Overview

HP ProBook 430 G3 Notebook PC

Front

1. Microphones (2)
2. Webcam light
3. Webcam
4. Wireless on/off button
5. Speaker mute button

6. Fingerprint reader
7. Touchpad pick buttons
8. Touchpad
9. Power button
10. Speaker array

Not all configuration components are available in all regions/countries.
Americas – HP ProBook 430/440/450 G3 – September 2015 - c04761984

Page 1

QuickSpecs

Overview

Right

1. USB 3.0 ports (2)	4. Ethernet port (RJ-45)
2. HDMI port	5. Security lock slot
3. External VGA monitor port	

Left

1. Power connector	3. Headphone/Microphone combo jack
2. USB 2.0 port (power port)	4. SD Card reader

Not all configuration components are available in all regions/countries.
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QuickSpecs

Overview

HP ProBook 440 G3 Notebook PC

Front

1. Microphones (2)
2. Webcam light
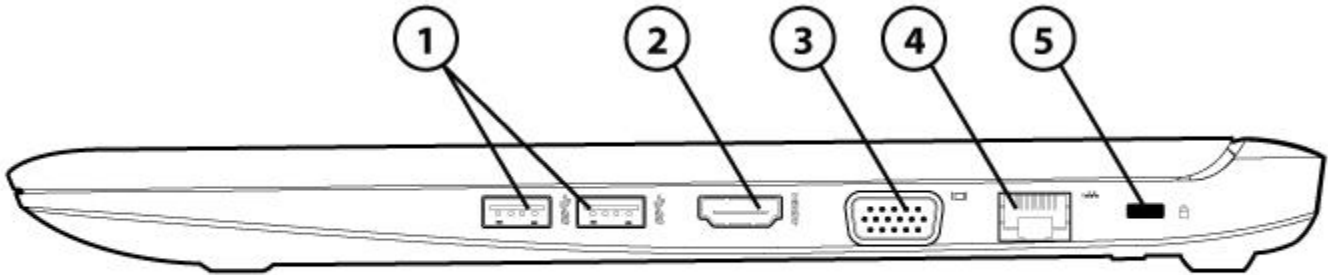3. Webcam
4. Wireless on/off button
5. Speaker mute button
6. Fingerprint reader
7. Touchpad pick buttons
8. Touchpad
9. Power button
10. Speaker array

Not all configuration components are available in all regions/countries.
Americas – HP ProBook 430/440/450 G3 – September 2015 - c04761984
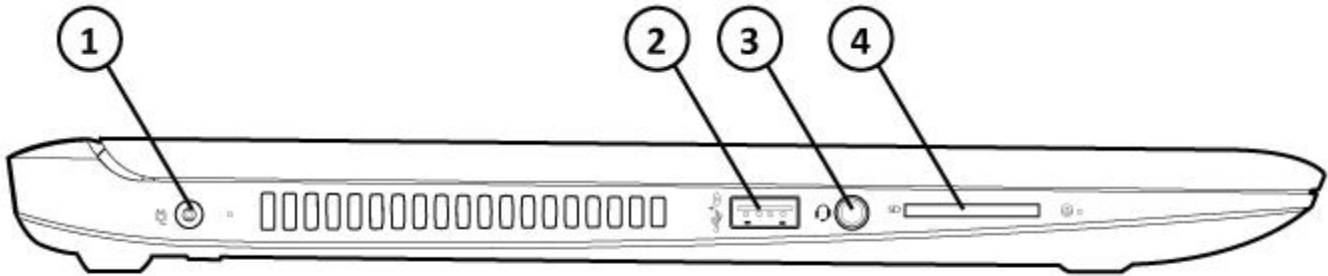
Page 3

