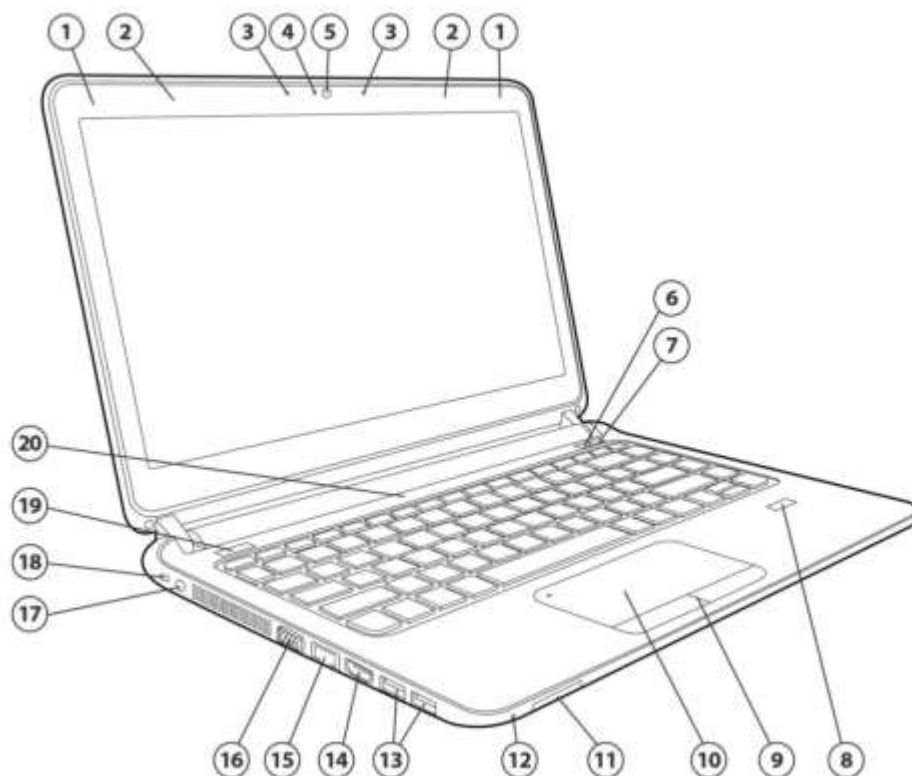


# QuickSpecs

HP ProBook 440 G2 Notebook PC  
HP ProBook 450 G2 Notebook PC  
HP ProBook 470 G2 Notebook PC

## Overview

### HP ProBook 440 G2 Notebook PC



#### Front

- |  |  |
|--|--|
| 1. WLAN antennas (available on select models only) | 11. Media Card Reader                                  |
| 2. WWAN antennas (available on select models only) | 12. Hard drive activity LED indicator                  |
| 3. Dual-microphone array*                          | 13. USB 3.0 ports (2)                                  |
| 4. Webcam light*                                   | 14. HDMI port  |
| 5. Optional webcam                                 | 15. RJ-45 (network) jack<br>RJ-45 (network) lights (2) |
| 6. Wireless on/off button                          | 16. VGA monitor port                                   |
| 7. Speaker mute button                             | 17. Power connector                                    |
| 8. Optional Fingerprint Reader                     | 18. Security lock slot                                 |
| 9. Touchpad pick buttons                           | 19. Power button                                       |
| 10. Touchpad                                       | 20. Speakers (2)                                       |

\* Only available with optional webcam.

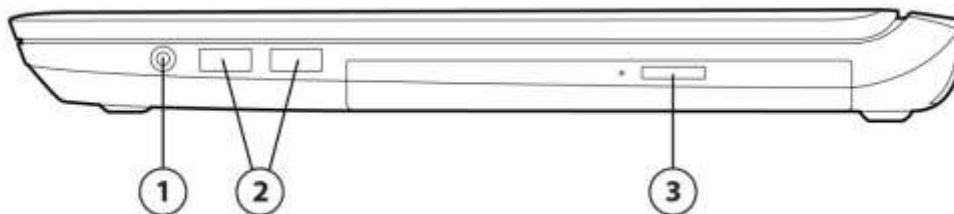
\*\* The antennas are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas free from obstructions.



# QuickSpecs

HP ProBook 440 G2 Notebook PC  
HP ProBook 450 G2 Notebook PC  
HP ProBook 470 G2 Notebook PC

## Overview



1. Headphone/Microphone combo jack
2. USB 2.0 ports (2)

### Right

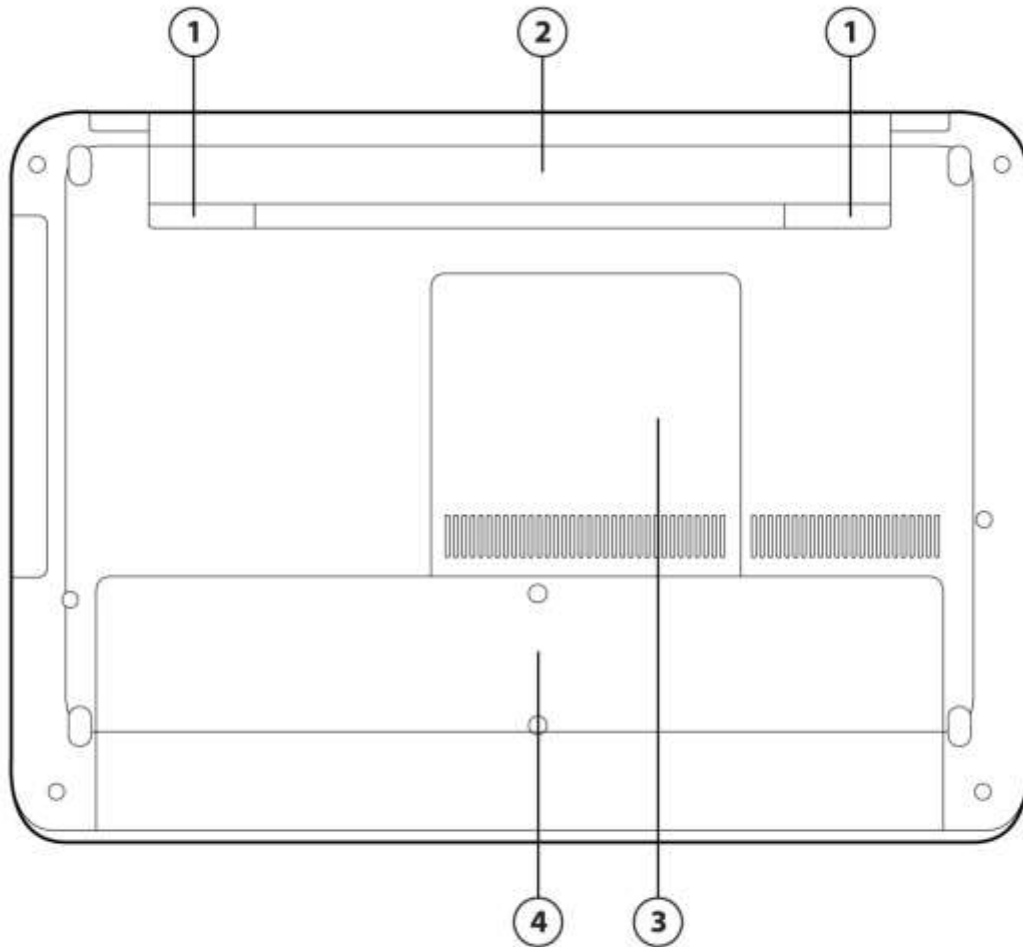
3. Optical drive eject button (select models only)



# QuickSpecs

HP ProBook 440 G2 Notebook PC  
HP ProBook 450 G2 Notebook PC  
HP ProBook 470 G2 Notebook PC

## Overview



1. Battery release latches
2. Battery bay

### Bottom

3. Service door
4. Service door

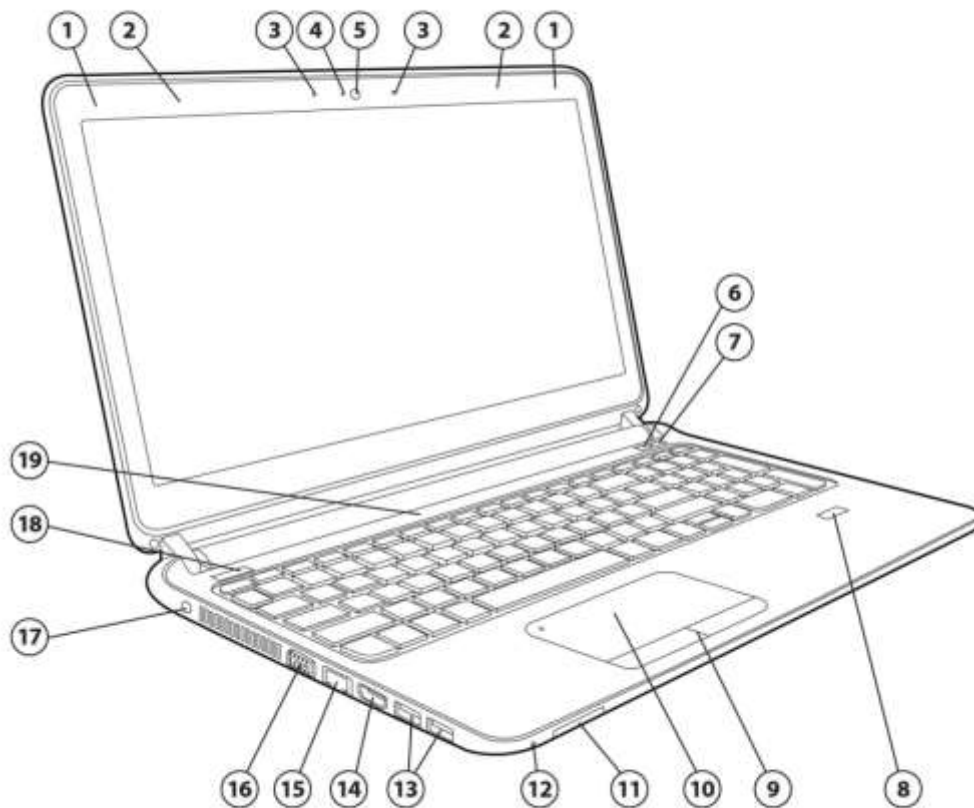


# QuickSpecs

HP ProBook 440 G2 Notebook PC  
HP ProBook 450 G2 Notebook PC  
HP ProBook 470 G2 Notebook PC

## Overview

### HP ProBook 450 G2 Notebook PC



#### Front

- |  |  |
|--|--|
| 1. WLAN antennas (available on select models only) | 11. Media Card Reader                                  |
| 2. WWAN antennas (available on select models only) | 12. Hard drive activity LED indicator                  |
| 3. Dual-microphone array*                          | 13. USB 3.0 ports (2)                                  |
| 4. Webcam light*                                   | 14. HDMI port  |
| 5. Optional Webcam                                 | 15. RJ-45 (network) jack<br>RJ-45 (network) lights (2) |
| 6. Wireless on/off button                          | 16. VGA monitor port                                   |
| 7. Speaker mute button                             | 17. Power connector                                    |
| 8. Optional Fingerprint Reader                     | 18. Power button                                       |
| 9. Touchpad pick buttons                           | 19. Speakers (2)                                       |
| 10. Touchpad                                       |  |

\* Only available with optional webcam.



# QuickSpecs

**HP ProBook 440 G2 Notebook PC**  
**HP ProBook 450 G2 Notebook PC**  
**HP ProBook 470 G2 Notebook PC**

## Overview

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



1. Headphone/Microphone combo jack
2. USB 2.0 ports (2)

### Right

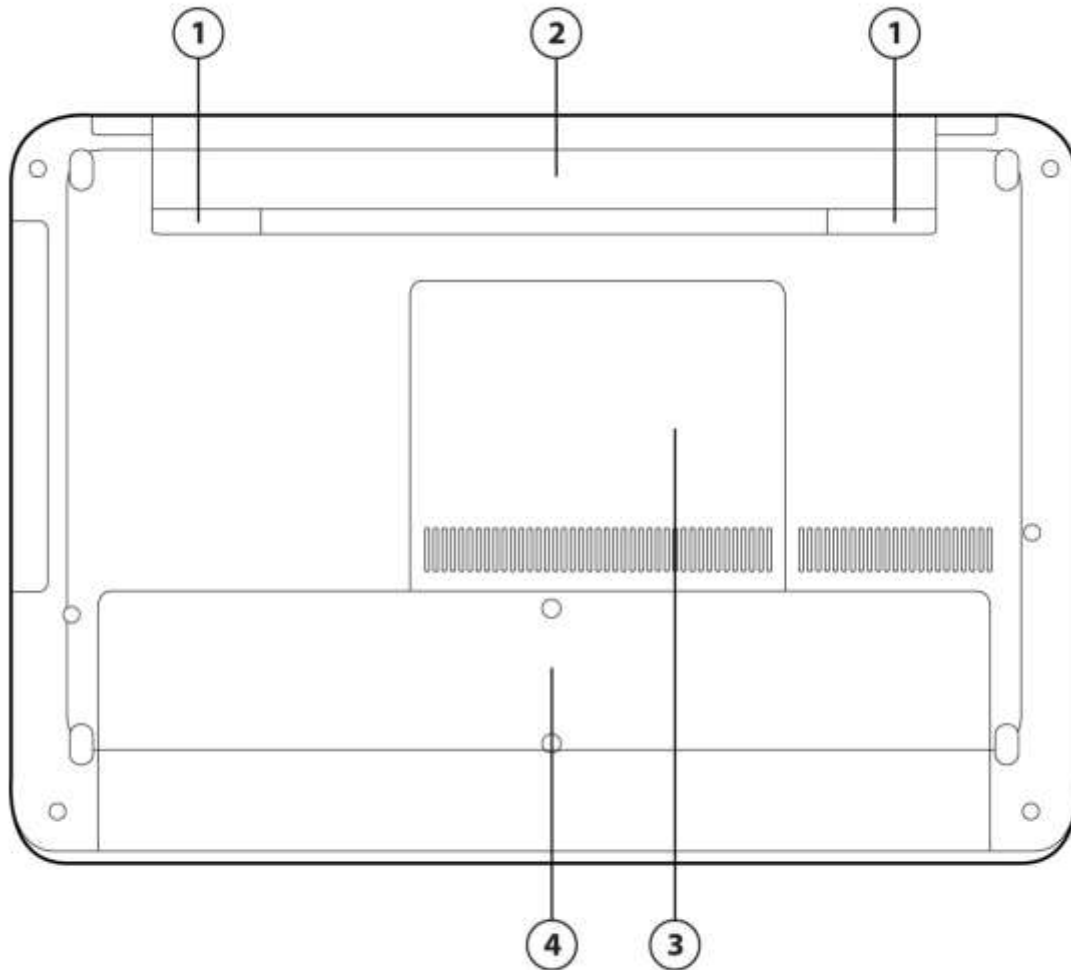
3. Optical drive eject button (select models only)
4. Security lock slot



# QuickSpecs

HP ProBook 440 G2 Notebook PC  
HP ProBook 450 G2 Notebook PC  
HP ProBook 470 G2 Notebook PC

