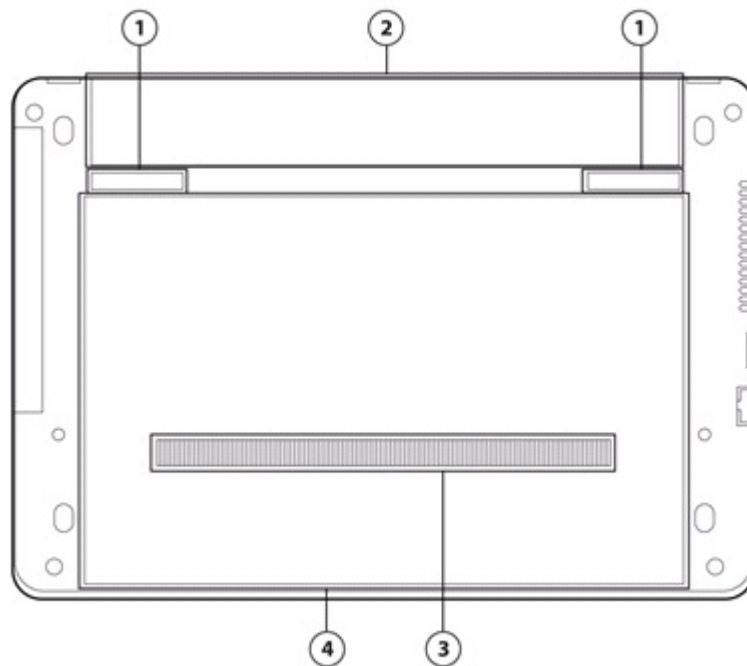
** The antennas are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas free from obstructions.

Overview



Right

- 1. Audio-out (headphone/line) jack
- 2. Audio-in (microphone) jack
- 3. USB 2.0 ports (2)
- 4. Optical drive (select models only)
- 5. Optical drive eject button (select models only)
- 6. Security lock slot