QuickSpecs

Overview

Right

1. USB 3.0 ports (2)
2. HDMI port
3. External VGA monitor port

4. Ethernet port (RJ-45)
5. Security lock slot
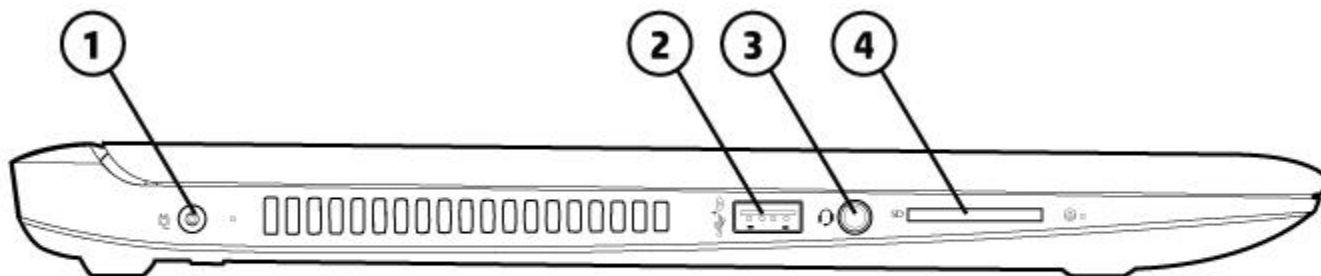
Left

1. Power connector
2. USB 2.0 port (power port)
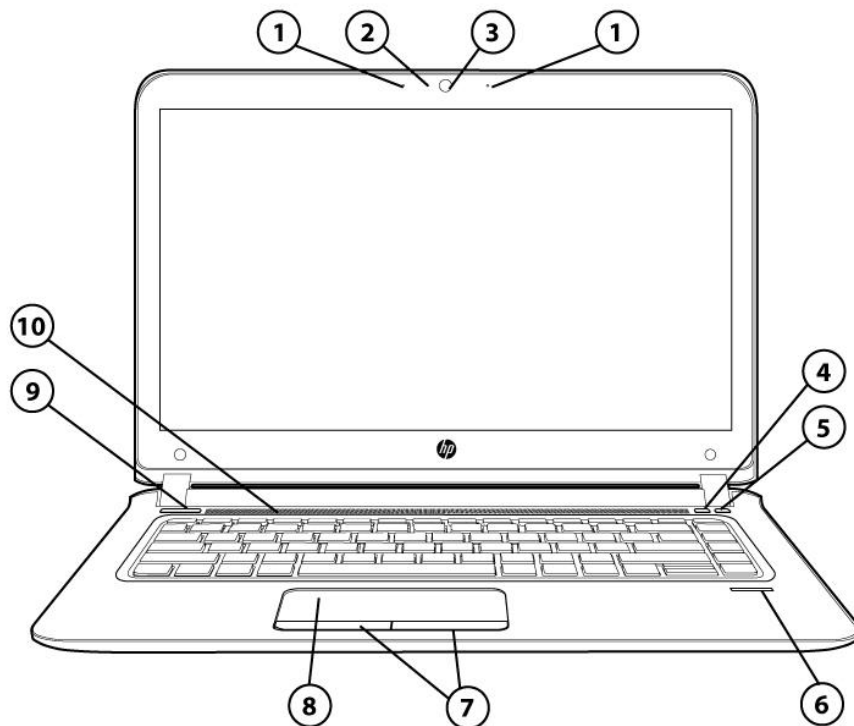
3. Headphone/Microphone combo jack
4. SD Card reader

Not all configuration components are available in all regions/countries.
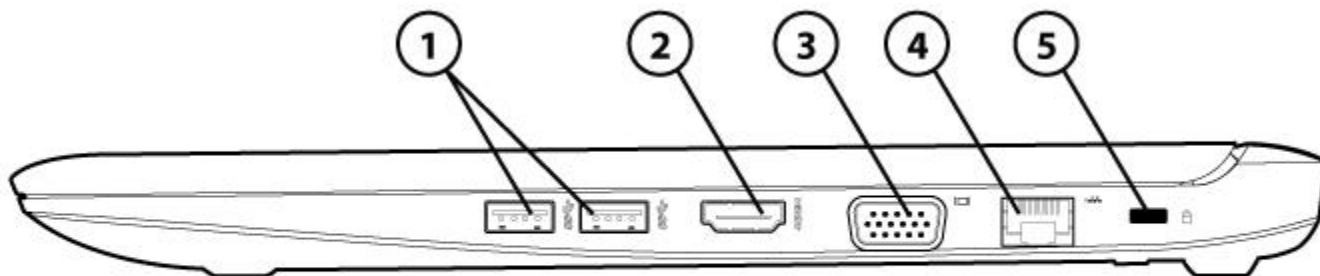Americas – HP ProBook 430/440/450 G3 – September 2015 - c04761984