## Overview



1. Battery release latches
2. Battery bay

### Bottom

3. Service door
4. Service door

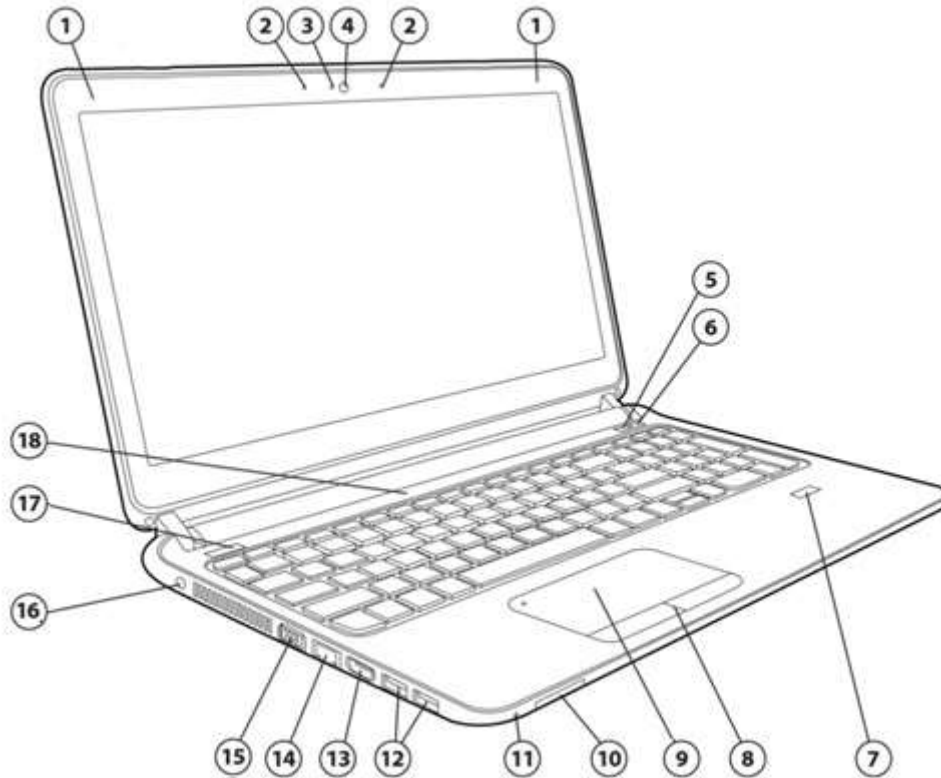


# QuickSpecs

HP ProBook 440 G2 Notebook PC  
HP ProBook 450 G2 Notebook PC  
HP ProBook 470 G2 Notebook PC

## Overview

### HP ProBook 470 G2 Notebook PC



#### Front

- |  |  |
|--|--|
| 1. WLAN antennas (available on select models only) | 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<br>RJ-45 (network) lights (2) |
| 6. Speaker mute button                             | 15. VGA monitor port                                   |
| 7. Optional Fingerprint Reader                     | 16. Power connector                                    |
| 8. Touchpad pick buttons                           | 17. Power button                                       |
| 9. Touchpad  | 18. Speakers (2)                                       |

\* Only available with optional webcam.

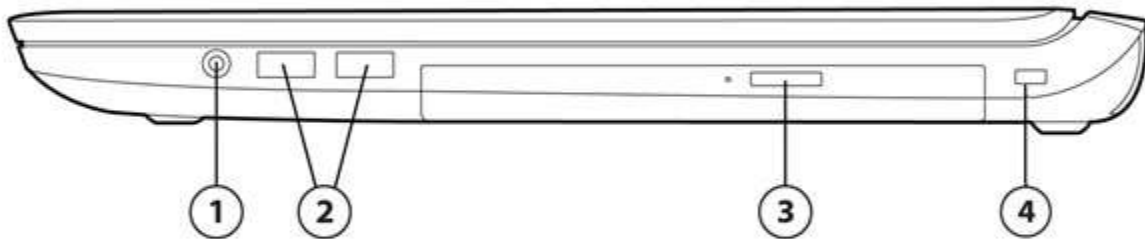
\*\* The antennas are not visible from the outside of the computer. For optimal transmission, keep the areas immediately around the antennas free from obstructions.



# QuickSpecs

HP ProBook 440 G2 Notebook PC  
HP ProBook 450 G2 Notebook PC  
HP ProBook 470 G2 Notebook PC

## Overview



### Right

1. Headphone/Microphone combo jack
2. USB 2.0 ports (2)
3. Optical drive eject button (select models only)
4. Security lock slot

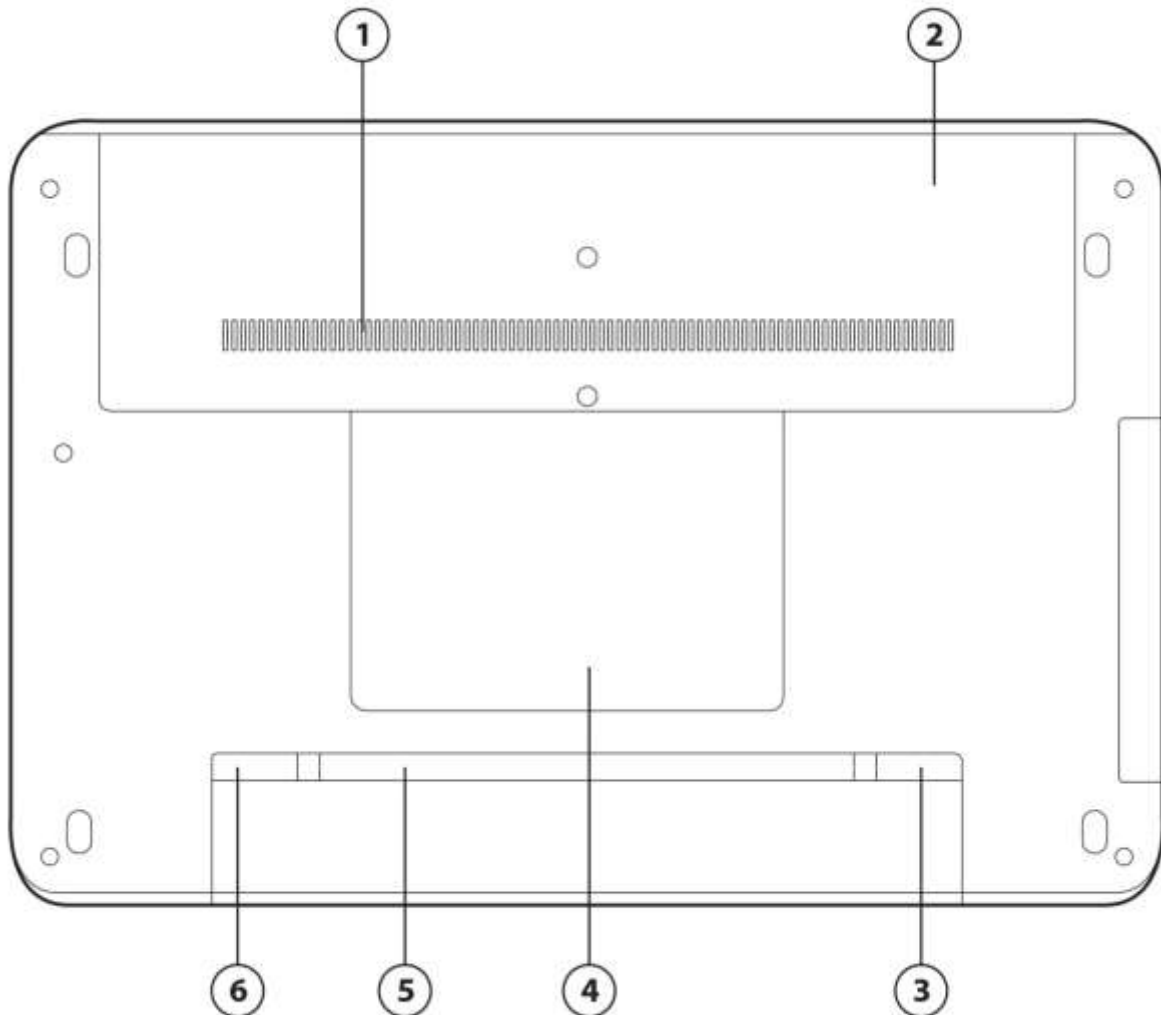




# QuickSpecs

HP ProBook 440 G2 Notebook PC  
HP ProBook 450 G2 Notebook PC  
HP ProBook 470 G2 Notebook PC

## Overview



### Bottom

- |                          |                          |
|--------------------------|--------------------------|
| 1. Vent                  | 4. Service door          |
| 2. Service door          | 5. Battery bay           |
| 3. Battery release latch | 6. Battery release latch |



# QuickSpecs

## Overview

### AT A GLANCE

- Windows 10 versions, Windows 8.1 versions, Windows 7 versions, Ubuntu Linux or FreeDOS 2.0
- Durable multi-layer soft touch painted LCD cover and brushed aluminum keyboard deck that keeps system looking good longer
- Full-sized spill-resistant keyboard with a thin layer of Mylar film to prevent minor spills; full separate numeric keypad (HP ProBook 450 and 470 only)
- Larger Touchpad with gestures support, on/off button with LED indicator
- Enhanced security features including HP Client Security, optional HP Fingerprint Reader and TPM 1.2
- 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 displays with available touch panels
  - 17.3-inch diagonal HD+, 17.3-inch diagonal FHD (HP ProBook 470 G2)
  - 15.6-inch diagonal HD, 15.6-inch diagonal HD with Touch (available in Summer 2014), 15.6-inch diagonal FHD (HP ProBook 450 G2)
  - 14-inch diagonal HD, 14-inch diagonal HD with Touch (available in Summer 2014), and 14-inch diagonal HD+ (HP ProBook 440 G2)
- Choice of 5<sup>th</sup> or 4<sup>th</sup> generation Intel® Core™ i7, i5 and i3 processors, Intel Celeron™(select models only) or Intel Pentium™ (select models only) processor
- Wireless on/off and speaker mute buttons for convenient management of the connectivity and speaker.
- Flexible wireless connectivity options:
  - Integrated HP Mobile Broadband Module (HP ProBook 440 G2 and 450 G2 select models)
  - Integrated 802.11 b/g/n wireless LAN module
  - Integrated 802.11 a/b/g/n/AC, a/b/g/n or b/g/n with Bluetooth 4.0 combo card
- Spill-resistant backlit keyboard available on select models (available in Summer 2014)
- Optional 4-cell (40 WHr) HP Long Life battery available on HP ProBook 440, 450 G2
- Optional 6-cell (51 WHr) HP Long Life battery available on HP ProBook 470 G2

\* Optional on models with integrated graphics only.

**NOTE: See important legal disclosures for all listed specs in their respective features sections.**



# QuickSpecs

## Features

### PRODUCT NAME

HP ProBook 440 G2 Notebook PC  
HP ProBook 450 G2 Notebook PC  
HP ProBook 470 G2 Notebook PC

### OPERATING SYSTEM

#### Preinstalled

Windows 10 Pro 64\*  
Windows 10 Home 64\*  
Windows 8.1 Pro 64\*  
Windows 8.1 64\*  
Windows 7 Professional 64 (available through downgrade rights from Windows 10 Pro)\*\*\*  
Windows 7 Professional 32 (available through downgrade rights from Windows 10 Pro)\*\*\*  
Windows 7 Professional 64 (available through downgrade rights from Windows 8.1 Pro)\*\*  
Windows 7 Professional 32 (available through downgrade rights from Windows 8.1 Pro)\*\*  
Windows 7 Professional 64\*  
Windows 7 Professional 32\*  
Ubuntu Linux

#### Web-only support

FreeDOS 2.0  
Windows 10 Home 64\*  
Windows 8.1 Pro 64\*  
Windows 8.1 64\*  
Windows 7 Professional 64 (available through downgrade rights from Windows 10 Pro)\*\*\*  
Windows 7 Professional 32 (available through downgrade rights from Windows 10 Pro)\*\*\*  
Windows 7 Professional 64 (available through downgrade rights from Windows 8.1 Pro)\*\*  
Windows 7 Professional 32 (available through downgrade rights from Windows 8.1 Pro)\*\*  
Windows 7 Professional 64\*  
Windows 7 Professional 32\*  
Windows 10 Enterprise 64  
Windows 8.1 Enterprise 64\*  
Windows 7 Enterprise 64\*  
Windows 7 Enterprise 32\*  
Windows 7 Home Basic 64\*  
Windows 7 Home Basic 32\*  
Windows 7 Home Premium 64\*  
Windows 7 Home Premium 32\*

\*Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.microsoft.com>

\*\* This system is preinstalled with Windows® 7 Professional 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.

\*\*\* This system is preinstalled with Windows 7 Professional software and also comes with a license and media for Windows 10 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.



# QuickSpecs

## Features

### PROCESSOR

#### 4<sup>th</sup> generation Intel® Dual-Core™ processors Core i7, i5, and i3

4<sup>th</sup> Generation Intel® Core™ i7-4558U (2.8GHz, 4 MB L3 cache, 2 cores)\* (available on 470 G2 only)

Up to 3.3GHz with Intel Turbo Boost Technology

4<sup>th</sup> Generation Intel® Core™ i7-4510U (2.0GHz, 4 MB L3 cache, 2 cores)\*

Up to 3.1GHz with Intel Turbo Boost Technology

4<sup>th</sup> Generation Intel® Core™ i5-4310U (2.0GHz, 3 MB L3 cache, 2 cores)\* (available on 440 G2 only)

Up to 3.0GHz with Intel Turbo Boost Technology

4<sup>th</sup> Generation Intel® Core™ i5-4210U (1.7GHz, 3 MB L3 cache, 2 cores)\*

Up to 2.7GHz with Intel Turbo Boost Technology

4<sup>th</sup> Generation Intel® Core™ i3-4030U (1.9GHz, 3 MB L3 cache, 2 cores)\*

4<sup>th</sup> Generation Intel® Core™ i3-4005U (1.7GHz, 3 MB L3 cache, 2 cores) (available on 440 and 450 G2 only)

4<sup>th</sup> Generation Intel® Pentium 3558U (1.7GHz, 2MB L3 cache, 2 cores)\* (available on 450 G2 only)

4<sup>th</sup> Generation Intel® Celeron 2957U (1.4GHz, 2MB L3 cache, 2 cores)\* (available on 440 and 450 G2 only)

#### 5<sup>th</sup> generation Intel® Dual-Core™ processors Core i7, i5, and i3

5<sup>th</sup> Generation Intel® Core™ i7-5500U (2.4GHz, 4 MB L3 cache, 2 cores)\*

Up to 3.0GHz with Intel Turbo Boost Technology

5<sup>th</sup> Generation Intel® Core™ i5-5300U (2.3GHz, 3 MB L3 cache, 2 cores)\* (available on 440 G2 only)

Up to 2.9GHz with Intel Turbo Boost Technology

5<sup>th</sup> Generation Intel® Core™ i5-5200U (2.2GHz, 3 MB L3 cache, 2 cores)\*

