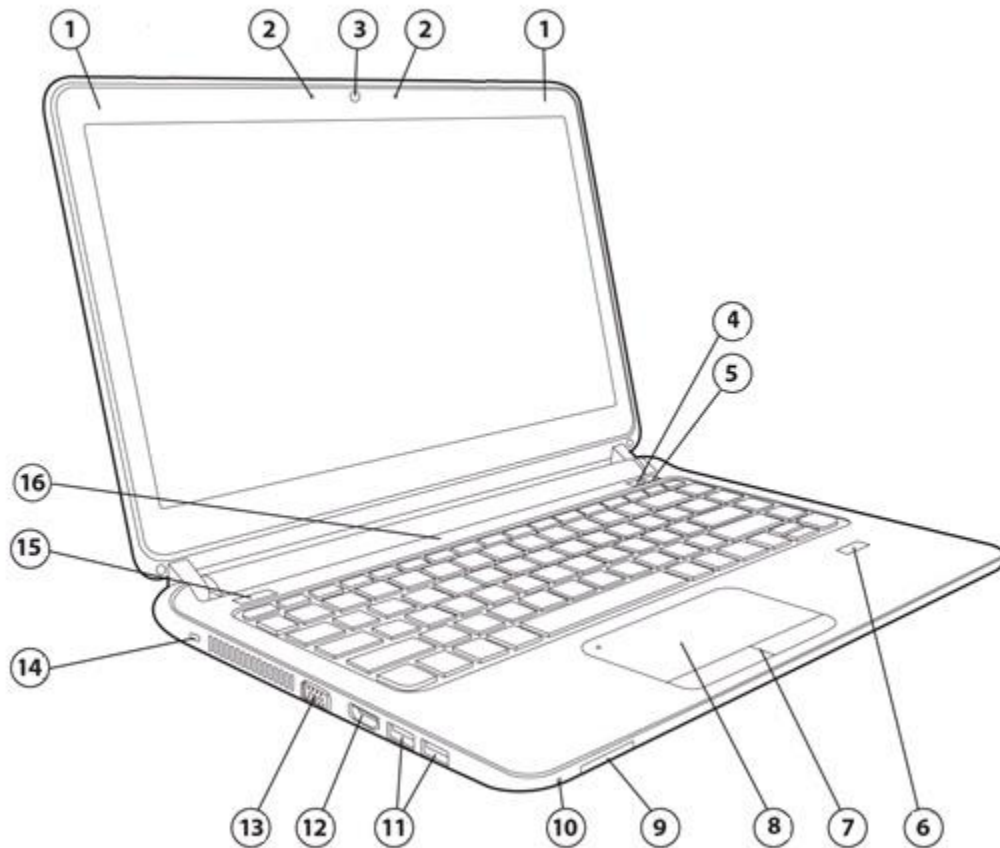# QuickSpecs

Overview

HP ProBook 430 G2 Notebook PC

Front

1. WLAN antennas (2)* (select models only)
2. Dual-microphone array**
3. Optional webcam
4. Wireless on/off button
5. Speaker mute button
6. Optional HP Fingerprint Reader
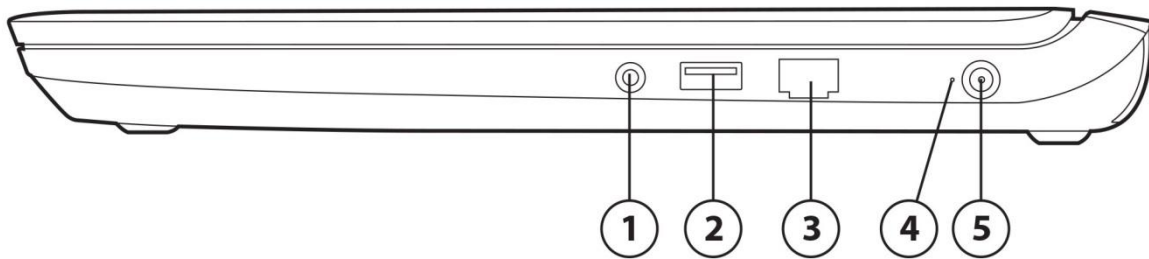7. Touchpad pick buttons
8. Touchpad

9. Media Card Reader
10. Hard drive activity LED indicator
11. USB 3.0 ports (2)
12. HDMI port
13. VGA monitor port
14. Security lock slot
15. Power button
16. Speakers (2)