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Overview

HP ProBook 450 G3 Notebook PC
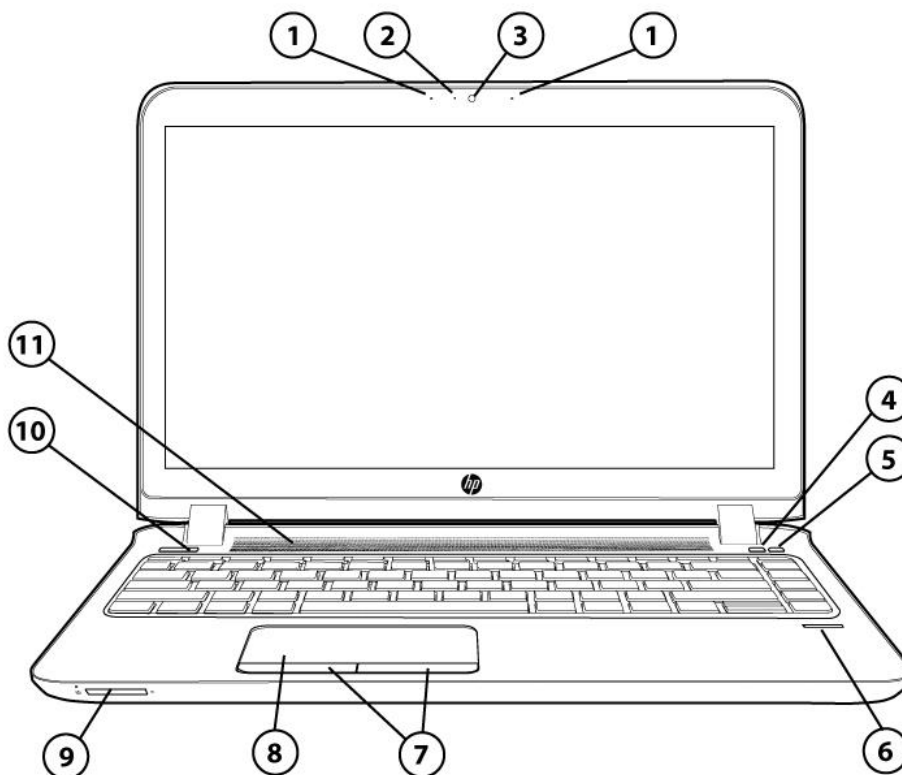
Front

1. Microphones (2)
2. Webcam light
3. Webcam
4. Wireless on/off button
5. Speaker mute button
6. Fingerprint reader
7. Touchpad pick buttons
8. Touchpad
9. SD Card reader
10. Power button
11. Speaker array

Not all configuration components are available in all regions/countries.
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Page 5
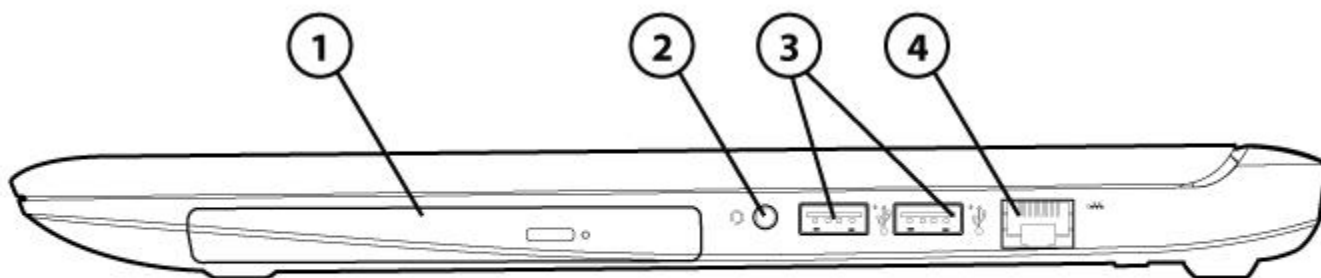
Overview

Right

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

4. Ethernet port (RJ-45)

Left

1. Power connector
2. USB 2.0 port (power port)
3. External VGA monitor port

4. HDMI port
5. USB 3.0 ports (2)

Not all configuration components are available in all regions/countries.
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QuickSpecs