Up to 2.7GHz with Intel Turbo Boost Technology

5<sup>th</sup> Generation Intel® Core™ i3-5010U (2.1GHz, 3 MB L3 cache, 2 cores)\*

5<sup>th</sup> Generation Intel® Pentium 3805U (1.9 GHz, 2MB L3 cache, 2 cores)\* (available on 450 G2 only)

5<sup>th</sup> Generation Intel® Celeron 3205U (1.5GHz, 2MB L3 cache, 2 cores)\* (available on 440 and 450 G2 only)

\* 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

Integrated with processor

### GRAPHICS

#### Integrated

4<sup>th</sup> Generation Intel® Core™ i7-4558U (2.8GHz, 4 MB L3 cache, 2 cores)/ Intel® Iris Graphics 5100 (available on 470 G2 only)

4<sup>th</sup> Generation Intel® Core™ i7-4510U (2.0GHz, 4 MB L3 cache, 2 cores)/ Intel® HD Graphics 4400

4<sup>th</sup> Generation Intel® Core™ i5-4310U (2.0GHz, 3 MB L3 cache, 2 cores)/ Intel® HD Graphics 4400 (available on 440 G2 only)

4<sup>th</sup> Generation Intel® Core™ i5-4210U (1.7GHz, 3 MB L3 cache, 2 cores)/ Intel® HD Graphics 4400

4<sup>th</sup> Generation Intel® Core™ i3-4030U (1.9GHz, 3 MB L3 cache, 2 cores)/ Intel® HD Graphics 4400

4<sup>th</sup> Generation Intel® Core™ i3-4005U (1.7GHz, 3 MB L3 cache, 2 cores)/ Intel® HD Graphics 4400 (available on 440 and 450 G2 only)

4<sup>th</sup> Generation Intel® Pentium 3558U (1.7GHz, 2 MB L3 cache, 2 cores)/ Intel® HD Graphics (HP ProBook 450 G2 only)



# QuickSpecs

## Features

4<sup>th</sup> Generation Intel® Celeron 2957U (1.4GHz, 2MB L3 cache, 2 cores) / Intel® HD Graphics (HP ProBook 440 G2 and 450 G2 only)

5<sup>th</sup> Generation Intel® Core™ i7-5500U (2.4GHz, 4 MB L3 cache, 2 cores)/ Intel® HD Graphics 5500  
5<sup>th</sup> Generation Intel® Core™ i5-5300U (2.3GHz, 3 MB L3 cache, 2 cores)/ Intel® HD Graphics 5500 (available on 440 G2 only)  
5<sup>th</sup> Generation Intel® Core™ i5-5200U (2.2GHz, 3 MB L3 cache, 2 cores)/ Intel® HD Graphics 5500  
5<sup>th</sup> Generation Intel® Core™ i3-5010U (2.1GHz, 3 MB L3 cache, 2 cores)/ Intel® HD Graphics 5500  
5<sup>th</sup> Generation Intel® Pentium 3805U (1.9GHz, 2 MB L3 cache, 2 cores)/ Intel® HD Graphics (available on 450 only)  
5<sup>th</sup> Generation Intel® Celeron 3205U (1.5GHz, 2 MB L3 cache, 2 cores)/ Intel® HD Graphics (available on 440 and 450 only)

### Switchable Discrete

AMD Radeon™ R5 M255, with 1 or 2 GB dedicated DDR3 video memory\*\*\*

\* HP ProBook 440 G2 and 450 G2 only. HP ProBook 470 G2 supports switchable discrete graphics only.

\*\* HD content required to view HD images.

\*\*\* 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 not available on FreeDOS OS. 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).

## DISPLAY

### HP ProBook 440 G2

#### Internal

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

14" diagonal LED-backlit HD Touch Display is shatter, scratch, and smudge resistant (1366 x 768)

14" 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 @50 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.

### HP ProBook 450 G2

#### Internal

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

15.6" diagonal LED-backlit HD Touch Display is shatter, scratch, and smudge resistant (1366 x 768)

15.6" diagonal LED-backlit FHD anti-glare (1920 x 1080)

#### External

Up to 32-bit per pixel color depth

#### VGA

Port supports resolutions up to 2048x1536 external resolution @ 50 Hz



## 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)

**NOTE:** HD content required to view HD images.

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

### HP ProBook 470 G2

#### Internal

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

17.3" diagonal LED-backlit FHD anti-glare (1920 x 1080)

#### External

Up to 32-bit per pixel color depth

#### VGA

Port supports resolutions up to 2048x1536 external resolution @ 50 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\*\*/1.0 TB\*\* 5400 rpm SMART SATA HDD; 500GB/750GB\*\* 7200 rpm SMART SATA HDD

500 GB\*\* 5400 rpm SMART SATA Hybrid SSHD with 8GB Cache (440 and 450 G2 only)

#### Solid State Drive\*

120 GB\* M.2 Solid State Drive (440 G2 and 450 G2 only)

128 GB\*\* 2.5" Solid State Drive

#### HP 3D DriveGuard (Windows only)

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

\*For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 16 GB (for Windows 7) and up to 30 GB (for Windows 8 and 10) of system disk is reserved for the system recovery software.

## OPTICAL DRIVES

### Fixed 9.5 mm SATA optical drive

Blu-ray ROM DVD+/-RW SuperMulti DL Drive\*†

DVD+/-RW SuperMulti DL Drive\*

DVD-ROM Drive

No optical drive option

\* Sold separately as an optional feature.

† For Blu-ray drives, certain disc, digital connection, compatibility and/or performance issues may arise, and do not constitute defects in the product. Flawless playback on all systems is not guaranteed. In order for some Blu-ray titles to



# QuickSpecs

## Features

play, they may require an HDMI digital connection and your display may require HDCP support. HD-DVD disks cannot be played on this drive. Note that DVD-RAM cannot read or write to 2.6GB Single Sided/5.2 GB Double Sided – Version 1.0 media. Actual speeds may vary. Don't copy copyright-protected materials. Double Layer discs can store more data than single layer discs; discs burned with this drive may not be compatible with many existing single-layer DVD drives and players.

## MEMORY

### Standard

DDR3L - 1600 (Transfer rates up to 1600 MT/s)  
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 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) (WWAN and LTE are not available on the HP ProBook 470 G2)

HP hs3110 HSPA+ Mobile Broadband Module\*

HP lt4112 LTE/HSPA+ Gobi™ 4G Module\*,\*\*

### Wireless LAN (WLAN)\*\*\*

Realtek RTL8188EE 802.11b/g/n (1x1) \*\*\*

Realtek RTL8723BE 802.11b/g/n (1x1) with Bluetooth® v4.0 combo\*\*\*

Broadcom BCM943228HMB 802.11 a/b/g/n (2x2) with Bluetooth® v4.0 combo\*

Intel Dual Band Wireless-AC 3160 802.11 a/b/g/n/ac (1x1) with Bluetooth 4.0 combo\*\*\*

Intel Dual Band Wireless-AC 7260 802.11 a/b/g/n/ac (2x2) with Bluetooth 4.0 combo\*\*\*

### 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.

Supports Bluetooth® v2.1 on Linux operating systems.

## AUDIO/MULTIMEDIA

### Audio



# QuickSpecs

## Features

### DTS Sound+

Integrated stereo speakers

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

Function keys for microphone mute, volume up, and volume down

Headphone/Microphone Combo Jack

### 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.

\*\*\* Internet access required.

\*\*\*\* Not available in China

## KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

### Keyboard

The HP spill-resistant keyboard and optional HP spill-resistant backlit keyboard are 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 450 and 470 only).

Optional backlit keyboard is available (available in Summer 2014).

### 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, volume up, and backlight toggle for backlit keyboard (select models only).

## SOFTWARE AND SECURITY

### Software Included

#### Security

#### Windows 8.1

Absolute Persistence Module<sup>1</sup>  
Device Access Manager with Just In Time Authentication  
HP File Sanitizer<sup>2</sup>  
HP Client Security<sup>3</sup>  
HP SpareKey  
Microsoft Defender  
DigitalPersona Fingerprint Driver  
Validity Fingerprint Driver  
Hardware Root of Trust

#### Windows 7

Absolute Persistence Module  
Device Access Manager with Just In Time Authentication  
HP File Sanitizer<sup>2</sup>  
HP Client Security<sup>3</sup>  
HP SpareKey  
Microsoft Security Essentials<sup>4</sup>  
DigitalPersona Fingerprint Driver  
Validity Fingerprint Driver  
Hardware Root of Trust





# QuickSpecs

## HP ProBook 440 G2 Notebook PC HP ProBook 450 G2 Notebook PC HP ProBook 470 G2 Notebook PC

### Features

|                              |  |  |
|------------------------------|--|--|
|                              | HP Automatic DriveLock                           | HP Automatic DriveLock                           |
|                              | HP BIOS Protection                               | HP BIOS Protection                               |
|                              | HP Disk Sanitizer <sup>5</sup>                   | HP Disk Sanitizer <sup>5</sup>                   |
|                              | DASH Support                                     | DASH Support                                     |
|                              | HP DriveLock                                     | HP DriveLock                                     |
|                              | HP SpareKey <sup>6</sup>                         | HP SpareKey <sup>6</sup>                         |
|                              | Hybrid Boot                                      | Hybrid Boot                                      |
|                              | Master Record Security                           | Master Record Security                           |
|                              | Measured Boot                                    | Measured Boot                                    |
|                              | Power On Authentication                          | Power On Authentication                          |
|                              | Pre-Boot Security                                | Pre-Boot Security                                |
|                              | Secure Boot (Windows 8.1)                        | Secure Boot (Windows 7)                          |
|                              | Secure Erase <sup>7</sup>                        | Secure Erase <sup>7</sup>                        |
|                              | Touch enabled F10 Setup with virtual KB          | Touch enabled F10 Setup with virtual KB          |
| <b>MultiMedia</b>            | Cyberlink Power2Go                               | Cyberlink Power2Go                               |
|                              | Cyberlink PowerDVD                               | Cyberlink PowerDVD                               |
|                              | Cyberlink YouCam BE                              | Cyberlink YouCam BE                              |
| <b>Communications</b>        | HP Connection Manager                            | HP Connection Manager                            |
|                              | HP GPS and Location <sup>8</sup>                 | HP GPS and Location <sup>8</sup>                 |
|                              | HP Mobile Connect <sup>9</sup>                   | Intel WiDi Software <sup>11</sup>                |
|                              | HP Wireless Hotspot <sup>10</sup>                | Intel My WiFi and Wireless Drivers for Microsoft |
|                              | Intel WiDi Software <sup>11</sup>                |  |
|                              | Intel My WiFi and Wireless Drivers for Microsoft |  |
| <b>HP Value Add Software</b> | Digital Energy Star Logo W8                      | Digital Energy Star Logo W8                      |
|                              | Getting Started with Windows 8                   | Getting Started with Windows 8                   |
|                              | HP 3D DriveGuard                                 | HP 3D DriveGuard                                 |
|                              | HP Ceement                                       | HP Ceement                                       |
|                              | HP ePrint Driver <sup>12</sup>                   | HP ePrint Driver <sup>12</sup>                   |
|                              | HP Hotkey  | HP Hotkey  |
|                              | HP PageLift App (Requires Windows 8)             | HP PageLift for Win 7                            |
|                              | HP Recovery Manager                              | HP Recovery Manager                              |
|                              | HP Registration App                              | HP Registration App                              |
|                              | HP Setup   | HP Setup   |
|                              | HP Softpaq Download Manager                      | HP Softpaq Download Manager                      |
|                              | HP Software Setup                                | HP Software Setup                                |
|                              | HP Support Assistant <sup>13</sup>               | HP Support Assistant <sup>13</sup>               |
|                              | HP Recovery Disc Creator (HPRDC)                 | HP Recovery Disc Creator (HPRDC)                 |
|                              | HP Wallpaper                                     | HP Wallpaper                                     |
|                              | System Default Settings for Win8                 | System Default Settings for Win8                 |
|                              | UEFI System Diagnostics W8                       | UEFI System Diagnostics W8                       |
| <b>3rd Party</b>             | Box 50GB Offer Desktop Icon <sup>14</sup>        | Box 50GB Offer Desktop Icon <sup>14</sup>        |
|                              | Box App  | Box App  |
|                              | Foxit PhantomPDF Express                         | Foxit PhantomPDF Express                         |
|                              | Buy Office                                       | Buy Office                                       |

<sup>1</sup>The Absolute Persistence agent is shipped turned off, and will be activated when customers activate a purchased subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. The Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit: <http://www.absolute.com/company/legal/agreements/computrace-agreement>. Data Delete is an optional service provided by Absolute Software. If utilized, the Recovery Guarantee is null and void. In order to use the Data Delete service,



# QuickSpecs

## Features

customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens from Absolute Software.

<sup>2</sup>For the use cases outlined in the DOD 5220.22-M Supplement. Supports standard Hard Drives. Initial setup required.

<sup>3</sup>Not all features are remotely manageable.

<sup>4</sup>Opt in and internet connection required for updates.

<sup>5</sup>For the use cases outlined in the DOD 5220.22-M Supplement. Does not support Solid State Drives (SSDs). Initial setup required. Web history deleted only in Internet Explorer and Firefox browsers and must be user enabled.

<sup>6</sup>Requires initial user set up.

<sup>7</sup>For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88.

<sup>8</sup>GPS access requires an unobstructed path to multiple satellites. Performance may be affected if/when used inside of buildings, bridges or heavily congested metropolitan areas. Requires separately purchased GPS navigation software available from multiple GPS applications.

<sup>9</sup>Internet access required.

<sup>10</sup> 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 service provider for plan details. Requires Windows.

<sup>11</sup>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.

<sup>12</sup>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 [www.hp.com/go/eprintcenter](http://www.hp.com/go/eprintcenter)). Requires optional broadband module. Broadband use requires separately purchased service contract. Check with service provider for coverage and availability in your area. Separately purchased data plans or usage fees may apply. Print times and connection speeds may vary.

<sup>13</sup> Internet access required.

<sup>14</sup> Offer available on new 2014 HP commercial PC and requires Box registration. Offer subject to change without notice.

### Security

#### Standard

HP Client Security (Windows only)

Microsoft Security Essentials(Windows 7)/Microsoft Defender (Windows 8)\*

HP Drive Encryption\*\*

HP BIOS Protection\*\*\*

Security lock slot

TPM 1.2 Embedded Security Chip

#### Optional

Intel Identity Protection\*\*\*\*

HP Fingerprint reader

**NOTE:** The Absolute Persistence 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.

\* Opt in and internet connection required for updates.

\*\* HP Drive Encryption requires Windows. Data is protected prior to Drive Encryption login. Turning the PC off or into hibernate logs out of Drive Encryption and prevents data access.

\*\*\* HP Tools partition with an HP BIOS required for automatic recovery.

\*\*\*\* Intel Identity Protection feature is only available with Intel Core Processors. Intel® IPT security requires separate Symantec VIP software service subscription and must be activated and configured. Requires a website that uses Symantec



## Features

VIP Authentication Service and Microsoft® Windows. Intel® and HP assume no liability for lost or stolen data and/or systems or any other damages resulting therefrom.