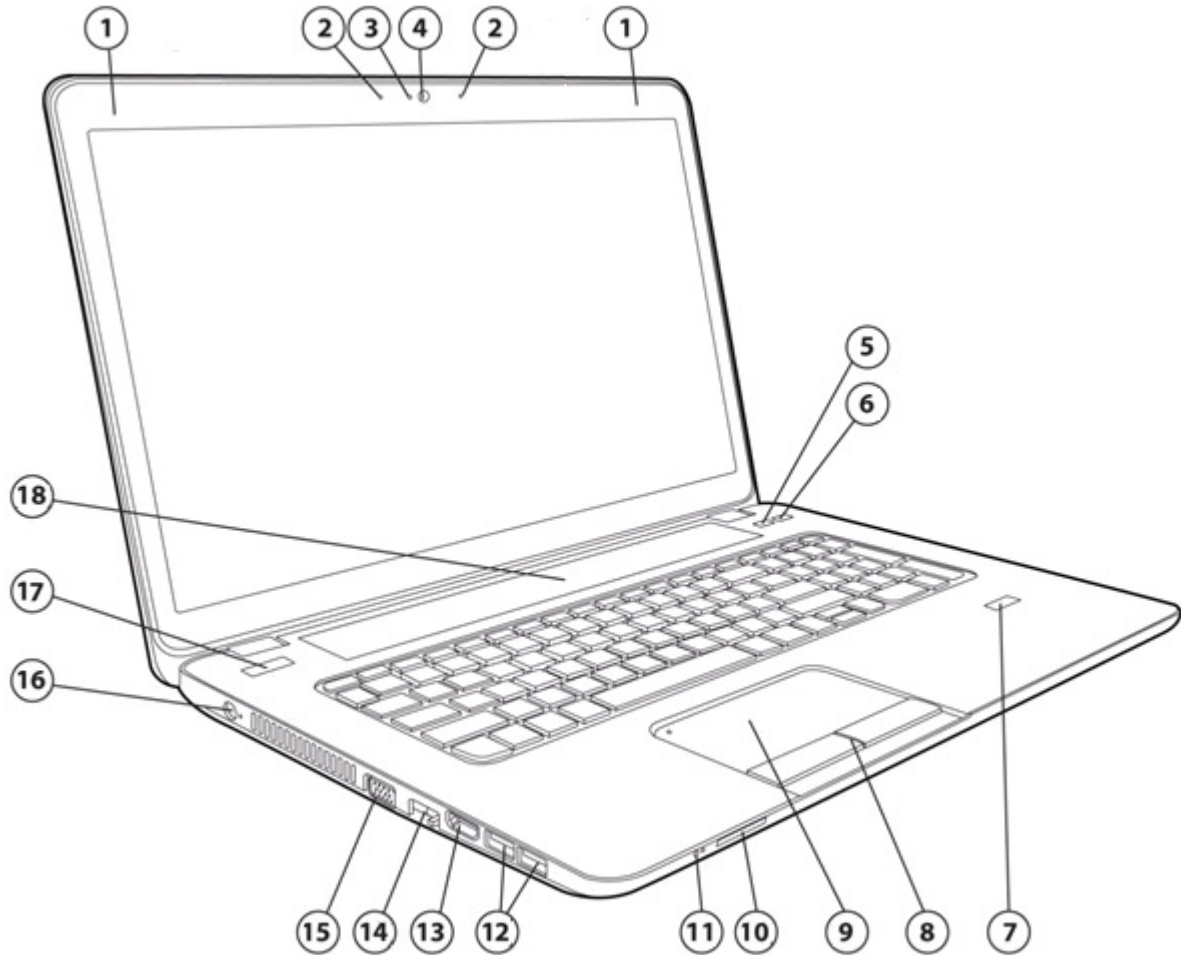


Bottom

- 1. Battery and service door release latches
- 2. Battery bay
- 3. Vents
- 4. Service door

HP ProBook 455 Notebook PC

Overview



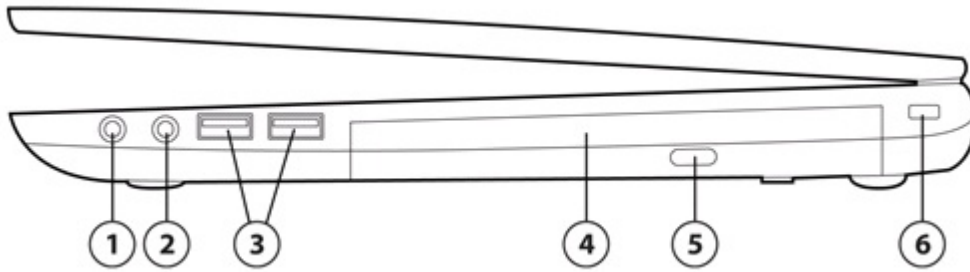
Front

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2. Dual-microphone array*
3. Webcam light*
4. Optional Webcam
5. Wireless on/off button
6. Speaker mute button
7. Optional Fingerprint Reader
8. Touchpad pick buttons
9. Touchpad
10. Media Card Reader
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13. HDMI port
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RJ-45 (network) lights (2)
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* Only available with optional webcam.

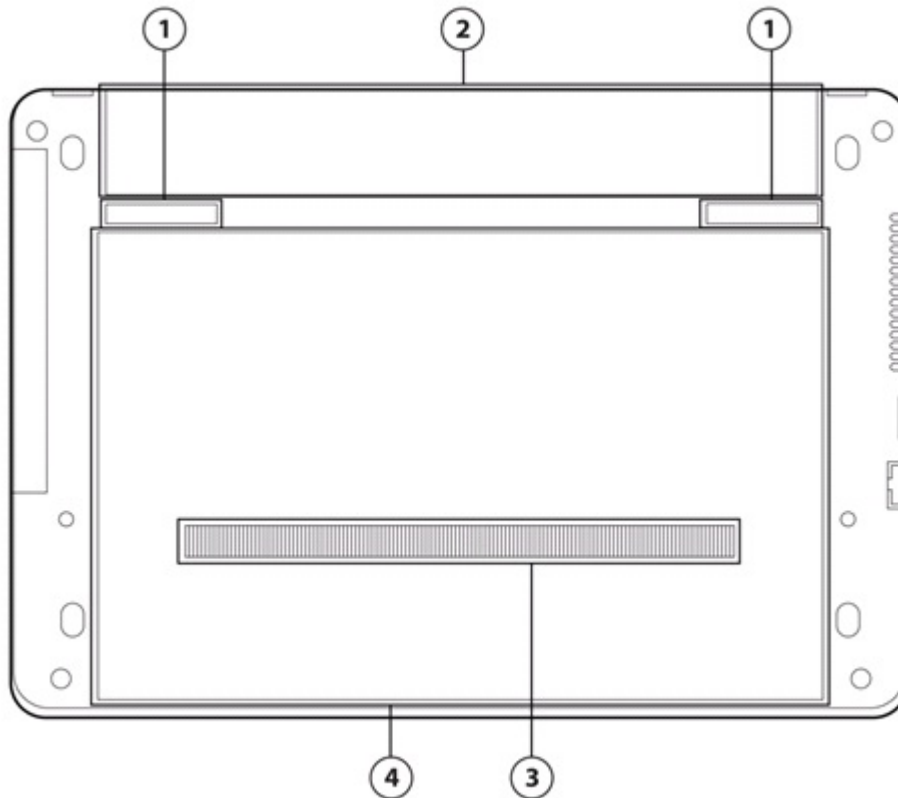
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Overview