Overview

AT A GLANCE

- Windows 10, Windows 8.1, Windows 7 editions, Ubuntu Linux, or FreeDOS 2.0
- Choice of Intel® Core™ or Intel® Pentium® processors
- fFull size HP Premium Keyboard, spill-resistant keyboard with a thin layer of Mylar film to prevent minor spills; full separate numeric keypad
- 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).
- Larger Touchpad with gestures support, on/off button with LED indicator
- Enhanced security features with preinstalled software and hardware options
- Optional HD webcam with dual-microphone array for video conferencing
- HDMI port for connecting to high-resolution displays
- HD audio with DTS Studio Sound™
- Choice of 13.3" diagonal, 14" diagonal, or 15.6" diagonal flat screens or
  14" diagonal, 15.6" diagonal Touch screens
- Flexible wireless connectivity options
- Battery life up to xx hours and xx minutes
- Choice of HP 4-cell, 44 WHr Li-ion battery or optional HP 6-cell, Long Life 55 WHr Li-ion battery

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

Not all configuration components are available in all regions/countries.
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Technical Specifications

PRODUCT NAMES
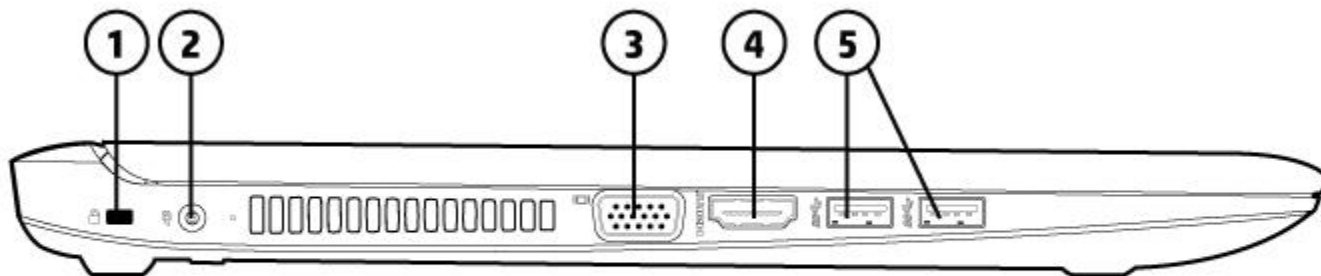
HP ProBook 430 G3 Notebook PC
HP ProBook 440 G3 Notebook PC
HP ProBook 450 G3 Notebook PC

OPERATING SYSTEMS

Preinstalled
Windows 10 Pro 64[1]
Windows 10 Home 64[1]
Windows 8.1 Pro 64[1]
Windows 8.1 64[1]
Windows 7 Professional 64 (available through downgrade rights from Windows 10 Pro)[2]
Windows 7 Professional 64[1]
FreeDOS 2.0

Web only support
Windows 10 Enterprise 64[1]
Windows 8.1 Enterprise 64[1]
Windows 7 Professional 32[1]
Windows 7 Enterprise 64[1]
Windows 7 Enterprise 32[1]

1. Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers and/or software 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.

2. 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.

PROCESSORS

HP ProBook 430 G3
Intel® Core™ i7-6500U with Intel® HD Graphics 520 (2.5 GHz, up to 3.1 GHz with Intel® Turbo Boost Technology, 4 MB cache, 2 cores)[1,2]
Intel® Core™ i5-6300U with Intel® HD Graphics 520 (2.4 GHz, up to 3 GHz with Intel® Turbo Boost Technology, 3 MB cache, 2 cores) [1,2]
Intel® Core™ i5-6200U with Intel® HD Graphics 520 (2.3 GHz, up to 2.8 GHz with Intel® Turbo Boost Technology, 3 MB cache, 2 cores) [1,2]
Intel® Core™ i3-6100U with Intel® HD Graphics 520 (2.3 GHz, 3 MB cache, 2 cores) [1,2]
Intel® Celeron® 3855U with Intel® HD Graphics 510 (1.6 GHz, 2 MB cache, 2 cores) [1,2]
Intel® Pentium® 4405U with Intel® HD Graphics 510 (2.1 GHz, 2 MB cache, 2 cores) [1,2]

HP ProBook 440 G3
Intel® Core™ i7-6500U with Intel® HD Graphics 520 (2.5 GHz, up to 3.1 GHz with Intel® Turbo Boost Technology, 4 MB cache, 2 cores) [1,2]
Intel® Core™ i5-6300U with Intel® HD Graphics 520 (2.4 GHz, up to 3 GHz with Intel® Turbo Boost Technology,

Not all configuration components are available in all regions/countries.
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Technical Specifications