* The number of WLAN antennas in the displays is determined by the WLAN selected
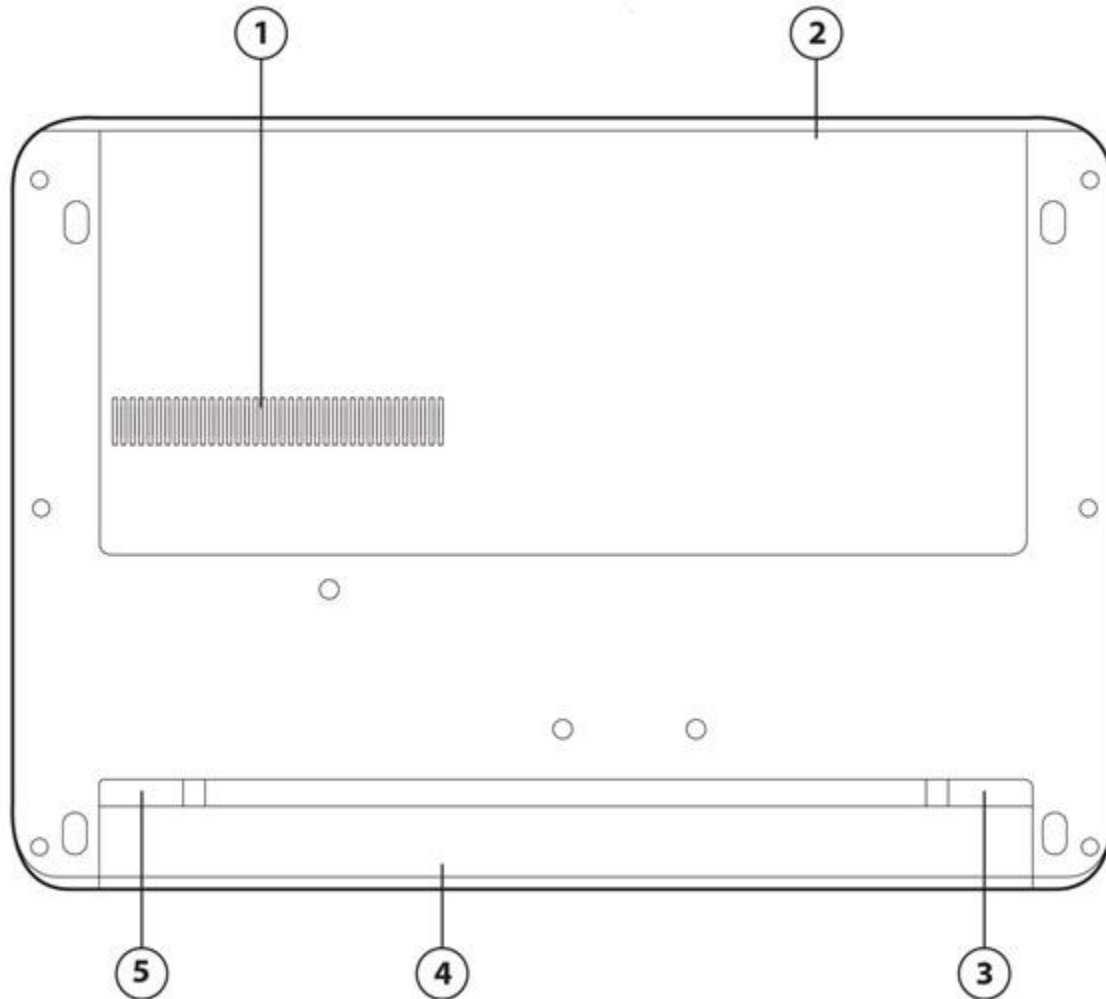** Only available with optional webcam.

Overview

Right

1. Headphone/Microphone Combo Jack
2. USB 2.0 charging (powered) port
3. RJ-45 (network) jack
4. AC adapter/Battery light
5. Power connector

Overview

Bottom

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

QuickSpecs

Overview

AT A GLANCE

- Windows 8.1 versions, Windows 7 Professional (available through downgrade rights from Windows 8.1 Pro), Windows 7 versions, or FreeDOS 2.0
- Lighter, durable multi-layer soft touch painted LCD cover and brushed aluminum keyboard deck help keep system looking good longer
- Full-sized, spill-resistant keyboard with a thin layer of Mylar film to prevent minor spills
- Larger Touchpad with gestures support, on/off button with LED indicator
- Enhanced security features including HP Client Security, optional HP Fingerprint Reader, 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 HD display with 16:9 aspect ratio with 13.3 -inch diagonal HD screen and 13.3 -inch diagonal HD screen with Touch option (available in Summer 2014)
- Choice of 4th generation Intel® Dual-Core™ i5, i3 and Celeron™ processors
- Wireless and speaker mute button to conveniently manage the connectivity and speaker.
- Flexible wireless connectivity options:
    - 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

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

QuickSpecs

Technical Specifications

PRODUCT NAME

HP ProBook 430 G2 Notebook PC

OPERATING SYSTEM

Preinstalled   Windows 8.1 Pro 64*
Windows 8.1 64*
Windows 7 Professional (available through downgrade rights from Windows 8.1 Pro)**
Windows 7 Professional 64***
Windows 7 Home Premium 64***
Windows 7 Home Basic 64***
FreeDOS 2.0

* Not all features are available in all editions of Windows 8.1. Systems may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows 8.1 functionality. See microsoft.com for details.
** This system is preinstalled with Windows® 7 Pro software and also comes with a license and media for Windows 8.1 Pro software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.
*** Not all features are available in all editions of Windows 7. This system may require upgraded and/or separately purchased hardware to take full advantage of Windows 7 functionality. See windows.microsoft.com/en-us/windows7/products/home for details.