Right

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Bottom

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Overview

At A Glance

- Windows 8.1 versions, Windows 8, Windows 7 versions, SUSE Linux, or FreeDOS 2.0
- New chassis with lighter, durable multi-layer soft touch paint and metal keyboard deck help keep system looking good longer
- Full-sized spill-resistant keyboard; full separate numeric keypad (HP ProBook 455 only)
- Larger Touchpad with gestures support, on/off button with LED indicator
- Enhanced security features including HP Client Security and optional HP Fingerprint Reader
- Optional HD webcam with dual-microphone array for video conferencing
- HDMI port for connecting to high-resolution displays; USB 3.0 ports
- DTS Sound+optimized for high fidelity audio
- Widescreen LED-backlit HD display with 16:9 aspect ratio with available 15.6-inch diagonal HD (HP ProBook 455) and 14-inch diagonal HD (HP ProBook 445)
- Accelerated Processing Unit and graphics from AMD
- Models with switchable discrete graphics
- AMD Radeon™ Dual Graphics to automatically manage how the graphics processor in the AMD APU and the AMD Radeon™ discrete graphics processor are used
- Wireless and speaker mute button to conveniently manage the connectivity and speaker.
- Flexible wireless connectivity options controlled by HP Connection Manager:
 - Integrated 802.11 b/g/n wireless LAN module*
 - Integrated 802.11 b/g/n with Bluetooth 4.0 High Speed (HS) combo card (Linux support Bluetooth 2.1 only)*

* Sold separately or as an optional feature

Features

PRODUCT NAME

HP ProBook 445 G1 Notebook PC
HP ProBook 455 G1 Notebook PC

OPERATING SYSTEM

Preinstalled

Windows 8.1 Pro 64*
Windows 7 Pro 64 (available through downgrade rights from Windows 8.1 Pro 64) **
Windows 8.1 64*
Windows 8 Pro 64*
Windows 7 Pro 64 (available through downgrade rights from Windows 8 Pro 64) **
Windows 8 64*
Windows 7 Professional 64***
Windows 7 Home Premium 64***
Windows 7 Home Basic 64***
SUSE Linux Enterprise Desktop 11
FreeDOS 2.0

* Not all features are available in all editions of Windows 8/8.1. Systems may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows 8/8.1 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.

ACCELERATED PROCESSING UNIT

AMD Elite Quad-Core A10-5750M (3.5 GHz/2.2 GHz, 4 MB L2 Cache) APU with AMD Radeon™ HD 8650G Graphics
AMD Elite Quad-Core A10-4600M (3.2 GHz/2.3 GHz, 4 MB L2 Cache) APU with AMD Radeon™ HD 7660G Graphics
AMD Elite Quad-Core A8-5550M (3.1 GHz/2.1 GHz, 4 MB L2 Cache) APU with AMD Radeon™ HD 8550G Graphics
AMD Elite Quad-Core A8-4500M (2.8 GHz/1.9 GHz, 4 MB L2 Cache) APU with AMD Radeon™ HD 7640G Graphics
AMD Elite A6-5350M (3.5 GHz/2.9 GHz, 1 MB L2 Cache) APU with AMD Radeon™ HD 8450G Graphics
AMD Elite A6-4400M (3.2 GHz/2.7 GHz, 1 MB L2 Cache) APU with AMD Radeon™ HD 7520G Graphics
AMD Elite A4-5150M (3.3 GHz/2.7 GHz, 1 MB L2 Cache) APU with AMD Radeon™ HD 8350G Graphics AMD Elite A4-4300M (3.0 GHz/2.5 Hz, 1 MB L2 Cache) APU with AMD Radeon™ HD 7420G Graphics

NOTE: AMD Radeon™ Dual Graphics requires an AMD "A" series APU plus an AMD Radeon™ discrete graphics configuration. AMD Dynamic Switchable Graphics technology requires either an AMD "A" series APU or an Intel processor, plus an AMD Radeon™ discrete graphics configuration and is available on Windows 8.1 Pro, Windows 8.1, Windows 8 Pro, Windows 8, Windows® 7 Professional, Home Premium, and/or Home Basic OS.

NOTE: With AMD Dynamic Switchable Graphics technology, full enablement of all discrete graphics video and display features may not be supported on all systems (e.g. OpenGL applications will run on the integrated GPU or the APU as the case may be).

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

Features

CHIPSET

AMD A76M FCH

GRAPHICS

Integrated graphics:

AMD Elite Quad-Core A10-5750M Accelerated Processor with AMD Radeon™ HD 8650G Graphics
AMD Elite Quad-Core A10-4600M Accelerated Processor with AMD Radeon™ HD 7660G Graphics
AMD Elite Quad-Core A8-5550M Accelerated Processor with AMD Radeon™ HD 8550G Graphics
AMD Elite Quad-Core A8-4500M Accelerated Processor with AMD Radeon™ HD 7640G Graphics
AMD Elite A6-5350M Accelerated Processor with AMD Radeon™ HD 8450G Graphics
AMD Elite A6-4400M Accelerated Processor with AMD Radeon™ HD 7520G Graphics
AMD Elite A4-5150M Accelerated Processor with AMD Radeon™ HD 8350G Graphics
AMD Elite A4-4300M Accelerated Processor with AMD Radeon™ HD 7420G Graphics