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

## POWER

### Power Supply

#### HP ProBook 440 G2 Notebook PC

Models with discrete graphics:

65W Smart AC Adapter

65W EM Smart AC Adapter

Models with integrated graphics:

45W Smart AC Adapter

45W Smart AC Adapter (two prong) (Japan only) (1.0 m power cord only)

Power cord included is 1.8m (+/- 0.1m) or 1.0m (+/- 0.1m) (1.8m power cord not available in Japan).

#### HP ProBook 450 G2 Notebook PC

Models with discrete graphics:

65W Smart AC Adapter

65W EM Smart AC Adapter

Models with integrated graphics:

45W Smart AC Adapter

45W Smart AC Adapter (two prong) (Japan only) (1.0 m power cord only)

Power cord included is 1.8m (+/- 0.1m) or 1.0m (+/- 0.1m) (1.8m power cord not available in Japan).

#### HP ProBook 470 G2 Notebook PC

Models with discrete graphics:

65W Smart AC Adapter

65W EM Smart AC Adapter

90W Smart AC Adapter

90W EM Smart AC Adapter

HP Fast Charge (available on 470 G2 standard battery only, not available for the Long Life Battery or for the 440 G2 or 450 G2)

### Primary Battery

#### HP ProBook 440 G2 and 450 G2 Notebook PCs

4-cell (44 WHr) Lithium-Ion battery

4-cell (40 WHr) Long Life Lithium-Ion battery

#### HP ProBook 470 G2 Notebook PC

6-cell (47 WHr) Lithium-Ion battery

6-cell (51 WHr) Long Life Lithium-Ion battery

### Battery Life \*

**Configurations with integrated graphics  
(Windows 7)**

**Configurations with discrete graphics  
(Windows 7)**



## Features

### HP ProBook 440 and 450

|  |                       |                        |
|--|-----------------------|------------------------|
| <b>4-cell (44 WHr) battery</b>           | Up to 11 hours*       | Up to 10 hours 15 min* |
| <b>4-cell (40 WHr) long life battery</b> | Up to 9 hours 15 min* | Up to 9 hours*         |

### HP ProBook 470

|  |    |                        |
|--|----|------------------------|
| <b>6-cell (47 WHr) battery</b>           | NA | Up to 9 hours 15 min*  |
| <b>6-cell (51 WHr) long life battery</b> | NA | Up to 10 hours 15 min* |

\* Windows 7 battery life will vary depending on various 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](http://www.bapco.com) for additional details.

### System Standby Time\*

#### HP ProBook 440 and 450

|  |                |
|--|----------------|
| <b>4-cell (44 WHr) battery</b>           | Up to 15 days* |
| <b>4-cell (40 WHr) long life battery</b> | Up to 14 days* |

#### HP ProBook 470

|  |                |
|--|----------------|
| <b>4-cell (47 WHr) battery</b>           | Up to 19 days* |
| <b>4-cell (51 WHr) long life battery</b> | Up to 17 days* |

\* 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.

### 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

## WEIGHTS & DIMENSIONS

### HP ProBook 440 G2 Notebook PC

#### Weight

Lightest possible configuration across battery and panel options (HD Panel, Non-Touch, No-ODD, 4-cell (44Whr) Battery, M.2 120GB SSD) at 3.97lb/1.80kg

#### Lightest Weight Configurations (across panel, battery and ODD options, if applicable)



# QuickSpecs

**HP ProBook 440 G2 Notebook PC**  
**HP ProBook 450 G2 Notebook PC**  
**HP ProBook 470 G2 Notebook PC**

## Features

**Non-Touch, No-ODD, M.2 SSD**

**4-cell (44Whr)**

3.97lb/1.80kg

**Non-Touch, ODD, M.2 SSD**

4.21lb/1.91kg

**Non-Touch, No-ODD, HDD**

4.17lb/1.89kg

**Non-Touch, ODD, HDD**

4.41lb/2.00kg

**Touch, No-ODD, HDD**

4.70lb/2.14kg

**Touch, ODD, HDD**

4.95lb/2.25kg

### Dimensions (w x d x h)

#### Non-Touch Models

13.35 x 9.61 x 0.91 (front) - 0.99 in (rear)

33.92 x 24.4 x 2.31 (front) - 2.52 cm (at rear)

#### Touch Models

13.35 x 9.62 x 0.96 (front) - 1.05 in (rear)

33.92 x 24.45 x 2.45 (front) - 2.66 cm (rear)

### HP ProBook 450 G2 Notebook PC

#### Weight

Lightest possible configuration across battery and panel options (HD Panel, Non-Touch, No-ODD, 4-cell (44Whr) Battery, M.2 120GB SSD) at 4.54lb/2.06kg

#### Lightest Weight Configurations (across panel, battery and ODD options, if applicable)

**4-cell (44Whr)**

**Non-Touch, No-ODD, M.2 SSD**

4.54lb/2.06kg

**Non-Touch, ODD, M.2 SSD**

4.78lb/2.17kg

**Non-Touch, No-ODD, HDD**

4.74lb/2.15kg

**Non-Touch, ODD, HDD**

4.98lb/2.26kg

**Touch, No-ODD, HDD**

5.51lb/2.50kg

**Touch, ODD, HDD**

5.75lb/2.61kg

### Dimensions (w x d x h)

#### Non-Touch Models

14.76 x 10.35 x 0.92 (front) - 1.00 in (rear)

37.50 x 26.28 x 2.34 (front) - 2.55 cm (at rear)

#### Touch Models



# QuickSpecs

**HP ProBook 440 G2 Notebook PC**  
**HP ProBook 450 G2 Notebook PC**  
**HP ProBook 470 G2 Notebook PC**

## Features

14.76 x 10.36 x 0.98 (front) - 1.07 in (rear)  
37.50 x 26.32 x 2.50 (front) - 2.71 cm (rear)

### HP ProBook 470 G2 Notebook PC

#### Weight

Lightest possible configuration across battery and panel options (HD+ Panel, No-ODD, 6-cell (47Whr) Battery, HDD) at 6.26lb/2.84kg

#### Lightest Weight Configurations (across panel, battery and ODD options, if applicable)

|               | 6-cell (47Whr) |
|---------------|----------------|
| <b>No-ODD</b> | 6.26lb/2.84kg  |
| <b>ODD</b>    | 6.50lb/2.95kg  |

#### Dimensions (w x d x h)

16.29 x 11.0 x 1.02 (front) - 1.27 in (rear)  
41.38 x 27.95 x 2.60 (front) - 3.22 cm (at rear)

**NOTE:** Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components. 440/450G2 lightest weight requires optional 120GB M.2 SSD drive.

## PORTS/SLOTS

#### Ports

USB 3.0 – Two  
USB 2.0 – Two  
HDMI 1.4a – One  
Headphone/Microphone Combo Jack – One  
RJ-45 (Ethernet) – One  
Power connector – One  
VGA – One

#### Digital Media Slots

Multi Media Reader Slot supporting SD, SDHC, and SDXC

## SERVICE AND SUPPORT

HP Services offers 2-year, 1-year and 90 day limited warranty options depending on country. Batteries have a default one year limited warranty except for Long Life batteries which will have same 1-year or 2-year limited warranty as the platform. On-site service and extended coverage is also available. HP Care Pack Services are optional extended service contracts that go beyond the standard limited 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/cpc>.



# QuickSpecs

**HP ProBook 440 G2 Notebook PC**  
**HP ProBook 450 G2 Notebook PC**  
**HP ProBook 470 G2 Notebook PC**

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## Features

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



# QuickSpecs

## Technical Specifications

### SYSTEM UNIT

| <b>Stand-Alone Power Requirements (AC Power)</b> | <b>Nominal Operating Voltage</b>        | <b>Average Operating Power</b> | <b>19 V Win 7</b>  | <b>Win8</b> | <b>Max</b> |
|--|---|--------------------------------|--|-------------|------------|
|  | <b>ProBook 440</b>                      | Integrated graphics            | 6.78W  | 6.78W       | 38.88W     |
|  |   | Discrete graphics              | 4.49W  | 4.49W       | 31.87W     |
|  | <b>ProBook 450</b>                      | Integrated graphics            | 8.89W  | 8.89W       | 39.33W     |
|  |   | Discrete graphics              | 6.79W  | 6.79W       | 38.42W     |
|  | <b>ProBook 470</b>                      | Discrete graphics              | 5.71W  | 5.71W       | 23.56W     |
|  | <b>Max Operating Power</b>              |                                | Discrete < 90W   |             |            |
|  |   |                                | UMA < 65W  |             |            |
| <b>Temperature</b>                               | <b>Operating</b>                        |                                | 32° to 95° F (0° to 35° C) (not writing optical)           |             |            |
|  |   |                                | 41° to 95° F (5° to 35° C) (writing optical)               |             |            |
|  | <b>Non-operating</b>                    |                                | -4° to 140° F (-20° to 60° C)                              |             |            |
| <b>Relative Humidity</b>                         | <b>Operating</b>                        |                                | 10% to 90%, non-condensing                                 |             |            |
|  | <b>Non-operating</b>                    |                                | 5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature |             |            |
| <b>Shock</b>                                     | <b>Operating</b>                        |                                | 40 G, 2 ms, half-sine                                      |             |            |
|  | <b>Non-operating</b>                    |                                | 200 G, 2 ms, half-sine                                     |             |            |
| <b>Random Vibration</b>                          | <b>Operating</b>                        |                                | 0.75 grms  |             |            |
|  | <b>Non-operating</b>                    |                                | 1.50 grms  |             |            |
| <b>Altitude (unpressurized)</b>                  | <b>Operating</b>                        |                                | -50 to 10,000 ft (-15.24 to 3,048 m)                       |             |            |
|  | <b>Non-operating</b>                    |                                | -50 to 40,000 ft (-15.24 to 12,192 m)                      |             |            |
| <b>Planned Industry Standard Certifications</b>  | <b>UL</b>                               |                                | Yes  |             |            |
|  | <b>CSA</b>                              |                                | Yes  |             |            |
|  | <b>FCC Compliance</b>                   |                                | Yes  |             |            |
|  | <b>ENERGY STAR 6.0®</b>                 |                                | Select models*   |             |            |
|  | <b>EPEAT</b>                            |                                | Registered Gold in United States**                         |             |            |
|  | <b>ICES</b>                             |                                | Yes  |             |            |
|  | <b>Australia / NZ A-Tick Compliance</b> |                                | Yes  |             |            |
|  | <b>CCC</b>                              |                                | Yes  |             |            |
|  | <b>Japan VCCI Compliance</b>            |                                | Yes  |             |            |
|  | <b>KC</b>                               |                                | Yes  |             |            |
|  | <b>BSMI</b>                             |                                | Yes  |             |            |
|  | <b>CE Marking Compliance</b>            |                                | Yes  |             |            |
|  | <b>BNCI or BELUS</b>                    |                                | Yes  |             |            |
|  | <b>CIT</b>                              |                                | Yes  |             |            |
|  | <b>GOST</b>                             |                                | Yes  |             |            |
|  | <b>Saudi Arabian Compliance (ICCP)</b>  |                                | Yes  |             |            |
|  | <b>SABS</b>                             |                                | Yes  |             |            |
|  | <b>UKRSERTCOMPUTER</b>                  |                                | Yes  |             |            |

\* Configurations of the HP ProBook 440 G2, HP ProBook 450 G2 and HP ProBook 470 G2 that are ENERGY STAR® qualified are identified as HP ProBook 440 G2 ENERGY STAR, HP ProBook 450 G2 ENERGY STAR and HP ProBook 470 G2 ENERGY STAR on HP websites and on [www.energystar.gov](http://www.energystar.gov).

\*\* EPEAT® registration varies by country. See [www.epeat.net](http://www.epeat.net) for registration status by country.

EPEAT status listed above applies to U.S.





# QuickSpecs

## Technical Specifications

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

### DISPLAYS

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

|                           |   |
|---------------------------|---|
| <b>Dimensions (W x H)</b> | 12.63 x 7.39 in (32.09 x 18.76 cm)  |
| <b>Weight</b>             | 320g max.   |
| <b>Diagonal Size</b>      | 14.0 in (35.6cm)  |
| <b>Surface Treatment</b>  | Anti-glare  |
| <b>Contrast Ratio</b>     | 400:1 (typical)   |
| <b>Refresh Rate</b>       | 60 Hz   |
| <b>Brightness</b>         | 200 nit (typical)   |
| <b>Pixel Resolution</b>   | <b>Pitch</b> 0.227 mm   |
|                           | <b>Format</b> 1366 x 768  |
|                           | <b>Configuration</b> RGB Stripe   |
| <b>Backlight</b>          | LED   |
| <b>PPI</b>                | 112 ppi   |
| <b>Viewing Angle</b>      | ±30° Horizontal, ±10° Vertical (minimum)<br>30/30/20/10 (Left/Right/Down/Up) (minimum) or<br>45/45/35/25 (Left/Right/Down/Up) (typical) |

**15.6-inch LED HD  
 (1366 x 768) with Touch**

|                           |   |
|---------------------------|---|
| <b>Dimensions (W x H)</b> | 13.54 x 7.64 in (34.39 x 19.41 cm)  |
| <b>Weight</b>             | 500g max.   |
| <b>Diagonal Size</b>      | 15.6 in (39.6cm)  |
| <b>Contrast Ratio</b>     | 300:1 (min)   |
| <b>Refresh Rate</b>       | 60 Hz   |
| <b>Brightness</b>         | 200 nit (typical)   |
| <b>Pixel Resolution</b>   | <b>Pitch</b> 0.252 x 0.252  |
|                           | <b>Format</b> 1366 x 768  |
|                           | <b>Configuration</b> RGB Stripe   |
| <b>Backlight</b>          | LED   |
| <b>PPI</b>                | 106 ppi   |
| <b>Viewing Angle</b>      | ±30° Horizontal, ±10° Vertical (minimum)<br>30/30/20/10 (Left/Right/Down/Up) (minimum) or<br>45/45/35/25 (Left/Right/Down/Up) (typical) |

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

|                           |                                   |
|---------------------------|-----------------------------------|
| <b>Dimensions (W x H)</b> | 14.17 x 8.83 in (36.0 x 22.43 cm) |
| <b>Weight</b>             | 500g max.                         |
| <b>Diagonal Size</b>      | 15.6 in (39.6cm)                  |
| <b>Surface Treatment</b>  | Anti-glare                        |
| <b>Contrast Ratio</b>     | 400:1 (min)                       |
| <b>Refresh Rate</b>       | 60 Hz                             |
| <b>Brightness</b>         | 200 nit (typical)                 |



# QuickSpecs

## Technical Specifications

|                         |   |            |
|-------------------------|---|------------|
| <b>Pixel Resolution</b> | <b>Pitch</b>  | 0.252 mm   |
|                         | <b>Format</b>   | 1366 x 768 |
|                         | <b>Configuration</b>  | RGB Stripe |
| <b>Backlight</b>        | LED   |            |
| <b>PPI</b>              | 106 ppi   |            |
| <b>Viewing Angle</b>    | ±30° Horizontal, ±10° Vertical (minimum)<br>30/30/20/10 (Left/Right/Down/Up) (minimum) or<br>45/45/35/25 (Left/Right/Down/Up) (typical) |            |