3 MB cache, 2 cores) [1,2]
Intel® Core™ i5-6200U with Intel® HD Graphics 520 (2.3 GHz, up to 2.8 GHz with Intel® Turbo Boost Technology, 3 MB cache, 2 cores) [1,2]
Intel® Core™ i3-6100U with Intel® HD Graphics 520 (2.3 GHz, 3 MB cache, 2 cores) [1,2]
Intel® Celeron® 3855U with Intel® HD Graphics 510 (1.6 GHz, 2 MB cache, 2 cores) [1,2]
Intel® Pentium® 4405U with Intel® HD Graphics 510 (2.1 GHz, 2 MB cache, 2 cores) [1,2]

HP ProBook 450 G3
Intel® Core™ i7-6500U with Intel® HD Graphics 520 (2.5 GHz, up to 3.1 GHz with Intel® Turbo Boost Technology, 4 MB cache, 2 cores) [1,2]
Intel® Core™ i5-6200U with Intel® HD Graphics 520 (2.3 GHz, up to 2.8 GHz with Intel® Turbo Boost Technology, 3 MB cache, 2 cores) [1,2]
Intel® Core™ i3-6100U with Intel® HD Graphics 520 (2.3 GHz, 3 MB cache, 2 cores) [1,2]
Intel® Celeron® 3855U with Intel® HD Graphics 510 (1.6 GHz, 2 MB cache, 2 cores) [1,2]
Intel® Pentium® 4405U with Intel® HD Graphics 510 (2.1 GHz, 2 MB cache, 2 cores) [1,2]

1. 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.
2. HD content required to view HD images.

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

CHIPSET

Integrated with processor

GRAPHICS

Integrated
Intel® HD Graphics 510 or Intel® HD Graphics 520[1]

1. HD content required to view HD images.
NOTE: View processor section for details.

DISPLAYS

HP ProBook 430 G3
Internal
Non-Touch
13.3" diagonal HD[1] anti-glare LED-backlit (1366 x 768)
Touch
13.3" diagonal HD[1] anti-glare LED-backlit touch screen (1366 x 768)
NOTE: Only available with Windows 10 or Windows 8.1.
External

Not all configuration components are available in all regions/countries.
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Technical Specifications

Up to 32-bit per pixel color depth
VGA
Port supports resolutions up to 2048 x 1536 external resolution @60 Hz
HDMI
Supports direct connection to high-definition displays with up to 4096 x 2160 @24 Hz
resolution and 7-channel audio with one convenient cable (Cable not included.)

HP ProBook 440 G3
Internal
Non-Touch
14" diagonal HD[1] anti-glare LED-backlit (1366 x 768)
14" diagonal full HD[1] anti-glare slim LED-backlit (1920 x 1080)
Touch
14" diagonal HD[1] anti-glare LED-backlit touch screen (1366 x 768)
NOTE: Only available with Windows 10 or Windows 8.1.
External
Up to 32-bit per pixel color depth
VGA
Port supports resolutions up to 2048 x 1536 external resolution @60 Hz
HDMI
Supports direct connection to high-definition displays with up to 4096 x 2160 @24 Hz
resolution and 7-channel audio with one convenient cable (Cable not included.)

HP ProBook 450 G3
Internal
Non-Touch
15.6" diagonal HD[1] anti-glare flat LED-backlit (1366 x 768)
15.6" diagonal full HD[1] anti-glare slim LED-backlit (1920 x 1080)
Touch
15.6" diagonal HD[1] anti-glare flat LED-backlit touch screen (1366 x 768)
External
Up to 32-bit per pixel color depth
VGA
Port supports resolutions up to 2048 x 1536 external resolution @ 60 Hz
HDMI
Supports direct connection to high-definition displays with up to 4096 x 2160 @24 Hz
resolution and 7-channel audio with one convenient cable (not included)

1. 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
HP 3D DriveGuard (Windows only)

HP ProBook 430 and 440 G3
Hard Drives
Supports SATA, 7mm, 2.5" Hard Drives
500 GB - 5400 RPM Solid State Hard Drive (8 GB Cache)
500 GB - 7200 RPM Hard Drive

Not all configuration components are available in all regions/countries.
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QuickSpecs

Technical Specifications

1 TB - 5400 RPM Hard Drive

HP ProBook 450 G3
Hard Drives
Supports SATA, 7mm/9.5mm, 2.5" Hard Drives
500 GB - 5400 RPM Hard Drive
500 GB - 5400 RPM Solid State Hard Drive (8 GB Cache)
500 GB - 7200 RPM Hard Drive
1 TB - 5400 RPM Hard Drive
2 TB - 5400 RPM Hard 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

NOTE: For Solid State Drives or Hard 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 8.1 and 10) is reserved for system recovery software.