Switchable Discrete Graphics

AMD Radeon™ HD 8750M, with 1 or 2 GB dedicated DDR3 video memory

Dual graphics:

AMD Elite Quad-Core A10-5750M Accelerated Processor with AMD Radeon™ HD 8650G Graphics and HD 8750M Graphics
AMD Elite Quad-Core A10-4600M Accelerated Processor with AMD Radeon™ HD 7660G Graphics and HD 8750M Graphics
AMD Elite Quad-Core A8-5550M Accelerated Processor with AMD Radeon™ HD 8550G and HD 8750M Graphics
AMD Elite Quad-Core A8-4500M Accelerated Processor with AMD Radeon™ HD 7640G and HD 8750M Graphics
AMD Elite A6-5350M Accelerated Processor with AMD Radeon™ HD 8450G and HD 8750M Graphics
AMD Elite A6-4400M Accelerated Processor with AMD Radeon™ HD 7520G and HD 8750M Graphics

NOTE: AMD Radeon™ Dual Graphics requires an AMD "A" series APU plus an AMD Radeon™ discrete graphics configuration.

AMD Dynamic Switchable Graphics technology requires either an AMD "A" series APU or an Intel processor, plus an AMD Radeon™ discrete graphics configuration and is available on Windows 8.1 Pro, Windows 8.1, Windows 8 Pro, Windows 8, Windows® 7 Professional, Home Premium, and/or Home Basic OS.

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

Features

DISPLAY

HP ProBook 445

Internal

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

External

Up to 32-bit per pixel color depth

VGA

Port supports resolutions up to 1920 x 1200 external resolution @75 Hz

HDMI

Supports direct connection to high-definition displays with up to 1080p, 1920 x 1080@60Hz resolution and 7-channel audio with one convenient cable (not included)

HP ProBook 455

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 1920 x 1200 external resolution @75 Hz

HDMI

Supports direct connection to high-definition displays with up to 1080p, 1920 x 1080@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/1 TB 5400 rpm SMART SATA II HDD;

320 GB 7200 rpm SMART SATA II HDD - available in 445 G1 only

500 GB 7200 rpm SMART SATA II HDD

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.

Features

OPTICAL DRIVES

Fixed 9.5 mm SATA optical drive

DVD+/-RW SuperMulti DL Drive*

DVD-ROM Drive*

No optical drive option

* Sold separately as an optional feature.

MEMORY

Standard

DDR3L SDRAM (1600 MHz)

Two SODIMM slots supporting dual-channel memory

2 GB, 4 GB, and 8 GB SODIMMs

Maximum

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

Dual-channel

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

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

NETWORKING/COMMUNICATIONS

Wireless

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

Wireless LAN (WLAN)*

Realtek 802.11 b/g/n (1x1)

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

NOTE: Supports Bluetooth® v2.1 on Linux operating systems

Communications

Realtek 10/100/1000** Ethernet Controller

* Sold separately as an optional feature.

** 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

DTS Sound+

Stereo speakers

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

Function keys for microphone mute, volume up, volume down

Stereo headphone/line out

Stereo microphone 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
- Skype-ready

* Sold separately as an optional feature.

** HD content required to view HD images.

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. Includes a separate numeric keypad (HP ProBook 455 only).

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 speaker mute. Function keys provide control of features including: standby mode, display brightness, external display, microphone mute, volume down, and volume up.

Features

SOFTWARE AND SECURITY

Preinstalled Software with Windows Operating System

HP Wireless Hotspot*
HP ePrint**
HP Hotkey support
HP 3D Driveguard
PDF Complete Corporate Edition
Skype-ready***
HP Recovery Manager
Evernote
HP Support Assistant
Buy Office

NOTE: HP Recovery Manager enables fast recovery of the factory preinstalled image if the system becomes corrupted or if important system files are accidentally deleted. Up to 16 GB (for Windows 7) and 36 GB (for Windows 8) of system disk is reserved for the system recovery software.

*The wireless hotspot application requires an active internet connection and separately purchased data plan. While HP wireless hotspot is active, on-device applications will continue to work and will use the same data plan as the wireless hotspot. Wireless hotspot data usage may incur additional charges. Check with your for plan details. Requires Windows.

**Requires an Internet connection to HP web-enabled printer and HP ePrint account registration (for a list of eligible printers, supported documents and image types and other HP ePrint details, see hpconnected.com). Mobile devices require Internet connection and email capability. May require wireless access point. Separately purchased data plans or usage fees may apply. Print times and connection speeds may vary. Some HP LaserJet printers may require firmware upgrades.

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

Security

Standard

HP Client Security
Microsoft Security Essentials
HP Drive Encryption
Security lock slot

Optional

Fingerprint reader

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

POWER

Power Supply

Models with discrete graphics:

External 90W HP Smart AC Adapter

Models with integrated graphics:

External 65W HP Smart AC Adapter (not available for ProBook 445)

Power cord included is 1.8 m (+/- 0.1 m) or 1.0 m (+/- 0.1 m).