PROCESSOR

4ᵗʰ generation Intel® Dual-Core™ processors Core i5, and i3
4ᵗʰ Generation Intel® Core™ i5-4310U (2.0GHz, 3 MB L3 cache, 2 cores)*
  Up to 3.0GHz with Intel Turbo Boost Technology
4ᵗʰ Generation Intel® Core™ i5-4210U (1.7GHz, 3 MB L3 cache, 2 cores)*
  Up to 2.7GHz with Intel Turbo Boost Technology
4ᵗʰ Generation Intel® Core™ i3-4030U (1.9GHz, 3 MB L3 cache, 2 cores)*
4ᵗʰ Generation Intel® Core™ i3-4005U (1.7GHz, 3 MB L3 cache, 2 cores)* (Available in Summer 2014)
4ᵗʰ Generation Intel® Celeron 2957U (1.4GHz, 2MB L3 cache, 2 cores)*

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

GRAPHICS

Integrated:
4ᵗʰ Generation Intel® Core™ i5-4310U (2.0GHz, 3 MB L3 cache, 2 cores)/ Intel® HD Graphics 4400
4ᵗʰ Generation Intel® Core™ i5-4210U (1.7GHz, 3 MB L3 cache, 2 cores)/ Intel® HD Graphics 4400
4ᵗʰ Generation Intel® Core™ i3-4030U (1.9GHz, 3 MB L3 cache, 2 cores)/Intel® HD Graphics 4400
4ᵗʰ Generation Intel® Core™ i3-4005U (1.7GHz, 3 MB L3 cache, 2 cores)/Intel® HD Graphics 4400 (Available in Summer 2014)
4ᵗʰ Generation Intel® Celeron 2957U (1.4GHz, 2 MB L3 cache, 2 cores)/Intel® HD Graphics

QuickSpecs

Technical Specifications

DISPLAY

Internal
13.3" diagonal LED-backlit HD anti-glare (1366 x 768)
13.3" diagonal LED-backlit HD Touch Display is shatter, scratch, and smudge resistant (1366 x 768) (Available in Summer 2014)
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.

STORAGE AND DRIVES

Primary Storage Bay
Hard Drives
320/500/750 GB*/1 TB* 5400 rpm SMART SATA HDD;
500 GB* 7200 rpm SMART SATA HDD
500 GB* 5400 rpm SMART SATA Hybrid HDD/SSHD

Solid State Drives
120 GB* M.2 Solid State Drive
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 36 GB (for Windows 8) of system disk is reserved for the system recovery software.

OPTICAL DRIVES

External Optical Disk Drive

MEMORY

Standard
DDR3L 1.35V SDRAM (1600 MHz)
Two SODIMM slots supporting dual-channel memory
2 GB, 4 GB, and 8 GB SODIMMs
Maximum
Upgradeable to 16384 MB with optional 8192 MB SODIMMs in slots 1 and 2
Dual-channel
Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory slots.

NOTE: Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed. With Windows Starter

Technical Specifications

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

Wireless LAN (WLAN)
Realtek 802.11 b/g/n (1x1) *
Realtek 802.11 b/g/n (1x1) with Bluetooth® v4.0 combo*
Broadcom 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) WiFi with Bluetooth 4.0 combo*
Intel Dual Band Wireless-AC 7260AN 802.11 a/b/g/n/ac (2x2) WiFi with Bluetooth 4.0 combo*
*Wireless access point and Internet service is required and is not included. Availability of public wireless access points limited.

Communications
Realtek 10/100/1000*** Ethernet Controller

NOTE: Wireless use requires separately purchased service contract. Check with your local vendor for coverage area and availability in your area.
NOTE: Wireless access point and Internet service required. Availability of public wireless access points limited.

* 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.

AUDIO/MULTIMEDIA

Audio
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

* HD content required to view HD images.