OPTICAL DRIVES

HP ProBook 430 and 440 G3
External
Support Optional[1] External USB Drive CD/DVD R/RW

HP ProBook 450 G3
Fixed Optional[1] Optical Drive
9.5mm SATA:
DVD+/-RW SuperMulti DL Drive[1,2]
Blu-ray ROM DVD+/-RW SuperMulti DL Drive[1,2]
Weight saver

1. Sold separately as an optional feature.
2. 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 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 2.6 GB 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

Two SODIMM slots
Both slots are customer accessible / upgradeable
DDR3L PC3-12800 (Transfer rates up to 1600 MT/s)
Supports Dual Channel Memory

Standard
4096 MB Total System Memory (4096 MB x 1)
8192 MB Total System Memory (4096 MB x 2) (Dual Channel)
8192 MB Total System Memory (8192 MB x 1)
16384 MB Total System Memory (8192 MB x 2) (Dual Channel)

Technical Specifications

Maximum
Upgradeable to 16384 MB 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

HP ProBook 430 G3
Wireless LAN (WLAN) [1,2]
Realtek 802.11b/g/n (1x1)
Realtek 802.11b/g/n (1x1) and Bluetooth® 4.0 Combo
Broadcom 802.11b/g/n (1x1) and Bluetooth® 4.0 Combo
Broadcom 802.11a/b/g/n (2x2) and Bluetooth® 4.0 Combo
Intel® Dual Band Wireless-AC 3165 802.11a/b/g/n/ac (1x1) WiFi and Bluetooth® 4.0 Combo
Intel® Dual Band Wireless-AC 8260 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo

HP ProBook 440 G3
Wireless LAN (WLAN) [1,2]
Realtek 802.11b/g/n (1x1)
Realtek 802.11b/g/n (1x1) and Bluetooth® 4.0 Combo
Broadcom 802.11b/g/n (1x1) and Bluetooth® 4.0 Combo
Broadcom 802.11a/b/g/n (2x2) and Bluetooth® 4.0 Combo
Intel® Dual Band Wireless-AC 3160 802.11a/b/g/n/ac (1x1) WiFi and Bluetooth® 4.0 Combo
Intel® Dual Band Wireless-AC 3165 802.11a/b/g/n/ac (1x1) WiFi and Bluetooth® 4.0 Combo
Intel® Dual Band Wireless-AC 8260 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo

HP ProBook 450 G3
Wireless LAN (WLAN) [1]
Realtek 802.11b/g/n (1x1)
Realtek 802.11b/g/n (1x1) and Bluetooth® 4.0 Combo
Broadcom 802.11b/g/n (1x1) and Bluetooth® 4.0 Combo
Broadcom 802.11a/b/g/n (2x2) and Bluetooth® 4.0 Combo
Intel® Dual Band Wireless-AC 3165 802.11a/b/g/n/ac (1x1) WiFi and Bluetooth® 4.0 Combo
Intel® Dual Band Wireless-AC 8260 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo

1. Wireless access point and Internet service required and sold separately.
Availability of public wireless access points limited.
2. Sold separately or as an optional feature.

Communications
Realtek Ethernet (10/100/1000)

NOTE: 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.

Not all configuration components are available in all regions/countries.
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Technical Specifications

AUDIO/MULTIMEDIA

Audio
HD audio with DTS Studio Sound™
Two stereo speakers
Integrated microphone (dual-microphone array when equipped with optional webcam)
Headphone/microphone combo jack

Webcam
Optional[1] 720p HD[2] webcam[3]

1. Sold separately as an optional feature.
2. HD content required to view HD images.
3. Internet access required.

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

HP Premium Keyboard
The HP spill-resistant keyboard is designed using a thin layer of Mylar film under the keyboard. The 101/102-key compatible keyboard features a full-pitch key layout with desktop keyboard features, such as editing keys, both left and right control and alt keys, and function keys. US and International key layouts are available.
Includes a separate numeric keypad (HP ProBook 450 only.)
Backlit keyboard available as an option.

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).