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

HP Fast Charge*

Features

Primary Battery

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

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

Battery Life*

	Configurations with integrated graphics	Configurations with discrete graphics
HP ProBook 445		
9-cell (93 WHr) battery	N/A	Up to 15 hours 15 minutes
6-cell (47 WHr) battery	N/A	Up to 8 hours
HP ProBook 455		
9-cell (93 WHr) battery	Up to 14 hours 45 minutes	Up to 14 hours 30 minutes
6-cell (47 WHr) battery	Up to 7 hours 30 minutes	Up to 7 hours 30 minutes

System Standby Time**

Up to 7 days (6-cell battery) or up to 13 days(9-cell battery)

* Battery life will vary depending on numerous factors including 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 www.bapco.com for additional details.

Testing conducted by HP consisting of full battery discharge while running a series of productivity scripts against the following applications (which may or may not be included with your particular product): Adobe® AcrobatReader 7.0, Adobe® Illustrator® CS2, Adobe® Photoshop® CS2, Apple® Quicktime 7.1, Intervideo® WinDVD® 8, Macromedia® Flash 8, Microsoft® Office® 2003 Pro, Microsoft® Project 2003, and Winzip® 10.0. Prior to testing, the system was fully charged and set to display brightness of 60 nits, auto dim disabled, wireless off, suspend and hibernate disabled and all other programs, utilities, and services not essential to running the computer system or battery life test. Battery life will vary depending on the product model, configuration, loaded applications, features, use, wireless functionality and power management settings.

** Standby life will vary depending on various factors including battery, Memory, CPU, EC and LAN chip. The maximum capacity of the battery will naturally decrease with time and usage.

NOTE: Fast Charge recharges your battery up to 90% within 90 minutes when the system is off(6-cell only).

Power Conservation

AMD PowerPlay technology (discrete models)

Hibernation

Standby

ACPI compliance

Features

WEIGHTS & DIMENSIONS

HP ProBook 445 Notebook PC

Weight

Starting at 4.33 lb (1.97 kg) without optical drive (weight will vary by configuration)

Starting at 4.62 lb (2.1 kg) with optical drive (weight will vary by configuration)

Dimensions (w x d x h)

13.35 x 9.41 x 0.88 (front)-1.13 in (at rear)

33.90 x 23.90 x 2.24 (front) - 2.86 cm (at rear)

HP ProBook 455 Notebook PC

Weight

Starting at 5.04 lb (2.29 kg) without optical drive (weight will vary by configuration)

Starting at 5.28 lb (2.4 kg) with optical drive (weight will vary by configuration)

Dimensions (w x d x h)

14.76 x 10.08 x 0.90 (front) -1.14 in (at rear)

37.50 x 25.60 x 2.28 (front) -2.90 cm (at rear)

NOTE: Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components.

PORTS/SLOTS

Ports

USB 3.0 – Two

USB 2.0 – Two

HDMI 1.4a – One

VGA – One

Stereo microphone input – One

Headphone/line out – One

RJ-45 (Ethernet) – One

Power connector – One

Digital Media Slots

Multi Media Reader Slot supporting SD, SDHC, SDXC, Memory Stick, MSXC

SERVICE AND SUPPORT

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

NOTE: Certain restrictions and exclusions apply. Consult the HP Customer Support Center for details.

<http://h20000.www2.hp.com/bizsupport/TechSupport/ProductRoot.jsp>

Technical Specifications

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)	Nominal Operating Voltage	19.5V
	Average Operating Power	21W
	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 / NZ A-Tick Compliance	Yes
	CCC	Yes
	Japan VCCI Compliance	Yes
	KC	Yes
	BSMI	Yes
	CE Marking Compliance	Yes
	BNCI or BELUS	Yes
	CIT	Yes
	GOST	Yes
	Saudi Arabian Compliance (ICCP)	Yes
	SABS	Yes
UKRSERTCOMPUTER	Yes	

Technical Specifications

* Configurations of the HP ProBook 445 and HP ProBook 455 that are ENERGY STAR qualified are identified as HP ProBook 445 ENERGY STAR and HP ProBook 455 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>.

DISPLAYS

14.0-inch LED HD (1366 x 768) anti-glare

Dimensions (W x H)	12.63 x 7.39 in (32.09 x 18.76 cm)	
Diagonal Size	14.0 in (35.6cm)	
Surface Treatment	Anti-glare	
Contrast Ratio	400:1 (min)	
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)	

15.6-inch LED HD (1366 x 768) anti-glare

Dimensions (W x H)	14.17 x 8.83 in (36.0 x 22.43 cm)	
Diagonal Size	15.6 in (39.6cm)	
Surface Treatment	Anti-glare	
Contrast Ratio	400:1 (min)	
Refresh Rate	60 Hz	
Brightness	200 nit (typical)	
Pixel Resolution	Pitch	0.252 mm
	Format	1366 x 768
	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)	