Technical Specifications

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. 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 volume 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

	Windows 8.1	Windows 7
Security	Absolute Persistence Module[1]	Absolute Persistence Module[1]
	Device Access Manager with Just In Time Authentication	Device Access Manager with Just In Time Authentication
	HP File Sanitizer[2]	HP File Sanitizer[2]
	HP Client Security[3]	HP Client Security[3]
	HP SpareKey	HP SpareKey
	Microsoft Defender	Microsoft Security Essentials[4]
	DigitalPersona Fingerprint Driver	DigitalPersona Fingerprint Driver
	Validity Fingerprint Driver	Validity Fingerprint Driver
	Hardware Root of Trust	Hardware Root of Trust
	HP Automatic DriveLock	HP Automatic DriveLock
	HP BIOS Protection	HP BIOS Protection
	HP Disk Sanitizer[5]	HP Disk Sanitizer[5]
	DASH Support	DASH Support
	HP DriveLock	HP DriveLock
	HP SpareKey[6]	HP SpareKey[6]
	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[7]	Secure Erase[7]
	Touch enabled F10 Setup with virtual KB	Touch enabled F10 Setup with virtual KB
MultiMedia	Cyberlink PowerDVD	Cyberlink PowerDVD
	Cyberlink YouCam BE	Cyberlink YouCam BE
Communications	HP Connection Manager	HP Connection Manager
	HP GPS and Location[8]	HP GPS and Location[8]
	HP Mobile Connect[9]	Intel WiDi Software[11]
	HP Wireless Hotspot[10]	Intel My WiFi and Wireless Drivers for Microsoft
	Intel WiDi Software[11]	
	Intel My WiFi and Wireless Drivers for Microsoft	
HP Value Add Software	Digital Energy Star Logo W8	Digital Energy Star Logo W8

Technical Specifications

	Getting Started with Windows 8	Getting Started with Windows 8
	HP 3D DriveGuard	HP 3D DriveGuard
	HP Ceement	HP Ceement
	HP ePrint Driver[12]	HP ePrint Driver[12]
	HP Hotkey	HP Hotkey
	HP PageLift App	HP PageLift App
	HP PageLift for Win 7	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[13]	HP Support Assistant[13]
	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
3rd Party	Box 50GB Offer Desktop Icon[14]	Box 50GB Offer Desktop Icon[14]
	Box App	Box App
	Foxit PhantomPDF Express	Foxit PhantomPDF Express
	Buy Office	Buy Office

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

[2]For the use cases outlined in the DOD 5220.22-M Supplement. Supports standard Hard Drives. Initial setup required.

[3]Not all features are remotely manageable.

[4]Opt in and internet connection required for updates.

[5]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.

[6]Requires initial user set up.

[7]For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88.

[8]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.

[9]Internet access required.

[10] 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.

[11]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.

[12]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 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.

[13] Internet access required.

[14] Offer available on new 2014 HP commercial PC and requires Box registration. Offer subject to change without notice.

Technical Specifications

Security

Standard
HP Client Security
Microsoft Defender
Drive Encryption*
HP BIOS Protection
Security lock slot
TPM 1.2 Embedded Security Chip

Optional
Intel Identity Protection**
HP Fingerprint reader

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

* 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.
** 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 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: hp.com/go/security.

POWER

Power Supply
45W Smart AC Adapter
Power cord included is 1.0m (+/- 0.1m)
Primary Battery
4-cell (44 WHr) Lithium-Ion battery
4-cell (40 WHr) Long Life Lithium-Ion battery

Battery Life

	Configurations with integrated graphics
HP ProBook 430 G2	
4-cell (44 WHr) battery	TBD hours

System Standby Time
Up to TBD days

Power Conservation
Supports enhanced Intel SpeedStep technology (allows Battery Optimized Mode, Maximum Performance Mode, or Automatic mode)
Hibernation
Standby
ACPI compliance

QuickSpecs

Technical Specifications

WEIGHTS & DIMENSIONS

Weight
Lightest possible configuration across battery and panel options (HD Panel, Non-Touch, 4-cell (44Whr) Battery, M.2 120GB SSD) at 3.31lb / 1.50kg

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

	4-cell (44Whr)
Non-Touch, M.2 SSD	3.31 lb/1.50 kg
Non-Touch, HDD	3.53 lb/1.60 kg
Touch, HDD	4.66 lb/2.12 kg*

          * Touch SKU are not finalized and expect to have another update during mid-May

Dimensions (w x d x h)

Non-Touch Models
12.83 x 9.19 x 0.79-0.83 in (at rear and at front)
32.6 x 23.35 x 2.0-2.1c m (at rear and at front)

Touch Models
12.83 x 9.21 x 0.84 (front) - 0.89 in (rear)
32.6 x 23.40 x 2.13 (front) - 2.25 cm (rear)