Function Keys
ESC: system information
F1 - Sleep
F2 - Blank
F3 - Backlight Toggle (for backlit keyboard) or Blank
F4 - Display Switching
F5 - Brightness Down
F6 - Brightness Up
F7 - Blank
F8 - Volume Down
F9 - Volume Up
F10 - Mic Mute
F11 - Blank
F12 – NumLock (430/440); Blank (450)

Hidden Fuctions
o Fn+R --> Break
o Fn+S --> Sys Rq

Not all configuration components are available in all regions/countries.
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Technical Specifications

o Fn+C --> Scroll Lock

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

Touchpad
On/off button (on board)
Taps enabled as default

Gestures
Enabled by default
2 Finger Scrolling
2 Finger Zoom (Pinch)
OSD (enable/disable)
Win8 2 Finger tap = right click
Win8 Edge Swipes

Disabled by default
3 Finger Flick
2 Finger Rotate
Momentum Motion
1 Finger Vertical Scroll

SOFTWARE AND SECURITY

Preinstalled Software
BIOS

HP BIOSphere[1]
HP DriveLock | HP Automatic DriveLock
HP BIOS Protection[2]
Master Boot Record Security
Power On Authentication
Pre-Boot Security
Secure Erase[3]
Hybrid Boot (Windows 8.1 & later)
Measure Boot (Windows 8.1 & later)
Secure Boot (Windows 8.1 & later)
Absolute Persistence Module[4]

Multi Media

Cyberlink Power DVD, BD
Cyberlink Power2Go (Secure Burn)
Cyberlink YouCam BE (Windows 7 only)

Communication

HP GPS and Location (Windows 7 only)[5]
HP Connection Manager with support for HP Mobile Connect (Windows 7 only)[6]
HP Mobile Connect (Windows 8.1 & later)[6]

Not all configuration components are available in all regions/countries.
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Technical Specifications

Intel® Wireless Display (WiDi) Software for Windows[7]
Native Miracast Support[8]

HP Value Add Software

HP 3D DriveGuard

HP ePrint Driver[9]

HP Hotkey

HP Recovery Manager

HP Recovery Disc Creator

HP Unified Recovery Manager (Windows 8.1 and 10 only)

HP Registration App (Windows 8.1 & later)

HP Support Assistant

HP Noise Reduction Software

3rd Party

Foxit PhantomPDF Express for HP
HP Caller Dashboard Built by Thug Labs

Microsoft Products

Buy Office
Bing Search
Skype[10]

Manageability

HP Driver Packs[11]
HP SoftPaq Download Manager (SDM)
HP System Software Manager (SSM)[11]
HP BIOS Config Utility (BCU)[11]
HP Client Catalog[11]
HP CIK for Microsoft SCCM[11]
LANDESK Management[12]

For more information on HP Client Management Solutions refer to: http://www.hp.com/go/clientmanagement.

Client Security Software

Absolute Persistence Module
HP Drive Encryption[13]
HP Security Manager
Microsoft Security Essentials [14]
Microsoft Defender

Not all configuration components are available in all regions/countries.
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QuickSpecs

Technical Specifications

Security
Pre-boot Authentication
Security lock slot (Lock sold separately.)
Optional[15] Fingerprint Reader
TPM

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.

For more information on HP Client Security Software Suite, refer to http://www.hp.com/go/clientsecurity.

1. Available only on business PCs with HP BIOS.
2. May require a manual recovery step if all copies of BIOS are compromised or deleted.
3. For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88.
4. Absolute 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, customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens from Absolute Software.
5. 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.
6. HP Mobile Connect is only available on preconfigured devices with WWAN. For geographic availability refer to www.hp.com/go/mobileconnect
7. Integrated Intel® Wi-Di Display is available on select configurations only and requires a separate projector, TV or monitor with an integrated or external Wi-Di receiver. For more information on Intel® Wi-Di Display visit www.intel.com/go/wirelessdisplay
8. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming media players that also support Miracast. You can use Miracast to share what you're doing on your PC and present a slide show. For more information: http://windows.microsoft.com/en-us/windows-8/project-wireless-screen-miracast
9. 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). 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.
10. Skype is not offered in China.
11. Not preinstalled, however available on manageability website.
12. Subscription required.
13. Data is protected prior to Drive Encryption login. Turning the PC off or into hibernate logs out of Drive Encryption and prevents data access.
14. Opt in and internet connection required for updates.
15. Sold separately as an optional feature.