Technical Specifications

STORAGE AND DRIVES

Internal Storage

500 GB 7200 rpm SATA Hard Drive

Drive Weight	0.25 lb (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 Time (typical reads, including settling)	Single Track	1.5 ms
	Average	11 ms
	Maximum	22 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	

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 Time (typical reads, including settling)	Single Track	3 ms
	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	

Technical Specifications

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 Time (typical reads, including settling)	Single Track 3 ms
	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

750 GB 5400 rpm SATA Hard Drive

Drive Weight	0.22 lb (101 g)
Capacity	750 GB
Height	0.37 in (9.5 mm)
Width	2.75 in (70 mm)
Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ
Transfer Rate	Synchronous (maximum) 300 MB/s (Drive Capability)
Seek Time (typical reads, including settling)	Single Track 3 ms
	Average 13 ms
	Maximum 24 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

Optical Drives

Technical Specifications

DVD+/-RW SuperMulti DL Drive	Access Times	Random	<140ms CD (typical) < 160 ms DVD (typical)
	Max Data Transfer Rate	24X CD-ROM 8X DVD 24X CD-R 24X CD-RW 8X DVD+R 8X DVD+RW 8X DVD-R 6X DVD-RW 5X DVD-RAM	
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
	Supported Media (read)	CD-DA, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	
	Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM, DVD+R DL, DVD-R DL	
	Max Media Capacity (read)	8.5 GB	
	Max Media Capacity (write)	8.5 GB	
	Transport	Tray Loading	
	DVD-ROM Drive	Access Times	Random
Max Data Transfer Rate		24X CD-ROM 8X-DVD	
Transfer Mode		UDMA Mode 5	
Interface		Gen 1 SATA	
Supported Media (read)		CD-DA, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	
Supported Media (write)		None	
Max Media Capacity (read)		8.5GB	
Transport		Tray Loading	

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 @ 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 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	
	Power Management Support	ACPI compliant - multiple power modes Situation-sensitive features reduce power consumption Advanced link down power saving for reducing link down power consumption	
	Performance Features	TCP/IP/UDP Checksum Offload (configurable) 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 L0s/L1 and CLKREQ	
	NIC Device Driver Name	Realtek PCIe GBE Ethernet Family Controller	
	Realtek 802.11 b/g/n (1x1)	Wireless LAN Standards	IEEE 802.11b IEEE 802.11g IEEE 802.11n

Technical Specifications

Interoperability	Wi-Fi certified
Frequency Band	2.402 - 2.482 GHz
Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: card will support rates for NSS=1 for RX and TX for 20 MHz channels. Short and long guard interval will be supported.
Modulation	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM
Security¹	IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only AES-CCMP: 128 bit in hardware 802.1x authentication types WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. WPA2 certification IEEE 802.11i Cisco Certified Extensions, all versions through V5 WAPI
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output²	13.5 dBm, nominal
Power Consumption	Transmit: 2.0 W (max) Receive: 1.6 W (max) Associated to Access Point, Idle: 250 mW nominal Wireless Button Off: 100 mW nominal Radio disabled: 75 mW nominal
Power Management	ACPI compliant power management 802.11 compliant power saving mode
Receiver Sensitivity³	802.11b:-95 dBm (1 Mbps), -93 dBm (2 Mbps), -91 dBm (5.5 Mbps), -88 dBm (11 Mbps) 802.11g:-90 dBm (6 Mbps), -89 dBm (9 Mbps), -87 dBm (12 Mbps), -85 dBm (18 Mbps), -82 dBm (24 Mbps), -79 dBm (36 Mbps), -76 dBm (48 Mbps), -74 dBm (54 Mbps) 802.11n:-70dBm (72.2 Mbps)
Antenna Connections	High efficiency antenna with spatial diversity, mounted in the display enclosure
Form Factor	PCI-Express Half-MiniCard
Dimensions	0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm)
Operating Voltage	3.3v +/- 9%
Temperature	Operating 14° to 158° F (-10° to 70° C) Non-operating -40° to 176° F (-40° to 80° C)
Humidity	Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing)
Altitude	Operating 0 to 10,000 ft (3,048 m) Non-operating 0 to 50,000 ft (15,240 m)
LED Activity	LED Off - Radio OFF; Solid LED On - Radio ON

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).

Ralink 802.11 b/g/n (1x1) with Bluetooth® v4.0 combo	Wireless LAN Standards	IEEE 802.11b IEEE 802.11g IEEE 802.11n
	Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliant with Microsoft Windows7 (details at: http://www.hp.com/go/notebooks/WLAN)
	Frequency Band	2.402 - 2.482 GHz
	Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: 150Mbps for MCS7
	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. WAPI Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 5) 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 Power²	13.5dBm , minimum
	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	11b:-88dBm@11Mbps, 11g:-74 dBm@54Mbps, 11n:-70dBm@72.Mbps
	Antenna type	High efficiency dual antenna with spatial diversity, mounted in the display enclosure
	Form Factor	PCI-Express Half-MiniCard v1.2
	Weight	6 g
	Dimensions	3.3 x 26.65 x 29.85 mm
	Operating Voltage	3.3v +/- 10%

Technical Specifications

Temperature	Operating	14° to 149° F (-10° to 65° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
Altitude	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
LED Activity	LED Off - Radio OFF; Solid LED On - Radio ON	

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

NOTE: 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 and Win7.