### 17.3-inch LED HD+ anti-glare

|                            |   |                      |
|----------------------------|---|----------------------|
| <b>Active Area (W x H)</b> | 15.0 x 8.5 in (38.2 x 21.5 cm)  |                      |
| <b>Weight</b>              | 570g max.   |                      |
| <b>Diagonal Size</b>       | 17.3 in (43.9 cm)   |                      |
| <b>Surface Treatment</b>   | Anti-glare  |                      |
| <b>Contrast Ratio</b>      | 400:1 typical   |                      |
| <b>Refresh Rate</b>        | 60 Hz   |                      |
| <b>Brightness</b>          | 200 nit typical   |                      |
| <b>Pixel Resolution</b>    | <b>Pitch</b>  | 0.23868 x 0.23868 mm |
|                            | <b>Format</b>   | 1600 x 900           |
|                            | <b>Configuration</b>  | RGB Stipe            |
| <b>Backlight</b>           | LED   |                      |
| <b>PPI</b>                 | 106   |                      |
| <b>Viewing Angle</b>       | ±30° Horizontal, ±10° Vertical (minimum)<br>30/30/20/10 (Left/Right/Down/Up) (minimum) or<br>45/45/35/25 (Left/Right/Down/Up) (typical) |                      |

## STORAGE AND DRIVES

### Internal Storage

#### 750 GB\* 7200 rpm SATA Hard Drive

|                                     |   |                             |
|-------------------------------------|---|-----------------------------|
| <b>Drive Weight</b>                 | 0.25 lbs (115g)                         |                             |
| <b>Capacity</b>                     | 750 GB                                  |                             |
| <b>Height</b>                       | 0.37 in (9.5 mm)                        |                             |
| <b>Width</b>                        | 2.50 in (63.5 mm)                       |                             |
| <b>Interface</b>                    | ATA-8, SATA 2.6, 3.0 Gb/s               |                             |
| <b>Transfer Rate</b>                | <b>Synchronous (maximum)</b>            | 300 MB/s (Drive Capability) |
| <b>Seek Time</b>                    | <b>Single Track</b>                     | 1.5 ms                      |
| (typical reads, including settling) | <b>Average</b>                          | 11 ms                       |
|                                     | <b>Maximum</b>                          | 22 ms                       |
| <b>Rotational Speed</b>             | 7200 rpm                                |                             |
| <b>Logical Blocks</b>               | 1,465,149,168                           |                             |
| <b>Operating Temperature</b>        | 32° to 140° F (0° to 60° C) [case temp] |                             |
| <b>Features</b>                     | ATA Security                            |                             |



# QuickSpecs

## Technical Specifications

### 320 GB\* 5400rpm rpm SATA Hard Drive

|   |  |
|---|--|
| <b>Drive Weight</b>                                     | 0.25 lbs (115 g)   |
| <b>Capacity</b>   | 320 GB   |
| <b>Height</b>   | 0.37 in (9.5 mm)   |
| <b>Width</b>  | 2.75 in (70 mm)  |
| <b>Interface</b>  | ATA-8, SATA 2.6, 3.0 Gb/s, NCQ   |
| <b>Transfer Rate</b>                                    | <b>Synchronous</b> (maximum) 300 MB/s (Drive Capability)                   |
| <b>Seek Time</b><br>(typical reads, including settling) | <b>Single Track</b> 1.5 ms<br><b>Average</b> 11 ms<br><b>Maximum</b> 22 ms |
| <b>Rotational Speed</b>                                 | 7200 rpm   |
| <b>Logical Blocks</b>                                   | 625,142,448  |
| <b>Operating Temperature</b>                            | 32° to 140° F (0° to 60° C) [case temp]                                    |
| <b>Features</b>   | ATA Security   |

### 500 GB\* 5400 rpm SATA Hard Drive

|   |  |
|---|--|
| <b>Drive Weight</b>                                     | 0.22 lb (101 g)  |
| <b>Capacity</b>   | 500 GB   |
| <b>Height</b>   | 0.37 in (9.5 mm)   |
| <b>Width</b>  | 2.75 in (70 mm)  |
| <b>Interface</b>  | ATA-8, SATA 2.6, 3.0 Gb/s, NCQ   |
| <b>Transfer Rate</b>                                    | <b>Synchronous</b> (maximum) 300 MB/s (Drive Capability)                 |
| <b>Seek Time</b><br>(typical reads, including settling) | <b>Single Track</b> 3 ms<br><b>Average</b> 13 ms<br><b>Maximum</b> 24 ms |
| <b>Rotational Speed</b>                                 | 5400 rpm   |
| <b>Logical Blocks</b>                                   | 976,773,168  |
| <b>Operating Temperature</b>                            | 32° to 140° F (0° to 60° C) [case temp]                                  |
| <b>Features</b>   | ATA Security   |

### 750 GB\* 5400 rpm SATA Hard Drive

|   |  |
|---|--|
| <b>Drive Weight</b>                                     | 0.22 lb (101 g)  |
| <b>Capacity</b>   | 750 GB   |
| <b>Height</b>   | 0.37 in (9.5 mm)   |
| <b>Width</b>  | 2.75 in (70 mm)  |
| <b>Interface</b>  | ATA-8, SATA 2.6, 3.0 Gb/s, NCQ   |
| <b>Transfer Rate</b>                                    | <b>Synchronous</b> 300 MB/s (Drive Capability)<br>(maximum)              |
| <b>Seek Time</b><br>(typical reads, including settling) | <b>Single Track</b> 3 ms<br><b>Average</b> 13 ms<br><b>Maximum</b> 24 ms |
| <b>Rotational Speed</b>                                 | 5400 rpm   |
| <b>Logical Blocks</b>                                   | 1,465,149,168  |
| <b>Operating Temperature</b>                            | 32° to 140° F (0° to 60° C) [case temp]                                  |
| <b>Features</b>   | ATA Security   |

### 1 TB\* 5400 rpm SATA Hard Drive

|                     |                  |
|---------------------|------------------|
| <b>Drive Weight</b> | 0.254 lb (115 g) |
| <b>Capacity</b>     | 1 TB             |
| <b>Height</b>       | 0.37 in (9.5 mm) |
| <b>Width</b>        | 2.75 in (70 mm)  |



# QuickSpecs

HP ProBook 440 G2 Notebook PC  
 HP ProBook 450 G2 Notebook PC  
 HP ProBook 470 G2 Notebook PC

## Technical Specifications

|   |   |   |                                 |                             |
|---|---|---|---------------------------------|-----------------------------|
| <b>1.5 TB* 5400 rpm<br/>SATA Hard Drive</b>                 | <b>Interface</b>                        | ATA-8, SATA 2.6, 3.0 Gb/s, NCQ          |                                 |                             |
|   | <b>Transfer Rate</b>                    | <b>Synchronous</b>                      | 300 MB/s (Drive Capability)     |                             |
|   |   | (maximum)                               |                                 |                             |
|   | <b>Seek Time</b>                        | <b>Single Track</b>                     | 3 ms                            |                             |
|   | (typical reads, including settling)     | <b>Average</b>                          | 13 ms                           |                             |
|   |   | <b>Maximum</b>                          | 24 ms                           |                             |
|   | <b>Rotational Speed</b>                 | 5400 rpm                                |                                 |                             |
|   | <b>Logical Blocks</b>                   | 1,953,525,168                           |                                 |                             |
|   | <b>Operating Temperature</b>            | 32° to 140° F (0° to 60° C) [case temp] |                                 |                             |
|   |   | <b>Features</b>                         | ATA Security                    |                             |
| <b>500 GB* 5400 rpm SMART<br/>SATA II Hybrid HDD/SSHD</b>   | <b>Drive Weight</b>                     | 0.26 lb (118 g)                         |                                 |                             |
|   | <b>Capacity</b>                         | 1.5 TB                                  |                                 |                             |
|   | <b>Height</b>                           | 0.37 in (9.5 mm)                        |                                 |                             |
|   | <b>Width</b>                            | 2.5 in (63.5 mm)                        |                                 |                             |
|   | <b>Interface</b>                        | ATA-8, SATA 2.6, 3.0 Gb/s, NCQ          |                                 |                             |
|   | <b>Transfer Rate</b>                    | <b>Synchronous</b>                      | 300 MB/s (Drive Capability)     |                             |
|   |   | (maximum)                               |                                 |                             |
|   | <b>Seek Time</b>                        | <b>Single Track</b>                     | 2.2 ms                          |                             |
|   | (typical reads, including settling)     | <b>Average</b>                          | 13 ms                           |                             |
|   |   | <b>Maximum</b>                          | 25 ms                           |                             |
| <b>500 GB* 5400 rpm SMART<br/>SATA II Hybrid HDD/SSHD</b>   | <b>Rotational Speed</b>                 | 5400 rpm                                |                                 |                             |
|   | <b>Logical Blocks</b>                   | 293,0277,168                            |                                 |                             |
|   | <b>Operating Temperature</b>            | 32° to 140° F (0° to 60° C) [case temp] |                                 |                             |
|   |   | <b>Features</b>                         | ATA Security                    |                             |
|   | <b>Drive Weight</b>                     | 0.209 lb (95 g)                         |                                 |                             |
|   | <b>Capacity</b>                         | 500 GB                                  |                                 |                             |
|   | <b>Height</b>                           | 0.276 in (7 mm)                         |                                 |                             |
|   | <b>Width</b>                            | 2.76 in (70.1 mm)                       |                                 |                             |
|   | <b>Interface</b>                        | ATA-8, SATA 2.6, 6.0 Gb/s, NCQ          |                                 |                             |
|   | <b>Transfer Rate</b>                    | <b>Synchronous</b>                      | (maximum)                       | 600 MB/s (Drive Capability) |
| <b>Seek Time</b><br>(typical reads, including settling)     | <b>Single Track</b>                     | 2 ms                                    |                                 |                             |
|   | <b>Average</b>                          | 12 ms                                   |                                 |                             |
|   | <b>Maximum</b>                          | NIL ms                                  |                                 |                             |
| <b>Rotational Speed</b>                                     | 5400 rpm                                |   |                                 |                             |
| <b>Logical Blocks</b>                                       | 976,773,168                             |   |                                 |                             |
| <b>Operating Temperature</b>                                | 32° to 140° F (0° to 60° C) [case temp] |   |                                 |                             |
|   | <b>Features</b>                         | ATA Security                            |                                 |                             |
| <b>SATA 6 Gb/s 128 GB*, 2.5-<br/>inch Solid State Drive</b> | <b>Drive Weight</b>                     | 73 Grams                                |                                 |                             |
|   | <b>Capacity</b>                         | 128 GB                                  |                                 |                             |
|   | <b>Height</b>                           | 0.276 in (7 mm)                         |                                 |                             |
|   | <b>Width</b>                            | 2.76 in (70 mm)                         |                                 |                             |
|   | <b>Interface</b>                        | SATA 3 (6 Gb/s)                         |                                 |                             |
|   | <b>Performance</b>                      | <b>Maximum Sequential Read</b>          | <b>Maximum Sequential Write</b> |                             |



# QuickSpecs

**HP ProBook 440 G2 Notebook PC**  
**HP ProBook 450 G2 Notebook PC**  
**HP ProBook 470 G2 Notebook PC**

## Technical Specifications

|   |                               |  |   |
|---|-------------------------------|--|---|
|   |                               | 415 MB/s   | 175 MB/s                                      |
|   | <b>Logical Blocks</b>         | 250,069,680  |   |
|   | <b>Operating Temperature</b>  | 32° to 158°F (0° to 70°C) [case temp]  |   |
|   | <b>Features</b>               | ATA Security; ATA-8; SATA 3.0; DIPM; TRIM  |   |
| <b>120 GB* M.2 Solid State Drive</b>  | <b>Drive Weight</b>           | < 10 Grams   |   |
|   | <b>Capacity</b>               | 120 GB   |   |
|   | <b>Height</b>                 | 0.276 in (22 mm)   |   |
|   | <b>Width</b>                  | 2.76 in (42 mm)  |   |
|   | <b>Interface</b>              | SATA 3 (6 Gb/s)  |   |
|   | <b>Performance</b>            | <b>Maximum Sequential Read</b>   | <b>Maximum Sequential Write</b>               |
|   |                               | 540 MB/s   | 480 MB/s                                      |
|   | <b>Logical Blocks</b>         | 234,441,648  |   |
|   | <b>Operating Temperature</b>  | 32° to 158°F (0° to 70°C) [case temp]  |   |
|   | <b>Features</b>               | ATA Security; ATA-8; SATA 3.0; TRIM  |   |
| * For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30GB (for Windows 8) of system disk is reserved for system recovery software. |                               |  |   |
| <b>Optical Drives</b>   |                               |  |   |
| <b>DVD+/-RW SuperMulti DL Drive*</b>  | <b>Access Times</b>           | Random   | <140ms CD (typical)<br>< 160 ms DVD (typical) |
|   | <b>Weight</b>                 | 170g max.  |   |
|   | <b>Max Data Transfer Rate</b> | 24X CD-ROM<br>8X DVD<br>24X CD-R<br>24X CD-RW<br>8X DVD+R<br>8X DVD+RW<br>8X DVD-R<br>6X DVD-RW<br>6X - DVD+R Dual Layer<br>6X - DVD-R Dual Layer<br>5X DVD-RAM  |   |
|   | <b>Transfer Mode</b>          | UDMA Mode 5  |   |
|   | <b>Interface</b>              | Gen 1 SATA   |   |
|   | <b>Supported Media (read)</b> | 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 |   |



# QuickSpecs

## Technical Specifications

|  |                                   |   |   |
|--|-----------------------------------|---|---|
|  | <b>Supported Media</b> (write)    | CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM, DVD+R DL, DVD-R DL  |   |
|  | <b>Max Media Capacity</b> (read)  | 8.5 GB  |   |
|  | <b>Max Media Capacity</b> (write) | 8.5 GB  |   |
|  | <b>Transport</b>                  | Tray Loading  |   |
| <b>Blu-ray ROM DVD+/-RW SuperMulti DL Drive*</b> | <b>Access Times</b>               | Random  | <190 ms CD-ROM (typical)<br>< 180ms DVD-ROM (typical)<br><230 ms BD-ROM (typical) |
|  | <b>Weight</b>                     | 170g max.   |   |
|  | <b>Max Data Transfer Rate</b>     | 24X CD-ROM<br>8X DVD-ROM<br>24X CD-R<br>16X CD-RW<br>8X DVD+R<br>8X DVD+RW<br>8X DVD-R<br>6X DVD-RW<br>4X - DVD+R Dual Layer<br>4X - DVD-R Dual Layer<br>5X DVD-RAM<br>6X BD-ROM  |   |
|  | <b>Transfer Mode</b>              | UDMA Mode 5   |   |
|  | <b>Interface</b>                  | Gen 1 SATA  |   |
|  | <b>Supported Media</b> (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 |   |
|  | <b>Supported Media</b> (write)    | CD-R, CD-RW, DVD+R, DVD+R DL, DVD+RW, DVD-R, DVD-R DL, DVD-RW, DVD-RAM  |   |
|  | <b>Max Media Capacity</b> (read)  | 50.0 GB   |   |
|  | <b>Max Media Capacity</b> (write) | 8.5GB   |   |
|  | <b>Transport</b>                  | Tray Loading  |   |
| <b>DVD-ROM Drive</b>                             | <b>Access Times</b>               | Random  | < 140 ms CD (typical)<br>< 160 ms DVD (typical)                                   |