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

PORTS/SLOTS

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

Digital Media Slots
Multi Media Reader Slot supporting SD, SDHC, SDXC

SERVICE AND SUPPORT

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

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

Technical Specifications

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)	**Nominal Operating Voltage**	19 V
	Average Operating Power	19.19 W
	Max Operating Power	35.84W
Temperature	**Operating**	32° to 95° F (0° to 35° C) (not writing optical)
		41° to 95° F (5° to 35° C) (writing optical)
	Non-operating	-4° to 140° F (-20° to 60° C)
Relative Humidity	**Operating**	10% to 90%, non-condensing
	Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
Shock	**Operating**	40 G, 2 ms, half-sine
	Non-operating	200 G, 2 ms, half-sine
Random Vibration	**Operating**	0.75 grms
	Non-operating	1.50 grms
Altitude (unpressurized)	**Operating**	-50 to 10,000 ft (-15.24 to 3,048 m)
	Non-operating	-50 to 40,000 ft (-15.24 to 12,192 m)
Planned Industry Standard Certifications	**UL**	Yes
	CSA	Yes
	FCC Compliance	Yes
	ENERGY STAR 6.0®	Select models*
	EPEAT	Registered Gold in United States**
	ICES	Yes
	Australia / NZ A-Tick Compliance	Yes
	CCC	Yes
	Japan VCCI Compliance	Yes
	KC	Yes
	BSMI	Yes
	CE Marking Compliance	Yes
	BNCI or BELUS	Yes
	CIT	Yes
	GOST	Yes
	Saudi Arabian Compliance (ICCP)	Yes
	SABS	Yes
	UKRSERTCOMPUTER	Yes

* Configurations of the HP ProBook 430 G2 that are ENERGY STAR qualified are identified as HP ProBook 430 G2 ENERGY STAR on HP websites and on energystar.gov.
** EPEAT registration varies by country. See epeat.net for registration status by country.
EPEAT status listed above applies to U.S.

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

DISPLAYS

13.3-inch LED HD (1366 x 768) anti-glare	**Active Area** (W x H)	11.53 x 6.49 in (29.3 x 16.5 cm)
	Diagonal Size	13.3 in (33.8cm)
	Surface Treatment	Anti-glare
	Contrast Ratio	400:1 (typical)

Technical Specifications

Refresh Rate	60 Hz	
Brightness	200 nit (typical)	
Pixel Resolution	**Pitch**	0.215 mm
	Format	1366 x 768
	Configuration	RGB Stripe
Backlight	LED	
PPI	118 ppi	
Viewing Angle	±30° Horizontal, ±10° Vertical (minimum) 30/30/20/10 (Left/Right/Down/Up) (minimum) or 45/45/35/25 (Left/Right/Down/Up) (typical)	

STORAGE AND DRIVES

Internal Storage

500 GB* 7200 rpm SATA Hard Drive	**Drive Weight**	0.25 lbs (115g)	
	Capacity	500 GB	
	Height	0.276 in (7 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	**Synchronous** (maximum)	300 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	**Single Track**	1.5 ms
		Average	11 ms
		Maximum	22 ms
	Rotational Speed	7200 rpm	
	Logical Blocks	976,773,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	
320 GB* 5400 rpm SATA Hard Drive	**Drive Weight**	0.22 lb (101 g	
	Capacity	320 GB	
	Height	0.276 in (7 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	**Synchronous** (maximum)	300 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	**Single Track**	3 ms
		Average	13 ms
		Maximum	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	625,142,448	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	
500 GB* 5400 rpm SATA	**Drive Weight**	0.22 lb (101 g)	

Technical Specifications

Hard Drive	**Capacity**	500 GB	
	Height	0.276 in (7 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	**Synchronous** (maximum)	300 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	**Single Track**	3 ms
		Average	13 ms
		Maximum	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	976,773,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	
750 GB* 5400 rpm SATA Hard Drive	**Drive Weight**	0.22 lb (101 g)	
	Capacity	750 GB	
	Height	0.276 in (7 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	**Synchronous** (maximum)	300 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	**Single Track**	3 ms
		Average	13 ms
		Maximum	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	1,465,149,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	
1 TB* 5400 rpm SATA Hard Drive	**Drive Weight**	0.254 lb (115 g)	
	Capacity	1 TB	
	Height	0.276 in (7 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
	Transfer Rate	**Synchronous** (maximum)	300 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	**Single Track**	3 ms
		Average	13 ms
		Maximum	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	1,953,525,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	
500 GB* 5400 rpm SMART SATA II Hybrid HDD/SSHD	**Drive Weight**	0.209 lb (95 g)	
	Capacity	500 GB	
	Height	0.276 in (7 mm)	
	Width	2.76 in (70.1 mm)	