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 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	Max 4 dBm (Bluetooth Class II)
Receiver Sensitivity	Better than -80 dBm at 0.1 % raw bit error rate
Power Consumption	Average 230mW Sleep <1 mW
Antenna	Internally integrated within module
Range	Up to 33 ft (10 m)
Electrical Interface	USB 2.0 compliant Microsoft Windows Plug and Play compliant
Bluetooth Software Supported	Broadcom Bluetooth for Windows Microsoft Windows Bluetooth Software
Link Topology	Point to Point, Multipoint Pico Nets up to 7 slaves
Security	Full support of Bluetooth Security Provisions
Power Management	Microsoft Windows ACPI, and USB Bus Support Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff

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
Bluetooth Profiles Supported	Serial Port Profile (SPP) ¹ Service Discovery Application Profile (SDAP) Dial-Up Networking (DUN) ^{1,2} Generic Object Exchange Profile (GOEP) ^{1,2} Object Push Profile (OPP) ^{1,2} File Transfer Profile (FTP) Synchronization Profile (SYNC) Hard Copy Cable Replacement (HCRP) ^{1,2} Personal Area Networking Profile (PAN) ^{1,2} Human Interface Device Profile (HID) ^{1,2} FAX Profile (FAX) Basic Imaging Profile (BIP) ² Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP)

1 indicates the profile is supported by Microsoft Windows XP SP2

2 indicates the profile is part of Windows Vista

AUDIO/MULTIMEDIA – DTS SOUND+

Hardware	Implementation	IDT 92HD91
	Function Key Volume Controls	Volume up, volume down, and mute
	Full Duplex	Yes
	Microphone In	Stereo
	Headphone/Line Out	Stereo
	Integrated Microphone	Yes, dual digital microphone array when equipped with optional webcam
Audio Output Quality	Frequency Response	20 Hz - 20 kHz
	Signal to Noise Ratio	>85 dB
	Total Harmonic Distortion	0.01%
	Noise Floor	-110 dB
	Play/Record Sampling Rate(s)	8 kHz - 48kHz
	DAC	16, 20 or 24-bit
	ADC	16 or 20-bit

Technical Specifications

Internal Stereo Speakers	Power Rating	2 Watts
	Impedance	4 ohms

POWER

HP 90W Smart AC Adapter (discrete configurations)	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	Input	100 to 240 VAC
		Input Efficiency	87% 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	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 temperature	32° to 104° F (0° to 40° C)
		Non-operating (storage) temperature	-4° to 149° F (-20° to 65° C)
Altitude		0 to 10,000 ft (0 to 3,048 m)	
Humidity		20% to 80%	
EMI and Safety Certifications	Storage Humidity	10% to 90%	
		CE Mark - full compliance with LVD and EMC directives; Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; MTBF- over 200,000 hours at 25°C ambient condition.	

Technical Specifications

HP 65W Smart AC Adapter (Configurations with integrated graphics)	Dimensions	4.17 x 1.85 x 1.1 in (10.6 x 4.7 x 2.8 cm)	
	Weight	0.62 lb (280 g)	
	Input		100 to 240 VAC
		Input Efficiency	87% min at 115 VAC
	Output	Input frequency range	47 to 63 Hz
		Input AC current	1.7 A at 90 VAC, 0.85 A at 180 VAC
		Output power	65W
		DC output	18.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<11A, Over voltage protection- 29V max automatic shutdown
		Connector	3 pin/grounded, mates with interchangeable cords
	Environmental Design	Operating temperature	32° to 104° F (0° to 40° C)
		Non-operating (storage) temperature	-4° to 149° F (-20° to 65° C)
		Altitude	0 to 10,000 ft (0 to 3,048 m)
Humidity		20% to 80%	
Storage Humidity		10% to 95%	
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)	1.57 x 1.85 x 10.59 in (4.0 x 4.7 x 26.9 cm)	
	Weight (max)	1.07 lb (0.488 kg)	
	Cells/Type	9-cell Lithium-Ion	
	Energy	Watt-hour Capacity	93 WHr
		Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 140° F (-10° to 60° C)
	Temperature	Non-operating	-4° to 140° F (-20° to 60° C)
		Battery Re-Charge Time	
		System in OFF or Standby Mode	3 to 4 hours
	System ON	4 to 6 hours (depending on system power consumption)	

Technical Specifications

6-Cell (47 WHr) Lithium-Ion battery	Dimensions (H x W x L)	0.85 x 1.76 x 10.59 in (2.16 x 4.46 x 26.9cm)		
	Weight (max)	0.70lb, (0.312kg)		
	Cells/Type	6-cell 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 140° F (-10° to 60° C)	
		Non-operating	-4° to 140° F (-20° to 60° C)	
	Battery Re-Charge Time	System in OFF or Standby Mode	2.5 hours	
System ON		3 to 5 hours		
Fuel Gauge LED		No		
Warranty	1 year			
Optional Travel Battery Available	No			