# QuickSpecs

## Technical Specifications

|                                  |  |
|----------------------------------|--|
| <b>Max Data Transfer Rate</b>    | 24X CD-ROM<br>8X-DVD   |
| <b>Transfer Mode</b>             | UDMA Mode 5  |
| <b>Interface</b>                 | Gen 1 SATA   |
| <b>Supported Media (read)</b>    | 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 |
| <b>Supported Media (write)</b>   | None   |
| <b>Max Media Capacity (read)</b> | 8.5GB  |
| <b>Transport</b>                 | Tray Loading   |

## SECURITY

### HP Validity VFM 495 Fingerprint Reader (optional)

|                                   |  |
|-----------------------------------|--|
| <b>Mobile Voltage Operation</b>   | 3.0V-3.6V Single Supply  |
| <b>Operating Temperature</b>      | 32° – 158°F (0° – 70°C)  |
| <b>Current Consumption @ 3.3V</b> | Less than 70 mA peak imaging and scrolling<br>Less than 25 mA hardware finger detection<br>Advanced Power Management |
| <b>High-Rate Image Capture</b>    | Up to 240 image frames /sec  |
| <b>ESD Resistance</b>             | IEC 61000-4-2 Level 4 (±15KV)  |
| <b>Detection Matrix</b>           | 200 pixel wide fingerprinting image<br>16.5 mm x 3 mm sensor area<br>508 dpi resolution, 256 levels of grayscale     |

## NETWORKING/COMMUNICATIONS

### Integrated Realtek RTL8161GSH-CH 10/100/1000 NIC

|                          |  |
|--------------------------|--|
| <b>Ethernet Features</b> | 10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14)<br>100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30)<br>1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023 clauses 40)<br>Auto-Negotiation (Automatic Speed Selection)<br>Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s<br>IEEE 802.1p QoS (Quality of Service) Support<br>IEEE 802.1q VLAN support<br>IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable)<br>IEEE 802.3az EEE (Energy Efficient Ethernet)<br>Jumbo Frame 9K<br>Auto MDI/MDIX Crossover cable detection |
| <b>Power Management</b>  | ACPI compliant - multiple power modes<br>Situation-sensitive features reduce power consumption<br>Advanced link down power saving for reducing link down power consumption   |



# QuickSpecs

## Technical Specifications

|  |  |  |
|--|--|--|
| <b>HP hs3110/3114 HSPA+ Mobile Broadband* Module</b> | <b>Performance Features</b>                | TCP/IP/UDP Checksum Offload (configurable)<br>Protocol Offload (ARP & NS)<br>Large send offload and Giant send offload<br>Receiving Side Scaling   |
|  | <b>Manageability</b>                       | Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only)<br>PXE 2.1 Remote Boot<br>Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30))<br>Comprehensive diagnostic and configuration software suite<br>Virtual Cable Doctor for Ethernet cable status |
|  | <b>Interface</b>                           | PCI Express 1.1 to fully support ASPM L0s/L1 and CLKREQ  |
|  | <b>NIC Device Driver Name</b>              | Realtek PCIe GBE Ethernet Family Controller  |
|  | <b>Technology/Operating bands</b>          | Modes: WCDMA/HSDPA/HSUPA/HSPA+/AWS/GSM/EDGE/GPRS<br>Penta-band WCDMA/HSDPA/HSUPA/HSPA+/AWS:<br>850/900/1900/2100/AWS MHz<br>GSM/GPRS/EDGE: 850/900/1800/1900 MHz   |
|  | <b>Wireless protocol standards</b>         | GSM/GPRS/EDGE: Class B, Multi-slot class 33, coding schemes CS1 - CS4 and MSC1 - MSC9.<br>UMTS/WCDMA: Release 99 and Release 7<br>Advanced Receiver Type 3i  |
|  | <b>GPS</b>                                 | GPS Standalone, A-GPS: L1 (Internet- and Network assisted)   |
|  | <b>Wireless parametric standards</b>       | Complies with 3GPP specifications  |
|  | <b>Maximum data rates</b>                  | GPRS/EDGE: Multi-slot Class 33, Class B<br>WCDMA PS: UL (384 kbps) / DL (384 kbps)<br>UL/DL HSPA: UL (5.76 Mbps)/ DL (7.2 Mbps)<br>UL/DL HSPA+: UL (5.76 Mbps)/ DL (21Mbps)  |
|  | <b>Maximum output power</b>                | WCDMA/HSPA/HSPA+ 2100/1900/900/850/AWS MHz:<br>+24dBm (Power Class 3)<br>GPRS 1900/1800 MHz: +30dBm (Power Class 1)<br>GPRS 900/850 MHz: +33dBm (Power Class 4)<br>EDGE 1900/1800 MHz: +26dBm (Power Class E2)<br>EDGE 900/850 MHz: +27dBm (Power Class E2)  |
|  | <b>Maximum power consumption</b>           | 2500mA (peak); 600mA (average)   |
|  | <b>Power consumption, sleep mode</b>       | 3.6 mA   |
|  | <b>Power management</b>                    | USB selective suspend, Connected Standby<br>Integrated notebook wireless button  |
|  | <b>Antenna type</b>                        | Dual high efficiency 5 band antennae with spatial diversity, mounted in the display enclosure  |
| <b>Form Factor</b>                                   | M.2 Socket 2, USB 2.0 interface high speed |  |
| <b>Weight</b>  | <6 g                                       |  |
| <b>Dimensions</b><br>(Length x Width x Thickness)    | 2.01 x 1.18 x 0.18 in (42 x 30 x 2.3 mm)   |  |





# QuickSpecs

## Technical Specifications

|                                |  |
|--------------------------------|--|
| <b>SIM card supply voltage</b> | 1.8 V/3.0 V UICC (SIM/UICC/USIM)   |
| <b>Voltage, Operating</b>      | 3.135V~4.4V (3.3 V recommended)  |
| <b>Temperature, operating</b>  | 14° to 131° F (-10° to 55° C) (Normal operation)<br>-4° to 158° F (-20° to 70° C) (Extended operation) |
| <b>Temperature, storage</b>    | -40° to 185° F (-40° to 85° C)   |
| <b>Humidity</b>                | 5% to 95%  |
| <b>Configuration utilities</b> | HP Connection Manager  |
| <b>LED activity</b>            | LED Off - Radio Off; Solid LED On - Radio On   |

\*Mobile Broadband is an optional feature and requires factory configuration. Use requires separately purchased service contract. Check with service provider for coverage and availability in your area. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products, and in all regions.

### HP It4112 LTE/HSPA+ Gobi™ 4G Module\*

|                                      |   |
|--------------------------------------|---|
| <b>Technology/Operating bands</b>    | LTE FDD all bands with diversity: 2100 MHz (Band I), 1900 MHz (Band II), 1800 MHz (Band III), 850 MHz (Band V), 2600 MHz (Band VII), 900 MHz (Band VIII), 800 MHz (Band XX, DD800)<br>WCDMA/HSDPA/HSUPA/HSPA+ all bands with diversity: 2100 MHz (Band I), 1900 MHz (Band II), 800 MHz (Band V), 900 MHz (Band VIII)<br>GSM/GPRS/EDGE: 1900 MHz (Band II), 1800 MHz (Band III), 850 MHz (Band V), 900 MHz (Band VIII) |
| <b>Wireless protocol standards</b>   | 3GPP Release 8 LTE Specification<br>WCDMA R99, 3GPP Release 5, 6 and 7 UMTS Specification   |
| <b>Wireless parametric standards</b> | Complies with 3GPP specifications Release 8 for LTE   |
| <b>Maximum data rates</b>            | LTE (Category 3): 100 Mbps (Download), 50Mbps (Upload)<br>DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload)<br>HSPA+: 21.6 Mbps (Download), 5.76 Mbps (Upload)<br>EDGE: 236.8 kbps (Download), 236.8 kbps (Upload)<br>GPRS: 85.6 kbps(Download), 85.6 kbps (Upload)  |
| <b>GPS</b>                           | Standalone  |
| <b>GPS bands</b>                     | 1575.42 MHz (± 1.023 MHz), GLONASS 1596-1607MHz   |
| <b>Maximum output power</b>          | LTE: +23 dBm (+/- 2 dBm)<br>WCDMA: +23.5 dBm (+/- 1 dBm)<br>GPRS Band II, III: +29.5 dBm (+/- 1 dBm)<br>GPRS Band V, VIII: +32.5 dBm (+/- 1 dBm)<br>EGPRS Band II, III: +26.5 dBM (+/-1.5 dBm)<br>EGPRS Band V, VIII: +27.5 dBM (+/-1.5 dBm)  |
| <b>Maximum power consumption</b>     | LTE: 1,200 mA (peak); <900 mA (average)<br>WCDMA: 1,100 mA (peak); <800 mA (average)<br>EGPRS: 2,800 mA (peak); <700 mA (average)   |
| <b>Power consumption, sleep mode</b> | 3 mA  |
| <b>Power management</b>              | USB selective suspend, Integrated notebook wireless button  |
| <b>Antenna type</b>                  | Dual high efficiency multi-band antennae with spatial diversity   |
| <b>Form Factor</b>                   | M.2, USB 2.0 interface  |



# QuickSpecs

**HP ProBook 440 G2 Notebook PC**  
**HP ProBook 450 G2 Notebook PC**  
**HP ProBook 470 G2 Notebook PC**

## Technical Specifications

|   |  |
|---|--|
| <b>Weight</b>   | 6 g  |
| <b>Dimensions</b><br>(Length x Width x Thickness)                         | 42 mm x 30 mm x 2.3 mm   |
| <b>Voltage, Operating</b>   | 3.135 V to 4.4 V (3.3 V +1.1V/-0.165V)                               |
| <b>Temperature, operating</b><br>(from TIA/EIA/IS-98-D)                   | 14° to 131° F (–10° to 55° C)  |
| <b>Temperature, non-operating, 96 hours</b> (from MIL-STD 202 Method 108) | –40° to 185° F (–40° to 85° C)                                       |
| <b>Humidity, non-operating</b>  | 95% relative humidity for 48 hours @ 185° F (85° C) (non-condensing) |
| <b>LED activity</b>   | LED Off - Radio Off; Solid LED On - Radio On                         |

\*\* Mobile Broadband is an optional feature and requires factory configuration. Use requires separately purchased service contract. Check with service provider for coverage and availability in your area. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products, and in all regions.

### Realtek 802.11 b/g/n (1x1)\*

|                                 |  |
|---------------------------------|--|
| <b>Wireless LAN Standards</b>   | IEEE 802.11b<br>IEEE 802.11g<br>IEEE 802.11n   |
| <b>Interoperability</b>         | Wi-Fi certified  |
| <b>Frequency Band</b>           | 2.402 – 2.482 GHz  |
| <b>Data Rates</b>               | 802.11b: 1, 2, 5.5, 11 Mbps<br>802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps<br>802.11n: card will support rates for NSS=1 for RX and TX for 20 MHz channels. Short and long guard interval will be supported.  |
| <b>Modulation</b>               | Direct Sequence Spread Spectrum<br>BPSK, QPSK, CCK, 16-QAM, 64-QAM   |
| <b>Security<sup>1</sup></b>     | IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only<br>AES-CCMP: 128 bit in hardware 802.1x authentication types WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.<br>WPA2 certification<br>IEEE 802.11i<br>Cisco Certified Extensions, all versions through V5<br>WAPI |
| <b>Network Architecture</b>     | Ad-hoc (Peer to Peer)  |
| <b>Models</b>                   | Infrastructure (Access Point Required)   |
| <b>Roaming</b>                  | IEEE 802.11 compliant roaming between access points  |
| <b>Output Power<sup>2</sup></b> | 13.5 dBm, nominal  |
| <b>Power Consumption</b>        | Transmit: 2.0 W (max)<br>Receive: 1.6 W (max)<br>Associated to Access Point, Idle: 250 mW nominal<br>Wireless Button Off: 100 mW nominal<br>Radio disabled: 75 mW nominal  |



# QuickSpecs

## Technical Specifications

|   |   |
|---|---|
| <b>Power Management</b>                 | ACPI compliant power management<br>802.11 compliant power saving mode   |
| <b>Receiver Sensitivity<sup>3</sup></b> | 802.11b: -95 dBm (1 Mbps), -93 dBm (2 Mbps), -91 dBm (5.5 Mbps), -88 dBm (11 Mbps)<br><br>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)<br><br>802.11n: -70dBm (72.2 Mbps)  |
| <b>Antenna type</b>                     | High efficiency antenna with spatial diversity, mounted in the display enclosure  |
| <b>Form Factor</b>                      | PCI-Express Half-MiniCard   |
| <b>Dimensions</b>                       | 0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm)   |
| <b>Operating Voltage</b>                | 3.3v +/- 9%   |
| <b>Temperature</b>                      | Operating 14° to 158° F (-10° to 70° C)<br>Non-operating -40° to 176° F (-40° to 80° C)   |
| <b>Humidity</b>                         | Operating 10% to 90% (non-condensing)<br>Non-operating 5% to 95% (non-condensing)   |
| <b>Altitude</b>                         | Operating 0 to 10,000 ft (3,048 m)<br>Non-operating 0 to 50,000 ft (15,240 m)   |
| <b>LED Activity</b>                     | LED Off – Radio OFF; Solid LED On – Radio ON  |
|   | <ol style="list-style-type: none"> <li>1. Check latest software/driver release for updates on supported security features.</li> <li>2. Maximum output power may vary by country according to local regulations.</li> <li>3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).</li> </ol> |

\* Wireless access point and internet service required. Availability of public wireless access points limited.