Technical Specifications

	Interface	ATA-8, SATA 2.6, 6.0 Gb/s, NCQ	
	Transfer Rate	**Synchronous** (maximum) 600 MB/s (Drive Capability)	
	Seek Time (typical reads, including settling)	**Single Track** 2 ms	
		Average 12 ms	
		Maximum NIL ms	
	Rotational Speed	7200 rpm	
	Logical Blocks	976,773,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	
SATA 6 Gb/s 128 GB*, 2.5-inch Solid State Drive	**Drive Weight**	73 Grams	
	Capacity	128 GB	
	Height	0.276 in (7 mm)	
	Width	2.76 in (70 mm)	
	Interface	SATA 3 (6 Gb/s)	
	Performance	**Maximum Sequential Read**	**Maximum Sequential Write**
		415 MB/s	175 MB/s
	Logical Blocks	250,069,680	
	Operating Temperature	32° to 158°F (0° to 70°C) [case temp]	
	Features	ATA Security; ATA-8; SATA 3.0; DIPM; TRIM	
120 GB* M.2 Solid State Drive	**Drive Weight**	< 10 Grams	
	Capacity	120 GB	
	Height	0.276 in (22 mm)	
	Width	2.76 in (42 mm)	
	Interface	SATA 3 (6 Gb/s)	
	Performance	**Maximum Sequential Read**	**Maximum Sequential Write**
		540 MB/s	480 MB/s
	Logical Blocks	234,441,648	
	Operating Temperature	32° to 158°F (0° to 70°C) [case temp]	
	Features	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.

SECURITY

HP Fingerprint Reader (optional)	**Mobile Voltage Operation**	3.0V-3.6V Single Supply
	Operating Temperature	32° – 158°F (0° – 70°C)
	Current Consumption @ 3.3V	Less than 70 mA peak imaging and scrolling Less than 25 mA hardware finger detection Advanced Power Management
	High-Rate Image Capture	Up to 240 image frames /sec
	ESD Resistance	IEC 61000-4-2 Level 4 (±15KV)
	Detection Matrix	192 x 16 Pixels

Technical Specifications

9.7 mm x 0.81 mm
500 ppi High-Resolution Images

NETWORKING/COMMUNICATIONS

Integrated Realtek RTL8161GSH-CH 10/100/1000 NIC	Ethernet Features	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 8023 clauses 40) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE (Energy Efficient Ethernet) Jumbo Frame 9K Auto MDI/MDIX Crossover cable detection
	Power Management	ACPI compliant - multiple power modes Situation-sensitive features reduce power consumption Advanced link down power saving for reducing link down power consumption
	Performance Features	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload and Giant send offload Receiving Side Scaling
	Manageability	Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite Virtual Cable Doctor for Ethernet cable status
	Interface	PCI Express 1.1to fully support ASPM L0s/L1 and CLKREQ
	NIC Device Driver Name	Realtek PCIe GBE Ethernet Family Controller
Realtek 802.11 b/g/n (1x1)	Wireless LAN Standards	IEEE 802.11b IEEE 802.11g IEEE 802.11n
	Interoperability	Wi-Fi certified
	Frequency Band	2.402 – 2.482 GHz
	Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: card will support rates for NSS=1 for RX and TX for 20 MHz channels. Short and long guard interval will be supported.
	Modulation	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM
	Security[1]	IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only AES-CCMP: 128 bit in hardware 802.1x authentication types WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.

Technical Specifications

	WPA2 certification	
	IEEE 802.11i	
	Cisco Certified Extensions, all versions through V5	
	WAPI	
Network Architecture	Ad-hoc (Peer to Peer)	
Models	Infrastructure (Access Point Required)	
Roaming	IEEE 802.11 compliant roaming between access points	
Output Power[2]	13.5 dBm, nominal	
Power Consumption	Transmit: 2.0 W (max)	
	Receive: 1.6 W (max)	
	Associated to Access Point, Idle: 250 mW nominal	
	Wireless Button Off: 100 mW nominal	
	Radio disabled: 75 mW nominal	
Power Management	ACPI compliant power management	
	802.11 compliant power saving mode	
Receiver Sensitivity[3]	802.11b:-95 dBm (1 Mbps), -93 dBm (2 Mbps), -91 dBm (5.5 Mbps), -88 dBm (11 Mbps)	
	802.11g:-90 dBm (6 Mbps), -89 dBm (9 Mbps), -87 dBm (12 Mbps), -85 dBm (18 Mbps), -82 dBm (24 Mbps), -79 dBm (36 Mbps), -76 dBm (48 Mbps), -74 dBm (54 Mbps)	
	802.11n:-70dBm (72.2 Mbps)	
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure	
Form Factor	PCI-Express Half-MiniCard	
Dimensions	0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm)	
Operating Voltage	3.3v +/- 9%	
Temperature	Operating	14° to 158° F (−10° to 70° C)
	Non-operating	−40° to 176° F (−40° to 80° C)
Humidity	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
Altitude	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
LED Activity	LED Off – Radio OFF; Solid LED On – Radio ON	