ENVIRONMENTAL

HP ProBook 445 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		
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	8.844 W	9.024 W	9.324 W
Sleep (Energy Star low power mode)	0.720 W	0.756 W	0.768 W
Off	0.516 W	0.516 W	0.516 W
Heat Dissipation*	115 VAC	230 VAC	100 VAC
Normal Operation	30 BTU/hr	31 BTU/hr	32 BTU/hr
Sleep	2 BTU/hr	3 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 (LWAd, bels)	Sound Pressure (LpAm, decibels)
Idle	3.6	32
Fixed Disk (random writes)	4.5	41

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 (common) (Li-MNO2) = PANDA CR2032
lithium/manganese dioxide

Additional information

This product is in compliance with the Restrictions of Hazardous 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 95 % recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
 - PAPER/Corrugated 51 g
 - OTHER/OTHER 20 g
 - PAPER/Cardboard & misc 325 g
- Internal:
 - PLASTIC/Polyethylene low density 15 g

Technical Specifications

- PLASTIC/EPE-Expanded Polyethylene 68 g
- PLASTIC/PET 20 g
- The PAPER/Corrugated packing material is made from 80 % recycled content
- The PAPER/Corrugated & misc packing material is made from 80 % recycled content
- The Others/Others packing material is made from 80 % recycled content
- The PLASTIC/Polyethylene low density packing materials contains at least 65 % recycled content
- The PLASTIC/EPE-Expanded Polyethylene packing materials contains at least 65 % recycled content
- The PLASTIC/PET packing materials contains at least 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 455 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		
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	7.560 W	7.704 W	7.344 W
Sleep (Energy Star low power mode)	0.948 W	1.104 W	0.960 W
Off	0.516 W	0.552 W	0.504 W
Heat Dissipation*	115 VAC	230 VAC	100 VAC

Technical Specifications

Normal Operation	26 BTU/hr	26 BTU/hr	25 BTU/hr
Sleep	3 BTU/hr	4 BTU/hr	3 BTU/hr
Off	2 BTU/hr	2 BTU/hr	0.2 BTU/hr

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

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

System Fan Off	Sound Power (LWAd, bels)	Sound Pressure (LpAm, decibels)
Idle	3.6	32
Fixed Disk (random writes)	4.4	40

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 (common) (Li-MNO2) = PANDA CR2032
lithium/manganese dioxide

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 0.0% post consumer recycled plastic (by wt.)

This product is greater than 96.08% recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
 - PAPER/Corrugated 560.5 g
 - Others/Others 20 g

Technical Specifications

- Internal:
 - PLASTIC/Polyethylene low density 24 g
 - PLASTIC/EPE-Expanded Polyethylene 37 g
 - PLASTIC/PET 2.5 g
- The PAPER/Corrugated packing material is made from 80 % recycled content
- The Others/Others packing material is made from 80 % recycled content
- The PLASTIC/Polyethylene low density packing materials contains at least 65 % recycled content
- The PLASTIC/EPE-Expanded Polyethylene packing materials contains at least 65 % recycled content
- The PLASTIC/PET packing materials contains at least 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
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)

Technical Specifications

- 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>

Country of Origin

China

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

Type	Description	Part #
Cases	HP Business Nylon Backpack (up to 17.3")	BP849AA
	HP Business 4 Wheel Roller Case	H5M93AA
Docking	HP LCD Monitor Stand	QM196AA
	HP Dual Hinge Notebook Stand	AW661AA#xxx
	HP USB 2.0 Port Replicator	H1L07AA#xxx
	HP USB 3.0 Port Replicator	H1L08AA#xxx
Input/Output - Mice	HP Wireless Mobile Mouse	H2L63AA
	HP X4000b Bluetooth Mouse	H3T50AA#xxx
Input/Output - Keyboards	HP Stylish Wireless KB/Mouse	H4B79AA
	HP Stylish USB KB/Mouse	H4B80AA
Memory	HP 2GB DDR3L-1600 1.35V SODIMM	H6Y73AA#XXX
	HP 4GB DDR3L-1600 1.35V SODIMM	H6Y75AA#XXX
	HP 8GB DDR3L-1600 1.35V SODIMM	H6Y77AA#XXX
Adapters	90W Slim Combo Adapter	H4A41AA#xxx
	90W w/USB Universal Adapter	H4A43AA#ABA
	90W Smart Auto/Truck Adapter	ED493AA
	HP 65W Slim Adapter	AX727AA#XXX
Security	HP Notebook Combo Lock	AY475AA#XXX
	HP UltraSlim Keyed Cable Lock	H4D73AA
Storage - External Storage	HP Mobile USB DVDRW Non-LS	A2U57AA

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