**Intel Dual Band  
Wireless-AC 3160 802.11  
ac (1x1) WiFi and  
Bluetooth 4.0 Combo\*  
Adaptor**

**General**

|                               |  |
|-------------------------------|--|
| <b>Dimensions (H x W x D)</b> | Standard: 26.80 mm x 30.00 mm x 2.4 mm Max (Top Side) / 1.35 mm Max (Bottom Side)<br>Low profile: 22 mm x 30.00 mm x 1.5 mm Max (Top Side) / 0.6 mm Max (Bottom Side)<br>NGFF: 22 mm x 30 mm, single sided |
| <b>Weight</b>                 | TBD  |
| <b>Diversity</b>              | No diversity support   |
| <b>Radio ON/OFF Control</b>   | Supported in both hardware and software  |
| <b>Connector interface</b>    | Half Mini Card form factor, based on PCIe electrical interface<br>Next Generation Form Factor, A-SD electrical interface definition support  |
| <b>LED Output</b>             | On/Off   |



# QuickSpecs

**HP ProBook 440 G2 Notebook PC**  
**HP ProBook 450 G2 Notebook PC**  
**HP ProBook 470 G2 Notebook PC**

## Technical Specifications

|                   |   |   |
|-------------------|---|---|
|                   | <b>Operating Temperature (Adapter Shield)</b>     | 0° to +80° C  |
|                   | <b>Humidity Non-Operating</b>                     | 50% to 90% RH non-condensing (at temperatures of 25°C to 35°C)  |
|                   | <b>Operating Systems</b>                          | Microsoft Windows 7, Microsoft Windows 8, Linux   |
|                   | <b>Wi-Fi Alliance</b>                             | Wi-Fi CERTIFIED for 802.11ac, Wi-Fi CERTIFIED a/b/g, Wi-Fi CERTIFIED n, WMM, WPA, WPA2, and WPS, WPS 2.0, Protected Management Frames, Wi-Fi Direct for peer to peer device connections |
|                   | <b>Microsoft WHQL</b>                             | Yes   |
|                   | <b>IEEE WLAN Standard</b>                         | IEEE 802.11abgn, 802.11ac, 802.11d, 802.11e, 802.11i, 802.11h, 802.11w  |
|                   | <b>Architecture</b>                               | Infrastructure and SoftAP; Supports simultaneous Client and SoftAP modes in 2.4 GHz or 5GHz   |
|                   | <b>Roaming<sup>1</sup></b>                        | ACPI and PCI Express compliant power management<br>802.11 compliant power saving mode   |
| <b>Security</b>   | <b>Authentication</b>                             | WPA and WPA2, 802.1X (EAP-TLS, TTLS, PEAP, LEAP, EAP-FAST), EAP-SIM, EAP-AKA  |
|                   | <b>Authentication Protocols</b>                   | PAP, CHAP, TLS, GTC, MS-CHAP, MS-CHAPv2   |
|                   | <b>Encryption</b>                                 | 64-bit and 128-bit WEP, AES-CCMP, TKIP  |
|                   | <b>Wi-Fi Direct Encryption and Authentication</b> | WPA2, AES-CCMP  |
|                   | <b>Product Safety</b>                             | UL, C-UL, CB (IEC 60950-1)  |
|                   | <b>Management Frame Protection</b>                | 802.11w (WFA- Protected Management Frames)  |
| <b>Compliance</b> | <b>Retail (Credit Card Processing)</b>            | PCI, CISP   |
|                   | <b>Government</b>                                 | FIPS <sup>2</sup> , FISMA   |

1. Roaming is supported only within each respective band and mode of access points.

2. Microsoft Windows 7 only.

### HP Integrated Module with Bluetooth 4.0+EDR Wireless Technology

|                                     |   |
|-------------------------------------|---|
| <b>Bluetooth Specification</b>      | Dual Mode Bluetooth* 2.1, 2.1+EDR, 3.0, 3.0+HS, 4.0 (BLE)   |
| <b>Dimensions</b>                   | 1.18 x 0.26 x 0.13 in (30 x 6.5 x 3.25 mm)  |
| <b>Frequency Band</b>               | 2402 to 2480 MHz  |
| <b>Number of Available Channels</b> | 79 (1 MHz) available channels   |
| <b>Data Rates and Throughput</b>    | 3 Mbps data rate; throughput up to 2.17 Mbps<br>Synchronous Connection Oriented links up to 3, 64 kbps, voice channels<br>Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric |



# QuickSpecs

**HP ProBook 440 G2 Notebook PC**  
**HP ProBook 450 G2 Notebook PC**  
**HP ProBook 470 G2 Notebook PC**

## Technical Specifications

|                                     |  |
|-------------------------------------|--|
| <b>Transmit Power</b>               | -1.5 dBm to 4 dBm (Bluetooth Class II)   |
| <b>Receiver Sensitivity</b>         | Better than -20 dBm at 0.1 % raw bit error rate  |
| <b>Power Consumption</b>            | Peak (Tx) 264 mW<br>Peak (Rx) 231 mW<br>Sleep <1 mW  |
| <b>Antenna</b>                      | Internally integrated within module  |
| <b>Range</b>                        | Up 33 ft (10 m)  |
| <b>Electrical Interface</b>         | USB 2.0 compliant<br>Microsoft Windows Plug and Play compliant   |
| <b>Bluetooth Software Supported</b> | Broadcom Bluetooth for Windows<br>Microsoft Windows Bluetooth Software   |
| <b>Link Topology</b>                | Point to Point, Multipoint Pico Nets up to 7 slaves  |
| <b>Security</b>                     | Full support of Bluetooth Security Provisions  |
| <b>Power Management</b>             | Microsoft Windows ACPI, and USB Bus Support<br>Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff   |
| <b>Certifications</b>               | All necessary regulatory approvals for supported countries, including:<br>FCC (47 CFR) Part 15C, Section 15.247 & 15.249<br>ETS 300 328, ETS 300 826<br>Low Voltage Directive IEC950<br>UL, CSA, and CE Mark   |
| <b>Temperature</b>                  | Operating -14° to 158° F (-10° to 70° C)<br>Non-operating -40° to 212° F (-40° to 100° C)  |
| <b>Humidity</b>                     | Operating 0% to 90%<br>Non-operating 0% to 95%   |
| <b>Altitude</b>                     | Operating 15,000 ft (4,572 m)<br>Non-operating 40,000 ft (12,192 m)  |
| <b>Bluetooth Profiles Supported</b> | Serial Port Profile (SPP) <sup>1</sup><br>Service Discovery Application Profile (SDAP)<br>Dial-Up Networking (DUN) <sup>1,2</sup><br>Generic Object Exchange Profile (GOEP) <sup>1,2</sup><br>Object Push Profile (OPP) <sup>1,2</sup><br>File Transfer Profile (FTP)<br>Synchronization Profile (SYNC)<br>Hard Copy Cable Replacement (HCRP) <sup>1,2</sup><br>Personal Area Networking Profile (PAN) <sup>1,2</sup><br>Human Interface Device Profile (HID) <sup>1,2</sup><br>FAX Profile (FAX)<br>Basic Imaging Profile (BIP) <sup>2</sup><br>Headset Profile (HSP)<br>Hands Free Profile (HFP) |



# QuickSpecs

## Technical Specifications

### 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
- \* Wireless access point and internet service required. Availability of public wireless access points limited. The specifications for the 802.11ac WLAN are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ac WLAN devices.

## AUDIO/MULTIMEDIA - DTS SOUND+

|                                     |                                     |                                    |
|-------------------------------------|-------------------------------------|------------------------------------|
| <b>Hardware</b>                     | <b>Implementation</b>               | Realtek ALC3227-CG                 |
|                                     | <b>Function Key Volume Controls</b> | Volume up, volume down, and mute   |
|                                     | <b>Full Duplex</b>                  | Yes                                |
|                                     | <b>Microphone In</b>                | Stereo                             |
|                                     | <b>Headphone/Line Out</b>           | Stereo                             |
|                                     | <b>Integrated Microphone</b>        | Yes, dual digital microphone array |
|                                     | <b>Audio Output Quality</b>         | <b>Frequency Response</b>          |
| <b>Signal to Noise Ratio</b>        |                                     | 95 dB (DAC), 88dB (ADC)            |
| <b>Total Harmonic Distortion</b>    |                                     | 0.01%                              |
| <b>Play/Record Sampling Rate(s)</b> |                                     | 44.1k/48k/96k/192kHz               |
| <b>DAC</b>                          |                                     | 16, 20 or 24-bit                   |
| <b>ADC</b>                          |                                     | 16, 20 or 24-bit                   |
| <b>Integrated Stereo Speakers</b>   |                                     | <b>Power Rating</b>                |
|                                     | <b>Impedance</b>                    | 4 Ohms                             |

## POWER

|  |                   |  |                                    |  |
|--|-------------------|--|------------------------------------|--|
| <b>HP 65W Smart AC Adapter (Configurations with integrated graphics)</b> | <b>Dimensions</b> | 4.17 x 1.85 x 1.1 in (10.6 x 4.7 x 2.8 cm) |                                    |  |
|  | <b>Weight</b>     | 0.66 lb (300 g) Max.                       |                                    |  |
|  | <b>Input</b>      | <b>Input</b>                               | 100 to 240 VAC                     |  |
|  |                   | <b>Input Efficiency</b>                    | 87% min at 115 VAC                 |  |
|  |                   | <b>Input frequency range</b>               | 47 to 63 Hz                        |  |
|  | <b>Output</b>     | <b>Input AC current</b>                    | 1.7 A at 90 VAC, 0.85 A at 180 VAC |  |
|  |                   | <b>Output power</b>                        | 65W                                |  |
|  |                   | <b>DC output</b>                           | 18.5V                              |  |
|  |                   | <b>Hold-up time</b>                        | 5 msec at 115 VAC input            |  |



# QuickSpecs

## HP ProBook 440 G2 Notebook PC HP ProBook 450 G2 Notebook PC HP ProBook 470 G2 Notebook PC

### Technical Specifications

|                                |                                      |  |   |
|--------------------------------|--------------------------------------|--|---|
|                                | <b>Connector</b>                     | Output current limit   | <11A, Over voltage protection- 29V max automatic shutdown |
|                                | <b>Environmental Design</b>          | 3 pin/grounded, mates with interchangeable cords   |   |
|                                |                                      | Operating temperature  | 32° to 104° F (0° to 40° C)                               |
|                                |                                      | Non-operating (storage) temperature  | -4° to 149° F (-20° to 65° C)                             |
|                                |                                      | Altitude   | 0 to 10,000 ft (0 to 3,048 m)                             |
|                                |                                      | Humidity   | 20% to 80%  |
|                                |                                      | Storage Humidity   | 10% to 90%  |
|                                | <b>EMI and Safety Certifications</b> | CE Mark - full compliance with LVD and EMC directives; Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; MTBF - over 200,000 hours at 25°C ambient condition.   |   |
| <b>HP 45W Smart AC Adapter</b> | <b>Dimensions</b>                    | 3.74 x 1.57 x 1.04 in (9.5 x 4.0 x 2.65 cm)  |   |
|                                | <b>Input</b>                         | 90 to 265 VAC  |   |
|                                |                                      | <b>Input Efficiency</b>  | 87.74% min at 115 VAC                                     |
|                                |                                      | <b>Input frequency range</b>   | 47 to 63 Hz   |
|                                |                                      | <b>Input AC current</b>  | 2.31 A at 100 VAC and maximum load                        |
|                                | <b>Output</b>                        | <b>Output power</b>  | 45W   |
|                                |                                      | <b>DC output</b>   | 19.5V +5.0%/-5%   |
|                                |                                      | <b>Hold-up time</b>  | 5 msec at 115 VAC input                                   |
|                                |                                      | <b>Output current limit</b>  | <8A, Over voltage protection- 29V max automatic shutdown  |
|                                | <b>Connector</b>                     | 3 pin/grounded, mates with interchangeable cords   |   |
|                                | <b>Environmental Design</b>          | <b>Operating temperature</b>   | 32° to 95° F (0° to 35° C)                                |
|                                |                                      | <b>Non-operating (storage) temperature</b>   | -4° to 121° F (-20° to 85° C)                             |
|                                |                                      | <b>Altitude</b>  | 0 to 16,405 ft (0 to 5,000 m)                             |
|                                |                                      | <b>Humidity</b>  | 0% to 95%   |
|                                |                                      | <b>Storage Humidity</b>  | 0% to 95%   |
|                                | <b>EMI and Safety Certifications</b> | CE Mark - full compliance with LVD and EMC directives; Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; Reliability - failure rate of less than 0.1% annually within the first three years of operation. |   |
| <b>HP 40W Smart AC Adapter</b> | <b>Dimensions</b>                    | 3.67 x 1.57 x 1.18 in (93 x 40 x 30 mm)  |   |
|                                | <b>Weight</b>                        | 8.64 oz (245 g)  |   |
|                                | <b>Input</b>                         | 90 to 265 VAC  |   |
|                                | <b>Input Efficiency</b>              | 84% min at 115 VAC   |   |
|                                | <b>Input frequency range</b>         | 47 to 63 Hz  |   |



# QuickSpecs

## Technical Specifications

|  |  |
|--|--|
| <b>Input AC current</b>                    | 1.1 A at 90 VAC  |
| <b>Output</b>                              |  |
| <b>Output power</b>                        | 40W  |
| <b>Output Voltage</b>                      | 19.5V +5.0%/-5.0%  |
| <b>Output current limit</b>                | 3.08A  |
| <b>Environmental design</b>                |  |
| <b>Operating temperature</b>               | 32° to 95° F (0° to 35° C)   |
| <b>Non-operating (storage) temperature</b> | -4° to 185° F (-20° to 85° C)  |
| <b>Altitude</b>                            |  |
| <b>Humidity</b>                            | Up to 95%  |
| <b>Storage humidity</b>                    | Up to 95%  |
| <b>EMI and safety certifications</b>       | Worldwide safety and EMC approvals including CE, UL, cUL, GS, Australian Electric Permit, RCM, NOM, CCC, KC, CU, S mark, BSMI, ISC, PSE, PSB, NRcan, Ukraine and SII |

### 6-Cell (47 WHr) Lithium-Ion battery

|  |   |                               |
|--|---|-------------------------------|
| <b>Dimensions (H x W x L)</b>            | 0.85 x 1.76 x 10.59 in (2.16 x 4.46 x 26.9cm) |                               |
| <b>Weight (max)</b>                      | .70lb, (.312kg)                               |                               |
| <b>Cells/Type</b>                        | 6-cell Lithium-Ion                            |                               |
| <b>Energy</b>                            | Voltage                                       | 10.8V                         |
|  | Amp-hour capacity                             | 4.4Ah                         |
|  | Watt-hour capacity                            | 47Wh                          |
| <b>Temperature</b>                       | 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) |
| <b>Battery Re-Charge Time</b>            | System in OFF or Standby Mode                 | 2.5 hours                     |
|  | System ON                                     | 3 to 5 hours                  |
| <b>Fuel Gauge LED</b>                    | No  |                               |
| <b>Warranty</b>                          | 1 year  |                               |
| <b>Optional Travel Battery Available</b> | No  |                               |

### 6-cell (51 WHr) Long Life Lithium-Ion battery

|                               |                               |  |
|-------------------------------|-------------------------------|--|
| <b>Cells/Type</b>             | 6-cell Lithium-Ion            |  |
| <b>Energy</b>                 | Amp-hour capacity             | 2.55Ah   |
|                               | Watt-hour Capacity            | 51 WHr   |
| <b>Temperature</b>            | 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)                        |
| <b>Battery Re-Charge Time</b> | System in OFF mode or Standby | 2.5 hours  |
|                               | System ON                     | 3 to 5 hours (depending on system power consumption) |