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

Broadcom 802.11a/b/g/n (2x2) + Bluetooth™ 4.0 combo	**Wireless LAN Standards**	IEEE 802.11a
		IEEE 802.11b
		IEEE 802.11g
		IEEE 802.11n
	Interoperability	Wi-Fi certified

Technical Specifications

Frequency Band	802.11b/g/n
	• 2.402 – 2.482 GHz
	802.11a/n
	• 4.9 – 4.95 GHz (Japan)
	• 5.15 – 5.25 GHz
	• 5.25 – 5.35 GHz
	• 5.47 – 5.725 GHz
	• 5.825 – 5.850 GHz
	• 2.402 – 2.482 GHz
Data Rates	802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
	802.11b: 1, 2, 5.5, 11 Mbps
	802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
	802.11n: card will support rates for NSS=1 and NSS=2 for RX and TX for 20 and 40 MHz channels. Short and long guard interval shall be supported.
Modulation	Direct Sequence Spread Spectrum
	BPSK, QPSK, CCK, 16-QAM, 64-QAM
Security[1]	• IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only
	• AES-CCMP: 128 bit in hardware
	• 802.1x authentication
	• WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.
	• WPA2 certification
	• IEEE 802.11i
	• Cisco Certified Extensions, all versions through V5
	• WAPI
Network Architecture Models	Ad-hoc (Peer to Peer)
	Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output Power[2]	• 2.4G: +13.5dBm minimum
	• 5G: +12dBm minimum
	• Maximum output power must be able to achieve modular regulatory certification with notebooks that have antennas >20cm from the user and peak gain of +3dBi at 2.4GHz and +4dBi at 5GHz
Power Consumption	Transmit: 2.0 W (max)
	Receive: 1.6 W (max)
	Idle mode (PSP): 250 mW (WLAN Associated)
	Idle mode: 100 mW (WLAN unassociated)
	Radio disabled: 75 mW
Power Management	ACPI and PCI Express compliant power management
	802.11 compliant power saving mode
Receiver Sensitivity[3]	802.11b:-95 dBm (1 Mbps), -93 dBm (2 Mbps), -91 dBm (5.5 Mbps), -88 dBm (11 Mbps)
	802.11a/g:-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

Technical Specifications

	Mbps), -74 dBm (54 Mbps)	
	802.11n:-69 dBm (72.2 Mbps), -66 dBm (300 Mbps)	
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure	
	Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications	
Form Factor	PCI-Express Half-MiniCard	
Dimensions	0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm)	
Operating Voltage	3.3v +/- 9%	
Temperature	Operating	14° to 158° F (−10° to 70° C)
	Non-operating	−40° to 176° F (−40° to 80° C)
Humidity	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
Altitude	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
LED Activity	LED Off – Radio OFF; Solid LED On – Radio ON	

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

Bluetooth Specification
V4.0 High Speed, V2.1+EDR, backwards compatible with V1.1, 1.2 and 2.0

Number of Available Channels	79 (1 MHz) available channels
Data Rates and Throughput	3 Mbps data rate; throughput up to 2.17 Mbps
	Synchronous Connection Oriented links up to 3, 64 kbps, voice channels
	Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric
Transmit Power	-6 dBm to 4 dBm (Bluetooth Class II)
Receiver Sensitivity	Better than -80 dBM at 0.1 % raw bit error rate
Power Consumption	Peak (Tx) 330 mW
	Peak (Rx) 230 mW
	Sleep <17 mW
Antenna	Internally integrated within module
Range	Up to 33 ft (10 m)
Electrical Interface	USB 2.0 compliant
	Microsoft Windows Plug and Play compliant
Bluetooth Software Supported	Broadcom Bluetooth for Windows
	Microsoft Windows Bluetooth Software
Link Topology	Point to Point, Multipoint Pico Nets up to 7 slaves
Security	Full support of Bluetooth Security Provisions
Power Management	Microsoft Windows ACPI, and USB Bus Support
	Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff
Certifications	All necessary regulatory approvals for supported countries, including:
	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
	ETS 300 328, ETS 300 826

Technical Specifications

		Low Voltage Directive IEC950
		UL, CSA, and CE Mark
	Bluetooth Profiles Supported	Generic Access Profile (GAP)
		Service Discovery Application Profile (SDAP)
		Serial Port Profile (SPP)
		Dial_Up Networking Profile (DUN)
		Generic Object Exchange Profile (GOEP)
		Object Push Profile (OPP)
		File Transfer Profile (FTP)
		Synchronization Profile (SYNC)
		Hard Copy Cable Replacement (HCRP)
		Personal Area Networking Profile (PAN)
		Human Interface Device Profile (HID)
		Generic Audio/Video Distribution Profile (GAVDP)
		Advanced Audio/Video Distribution Profile (A2DP)
		FAX Profile (FAX)
		Basic Imaging Profile (BIP)
		Headset Profile (HSP)
		Hands Free Profile (HFP)
		Basic Printing Profile (BPP)
		VDP (Video Distribution Profile)
		AVRCP (Audio Video Remote Control Profile)