# QuickSpecs

## Technical Specifications

|  |  |  |
|--|--|--|
|  | <b>Fuel Gauge LED</b>                    | No   |
|  | <b>Warranty</b>                          | Up to 3 years (depending on system warranty)   |
|  | <b>Optional Travel Battery Available</b> | No   |
| <b>4-Cell (44 WHr) Lithium-Ion battery</b>           | <b>Dimensions (H x W x L)</b>            | 0.86 x 1.4 x 8.0 in (2.18 x 3.56 x 27.72 cm)   |
|  | <b>Weight</b>                            | ≤0.551 lb (250 g)  |
|  | <b>Cells/Type</b>                        | 4-cell Lithium-Ion   |
|  | <b>Energy</b>                            | Voltage 14.8V DC<br>Amp-hour capacity 2850mAh<br>Watt-hour Capacity 44 WHr   |
|  | <b>Temperature</b>                       | Operating (Charging) 32° to 113° F (0° to 45° C)<br>Operating (Discharging) 14° to 140° F (–10° to 60° C)<br>Non-operating –4° to 140° F (–20° to 60° C) |
|  | <b>Battery Re-Charge Time</b>            | System in OFF mode or Standby 2.5 hours<br>System ON 3 to 5 hours (depending on system power consumption)  |
|  | <b>Fuel Gauge LED</b>                    | No   |
|  | <b>Warranty</b>                          | 1 year   |
|  | <b>Optional Travel Battery Available</b> | No   |
| <b>4-cell (40 WHr) Long Life Lithium-Ion battery</b> | <b>Cells/Type</b>                        | 4-cell Lithium-Ion   |
|  | <b>Energy</b>                            | Amp-hour capacity 3.0Ah<br>Watt-hour Capacity 40 WHr   |
|  | <b>Temperature</b>                       | Operating (Charging) 32° to 113° F (0° to 45° C)<br>Operating (Discharging) 14° to 140° F (–10° to 60° C)<br>Non-operating –4° to 140° F (–20° to 60° C) |
|  | <b>Battery Re-Charge Time</b>            | System in OFF mode or Standby 2.5 hours<br>System ON 3 to 5 hours (depending on system power consumption)  |
|  | <b>Fuel Gauge LED</b>                    | No   |
|  | <b>Warranty</b>                          | Up to 3 years (depending on system warranty)   |
|  | <b>Optional Travel Battery Available</b> | No   |

## ENVIRONMENTAL



# QuickSpecs

## Technical Specifications

### HP ProBook 440 G2 Notebook PC

**System Configuration** The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a “Typically Configured Notebook”.

**Energy Consumption**  
**(in accordance with**  
**US ENERGY STAR®**  
**test method)**

|                               | <b>115VAC, 60Hz</b> | <b>230VAC, 50Hz</b> | <b>100VAC, 60Hz</b> |
|-------------------------------|---------------------|---------------------|---------------------|
| Normal Operation (Short idle) | 7.02 W              | 7.04 W              | 6.89 W              |
| Normal Operation (Long idle)  | 5.24 W              | 5.27 W              | 5.20 W              |
| Sleep                         | 0.65 W              | 0.68 W              | 0.65 W              |
| Off                           | 0.31 W              | 0.35 W              | 0.31 W              |

**Note:**

Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.

| <b>Heat Dissipation*</b>      | <b>115VAC, 60Hz</b> | <b>230VAC, 50Hz</b> | <b>100VAC, 60Hz</b> |
|-------------------------------|---------------------|---------------------|---------------------|
| Normal Operation (Short idle) | 24 BTU/hr           | 24 BTU/hr           | 24 BTU/hr           |
| Normal Operation (Long idle)  | 18 BTU/hr           | 18 BTU/hr           | 18 BTU/hr           |
| Sleep                         | 2 BTU/hr            | 2 BTU/hr            | 2 BTU/hr            |
| Off                           | 1 BTU/hr            | 1 BTU/hr            | 1 BTU/hr            |

\*NOTE: 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)**

Typically Configured – Idle

Sound Power  
(L<sub>WA</sub>d, bels)

3.1

Sound Pressure  
(L<sub>pAm</sub>, decibels)

24



# QuickSpecs

## Technical Specifications

Fixed Disk – Random writes

3.1

24

### Longevity and Upgrading

This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include:

- 3 USB ports
- 1 PC card slot (type I/II)
- 1 ExpressCard/54 slot
- 1 IEEE 1394 Port
- 2 SODIMM memory slots
- Optional expansion base docking station
- 1 multi-bay II storage port
- Interchangeable HDD

Spare parts are available throughout the warranty period and or for up to “5” years after the end of production.

### 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 1ppm by weight  
 Cadmium greater than 20ppm by weight

Battery size: CR2032 (coin cell)  
 Battery type: Lithium  
 Battery size: 6-cell high capacity Lithium-Ion battery (optional 8 cell available)  
 Battery type:

### Additional Information

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.
- This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.
- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
- This product is in compliance with the IEEE 1680 (EPEAT) standard at the <Gold> level, see [www.epeat.net](http://www.epeat.net)
- Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.
- This product contains 0% post-consumer recycled plastic (by wt.)
- This product is 95.9% recycle-able when properly disposed of at end of life.

### Packaging Materials

|                  |                                   |         |
|------------------|-----------------------------------|---------|
| <b>External:</b> | PAPER/Corrugated                  | 387.8 g |
| <b>Internal:</b> | PLASTIC/Polyethylene low density  | 18.1 g  |
|                  | PLASTIC/EPE-Expanded Polyethylene | 38 g    |

The plastic packaging material contains at least 75% recycled content.  
 The corrugated paper packaging materials contains at least 75% recycled content.



# QuickSpecs

**HP ProBook 440 G2 Notebook PC**  
**HP ProBook 450 G2 Notebook PC**  
**HP ProBook 470 G2 Notebook PC**

## Technical Specifications

### HP ProBook 450 G2 Notebook PC

**System Configuration** The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a “Typically Configured Notebook”.

**Energy Consumption**  
**(in accordance with**  
**US ENERGY STAR®**  
**test method)**

|                               | <b>115VAC, 60Hz</b> | <b>230VAC, 50Hz</b> | <b>100VAC, 60Hz</b> |
|-------------------------------|---------------------|---------------------|---------------------|
| Normal Operation (Short idle) | 7.88 W              | 7.31 W              | 7.78 W              |
| Normal Operation (Long idle)  | 4.88 W              | 5.84 W              | 6.28 W              |
| Sleep                         | 0.95 W              | 0.95 W              | 0.92 W              |
| Off                           | 0.34 W              | 0.37 W              | 0.34 W              |

**Note:**

Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.

| <b>Heat Dissipation*</b>      | <b>115VAC, 60Hz</b> | <b>230VAC, 50Hz</b> | <b>100VAC, 60Hz</b> |
|-------------------------------|---------------------|---------------------|---------------------|
| Normal Operation (Short idle) | 27 BTU/hr           | 25 BTU/hr           | 27 BTU/hr           |
| Normal Operation (Long idle)  | 17 BTU/hr           | 20 BTU/hr           | 21 BTU/hr           |
| Sleep                         | 3 BTU/hr            | 3 BTU/hr            | 3 BTU/hr            |
| Off                           | 1 BTU/hr            | 1 BTU/hr            | xxx BTU/hr          |

\*NOTE: 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)**

Typically Configured – Idle

Sound Power  
(L<sub>WA,d</sub>, bels)

3.1

Sound Pressure  
(L<sub>pAm</sub>, decibels)

22



# QuickSpecs

## Technical Specifications

Fixed Disk – Random writes

3.1

22

### Longevity and Upgrading

This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include:

- 3 USB ports
- 1 PC card slot (type I/II)
- 1 ExpressCard/54 slot
- 1 IEEE 1394 Port
- 2 SODIMM memory slots
- Optional expansion base docking station
- 1 multi-bay II storage port
- Interchangeable HDD

Spare parts are available throughout the warranty period and or for up to “5” years after the end of production.

### 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 1ppm by weight  
 Cadmium greater than 20ppm by weight

Battery size: CR2032 (coin cell)  
 Battery type: Lithium  
 Battery size: 6-cell high capacity Lithium-Ion battery (optional 8 cell available)  
 Battery type:

### Additional Information

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.
- This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.
- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
- This product is in compliance with the IEEE 1680 (EPEAT) standard at the <gold> level, see [www.epeat.net](http://www.epeat.net)
- Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.
- This product contains 0% post-consumer recycled plastic (by wt.)
- This product is 96.2% recycle-able when properly disposed of at end of life.

### Packaging Materials

|                  |                                     |        |
|------------------|-------------------------------------|--------|
| <b>External:</b> | PAPER/Corrugated                    | 398 g  |
| <b>Internal:</b> | PLASTIC/EPE (Expanded Polyethylene) | 36 g   |
|                  | PLASTIC/Polyethylene low density    | 18.1 g |

The plastic packaging material contains at least 75% recycled content.

The corrugated paper packaging materials contains at least 75% recycled content.

## HP ProBook 470 G2 Notebook PC



# QuickSpecs

## Technical Specifications

**System Configuration** The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a “Typically Configured Notebook”.

**Energy Consumption**  
**(in accordance with**  
**US ENERGY STAR®**  
**test method)**

|                                  | <b>115VAC, 60Hz</b> | <b>230VAC, 50Hz</b> | <b>100VAC, 60Hz</b> |
|----------------------------------|---------------------|---------------------|---------------------|
| Normal Operation<br>(Short idle) | 7.60 W              | 7.50 W              | 7.57 W              |
| Normal Operation<br>(Long idle)  | 3.42 W              | 3.62 W              | 3.43 W              |
| Sleep                            | 0.66 W              | 0.71 W              | 0.66 W              |
| Off                              | 0.34 W              | 0.37 W              | 0.34 W              |

**Note:**

Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.

**Heat Dissipation\***

|                                  | <b>115VAC, 60Hz</b> | <b>230VAC, 50Hz</b> | <b>100VAC, 60Hz</b> |
|----------------------------------|---------------------|---------------------|---------------------|
| Normal Operation<br>(Short idle) | 26 BTU/hr           | 26 BTU/hr           | 26 BTU/hr           |
| Normal Operation<br>(Long idle)  | 12 BTU/hr           | 12 BTU/hr           | 12 BTU/hr           |
| Sleep                            | 2 BTU/hr            | 2 BTU/hr            | 2 BTU/hr            |
| Off                              | 1 BTU/hr            | 1 BTU/hr            | 1 BTU/hr            |

\*NOTE: 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)**

|                                | <b>Sound Power</b><br><b>(L<sub>WAd</sub>, bels)</b> | <b>Sound Pressure</b><br><b>(L<sub>pAm</sub>, decibels)</b> |
|--------------------------------|--|---|
| Typically Configured –<br>Idle | 2.9  | 23  |
| Fixed Disk – Random<br>writes  | 2.9  | 24  |



# QuickSpecs

## Technical Specifications

### Longevity and Upgrading

This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include:

- 3 USB ports
- 1 PC card slot (type I/II)
- 1 ExpressCard/54 slot
- 1 IEEE 1394 Port
- 2 SODIMM memory slots
- Optional expansion base docking station
- 1 multi-bay II storage port
- Interchangeable HDD

Spare parts are available throughout the warranty period and or for up to “5” years after the end of production.

### Batteries

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

Batteries used in the product do not contain:

- Mercury greater than 1ppm by weight
- Cadmium greater than 20ppm by weight

Battery size: CR2032 (coin cell)

Battery type: Lithium

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

Battery type:

### Additional Information

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.
- This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.
- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
- This product is in compliance with the IEEE 1680 (EPEAT) standard at the <Gold> level, see [www.epeat.net](http://www.epeat.net)
- Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.
- This product contains 0% post-consumer recycled plastic (by wt.)
- This product is 96.9% recycle-able when properly disposed of at end of life.

### Packaging Materials

**External:** PAPER/Corrugated 454.8 g

**Internal:** PLASTIC/Polyethylene low density 68.5 g

The plastic packaging material contains at least 75% recycled content.

The corrugated paper packaging materials contains at least 75% recycled content.

## All models



# QuickSpecs

## Technical Specifications

### **Eco-Label Certifications & declarations**

These products have received or are in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- IT ECO declaration
- US ENERGY STAR®
- EPEAT <Gold> registered in the United States. See <http://www.epeat.net> for registration status in your country.

### **MATERIAL USAGE**

This product does not contain any of the following substances in excess of regulatory limits (for reference of these limits please refer to the HP General Specification of the Environment ([http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen\\_specifications.html](http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html)):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants – may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)
- Nickel finishes that release greater than 0.5 µgrams/cm<sup>2</sup>/week, measured according to EN 1811:1998, are not used on any product surface designed to be frequently handled or touched by users.

### **PACKAGING USAGE**

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.

### **END-OF-LIFE MANAGEMENT AND RECYCLING**





# QuickSpecs

## Technical Specifications

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



# QuickSpecs

**HP ProBook 440 G2 Notebook PC**  
**HP ProBook 450 G2 Notebook PC**  
**HP ProBook 470 G2 Notebook PC**

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

| <b>Type</b>                | <b>Description</b>   | <b>Part #</b> |
|----------------------------|--|---------------|
| <b>Cases</b>               | HP Essential Top Load Case   | H2W17AA       |
|                            | HP Essential Backpack (up to 15.6")  | H1D24AA       |
|                            | HP Essential Messenger Case (up to 17.3")                                  | H1D25AA       |
| <b>Docking</b>             | HP 3005pr USB 3.0 Port Replicator  | H1L08AA       |
| <b>Input/Output – Mice</b> | HP Comfort Grip Wireless Mouse   | H2L63AA       |
|                            | HP 3-Button USB Laser Mouse  | H4B81AA       |
|                            | HP USB Optical Travel mouse  | RH304AA       |
| <b>Adapters</b>            | HP 45W Smart AC Adapter 4.5mm  | H6Y88AA       |
| <b>Security</b>            | HP UltraSlim Keyed Cable Lock  | H4D73AA       |
| <b>Displays</b>            | HP ProDisplay P201 20-inch LED Backlit Monitor                             | C9F26AA       |
|                            | HP ProDisplay P201m 20-inch LED Backlit Monitor (With Integrated Speakers) | C9F73AA       |
|                            | HP ProDisplay P221 21.5-inch LED Backlit Monitor                           | C9E49AA       |
|                            | HP ProDisplay P231 23-inch LED Backlit Monitor                             | E4S07AA       |

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# QuickSpecs

## Summary of Changes

| <b>Date of change:</b> | <b>Version History:</b> |         | <b>Description of change:</b>  |
|------------------------|-------------------------|---------|--|
| June 5, 2014           | From vMar'14 to vJun'14 | Changed | Environmental data for the 440 & 470   |
| June 9, 2014           | From June 6 to June 9   | Added   | Environmental data for the 450   |
| June 19, 2014          | From June 9 to June 19  | Added   | Changes throughout the document  |
| July 7, 2014           | From v4 to v5           | Changed | Weight specs   |
| October 22, 2014       | From v5 to v6           | Changed | Operating System and Processor changes on pages 4-14                             |
| October 28, 2014       | From v6 to v7           | Removed | Windows 7 Home, Home Premium & Ultimate OS                                       |
| November 13, 2014      | From v7 to v8           | Added   | 5 <sup>th</sup> Generation Intel processors and graphics.                        |
| November 17, 2014      | From v8 to v9           | Changed | Warranty specs on page 22  |
| March 13, 2015         | From v9 to v10          | Changed | Memory speed transfer units on page 14   |
| April 8, 2015          | From v10 to v11         | Added   | Average Operating Power page 23  |
| June 26, 2015          | From v11 to v12         | Added   | Web-only support OS on page 11   |
| June 29, 2015          | From V12 to v13         | Added   | Windows 10 to overview on page 9, OS list on page 10, footnotes to pages 10 & 14 |