AUDIO/MULTIMEDIA - DTS SOUND+

Hardware	**Implementation**	Realtek ALC3227-CG
	Function Key Volume Controls	Volume up, volume down, and mute
	Full Duplex	Yes
	Microphone In	Stereo
	Headphone/Line Out	Stereo
	Integrated Microphone	Yes, dual digital microphone array
Audio Output Quality	**Frequency Response**	10 Hz – .454*Fs
	Signal to Noise Ratio	95 dB (DAC), 88dB (ADC)
	Total Harmonic Distortion	0.01%
	Play/Record Sampling Rate(s)	44.1k/48k/96k/192kHz
	DAC	16, 20 or 24-bit
	ADC	16, 20 or 24-bit
Integrated Stereo Speakers	**Power Rating**	2 Watts
	Impedance	4 Ohms

POWER

HP 45W Smart AC	**Dimensions**	3.74 x 1.57 x 1.04 in (9.5 x 4.0 x 2.65 cm)

Technical Specifications

Adapter	**Input**	90 to 265 VAC	
		Input Efficiency	87.74% min at 115 VAC
		Input frequency range	47 to 63 Hz
		Input AC current	2.31 A at 100 VAC and maximum load
	Output	**Output power**	45W
		DC output	19.5V +5.0%/−5%
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<8A, Over voltage protection- 29V max automatic shutdown
	Connector	3 pin/grounded, mates with interchangeable cords	
	Environmental Design	**Operating temperature**	32° to 95° F (0° to 35° C)
		Non-operating (storage) temperature	-4° to 121° F (-20° to 85° C)
		Altitude	0 to 16,405 ft (0 to 5,000 m)
		Humidity	0% to 95%
		Storage Humidity	0% to 95%
	EMI and Safety Certifications	CE Mark - full compliance with LVD and EMC directives; Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; Reliability - failure rate of less than 0.1% annually within the first three years of operation.	
4-Cell (44 WHr) Lithium-Ion battery	**Dimensions** (H x W x L)	0.86 x 1.4 x 8.0 in (2.18 x 3.56 x 27.72 cm)	
	Weight	≤0.551 lb (250 g)	
	Cells/Type	4-cell Lithium-Ion	
	Energy	Voltage	14.8V DC
		Amp-hour capacity	2850mAh
		Watt-hour Capacity	44 WHr
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 140° F (−10° to 60° C)
		Non-operating	−4° to 140° F (−20° to 60° C)
	Battery Re-Charge Time	System in OFF mode or Standby	2.5 hours
		System ON	3 to 5 hours (depending on system power consumption)
	Fuel Gauge LED	No	
	Warranty	1 year	
	Optional Travel Battery Available	No	
4-cell (40 WHr) Long Life Lithium-Ion battery	**Cells/Type**	4-cell Lithium-Ion	
	Energy	Watt-hour Capacity	40 WHr
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)

QuickSpecs

Technical Specifications

	Operating (Discharging)	14° to 140° F (−10° to 60° C)
	Non-operating	−4° to 140° F (−20° to 60° C)
Battery Re-Charge Time	System in OFF mode or Standby	2.5 hours
	System ON	3 to 5 hours (depending on system power consumption)
Fuel Gauge LED	No	
Warranty	3 years	
Optional Travel Battery Available	No	

ENVIRONMENTAL DATA

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

End-of-life Management and Recycling   Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: 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: 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.

Technical Specifications

Hewlett-Packard Corporate Environmental Information	For more information about HP's commitment to the environment: Global Citizenship Report hp.com/hpinfo/globalcitizenship/gcreport/index.html Environment website hp.com/environment Eco-label certifications hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html ISO 14001 certificates: hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html

Country of Origin

China

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

Type	Description	Part #
Cases	HP Essential Top Load Case	H2W17AA
	HP Essential Backpack (up to 15.6")	H1D24AA
	HP Essential Messenger Case (up to 17.3")	H1D25AA
Docking	HP 3005pr USB 3.0 Port Replicator	H1L08AA
Input/Output – Mice	HP Comfort Grip Wireless Mouse	H2L63AA
	HP 3-Button USB Laser Mouse	H4B81AA
	HP USB Optical Travel mouse	RH304AA
Adapters	HP 45W Smart AC Adapter 4.5mm	H6Y88AA
Security	HP UltraSlim Keyed Cable Lock	H4D73AA
Displays	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