Not all configuration components are available in all regions/countries.
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Technical Specifications

POWER

Power Supply
HP ProBook 430 /440 /450 G3
45 W Smart AC adapter
45 W Smart AC adapter 2-prong (Japan only)
65 W EM Smart AC adapter (China and India only)

Battery
HP 4-cell, 44 WHr Li-ion
Optional[1] HP 6-cell, Long Life 55 WHr Li-ion
(HP Fast Charge is available on 6-cell battery only.)

    1.   Sold separately as an optional feature.

Battery Time

	Configurations with integrated graphics (Windows 8.1)	Configurations with discrete graphics (Windows 8.1)
HP ProBook 430 G3		
HP 4-cell (44 WHr) battery	Up to 9 hours[1]	NA
HP 6-cell (55 WHr) long life battery	Up to 10 hours[1]	NA
HP ProBook 440 G3		
HP 4-cell (44 WHr) battery	Up to 9 hours[1]	Up to 8 hours 45 min[1]
HP 6-cell (55 WHr) long life battery	Up to 10 hours[1]	Up to 9 hours 45 min[1]
HP ProBook 450 G3		
HP 4-cell (44 WHr) battery	Up to 8 hours 30 min[1]	Up to 8hours 15 min[1]
HP 6-cell (55 WHr) long life battery	Up to 9 hours 15 min[1]	Up to 9 hours[1]

    1.   Windows 8.1 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 for additional details.

System Standby Time

4-cell (44 WHr) battery	Up to 15 days
6-cell (55 WHr) long life battery	Up to 16 days

NOTE: Standby time 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.

Power Conservation

Not all configuration components are available in all regions/countries.
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Technical Specifications

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 430 G3
Weight
Starting at 3.31 lbs (1.5 kg)
Dimensions
Non-Touch
12.83 x 9.19 x 0.78 to 0.83 in (front to rear)
32.6 x 23.35 x 1.99 to 2.09 cm (front to rear)
Touch
12.83 x 9.2 x 0.84 to 0.88 in (front to rear)
32.6 x 23.37 x 2.14 to 2.24 cm (front to rear)

HP ProBook 440 G3
Weight
Starting at 3.69 lbs (1.68 kg)
Dimensions
Non-Touch
13.35 x 9.61 x 0.78 to 0.83 in (front to rear)
33.92 x 24.4 x 1.99 to 2.09 cm (front to rear)
Touch
13.35 x 9.61 x 0.85 to 0.89 in (front to rear)
33.92 x 24.42 x 2.15 to 2.25 cm (front to rear)

HP ProBook 450 G3
Weight
Starting at 4.56 lbs (2.07 kg)
Dimensions
Non-Touch
14.88 x 10.41 x 0.94 to 0.98 in
37.8 x 26.43 x 2.38 to 2.48 cm (front to rear)
Touch
14.88 x 10.42 x 1 to 1.04 in (front to rear)
37.8 x 26.46 x 2.55 to 2.65 cm (front to rear)

HP ProBook 470 G3
Weight
Starting at 5.75 lbs (2.61 kg)
Dimensions
Non-Touch
16.41 x 11.44 x 0.98 to 1.02 in (front to rear)
41.68 x 29.05 x 2.5 to 2.6 cm (front to rear)

Not all configuration components are available in all regions/countries.
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NOTE: Height varies depending upon where on the notebook the measurement is made.
Weight varies by configuration and components.

PORTS/SLOTS

Ports
430/440
2 USB 3.0
1 USB 2.0 (power port)
1 HDMI
1 headphone/microphone combo
1 AC power
1 RJ-45
1 VGA

450
2 USB 3.0
2 USB 2.0
1 HDMI
1 headphone/microphone combo
1 AC power
1 RJ-45
1 VGA

NOTE: All cables are not included and sold separately.

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

SERVICE AND SUPPORT

HP Services offers 3 year, 1 year and 90 day limited warranty options depending on country. 1 year limited warranty on primary battery. On-site service and optional extended service contracts are also available. Optional[1] HP Services[2] are extended service contracts which go beyond your standard limited warranties. For more details visit: http://www.hp.com/go/lookuptool.

1. Sold separately or as an optional feature.
2. Service levels and response times for HP Care Packs may vary depending on your geographic location. Service starts on date of hardware purchase. Restrictions and limitations apply. HP services are governed by the applicable HP terms and conditions of service provided or indicated to Customer at the time of purchase. Customer may have additional statutory rights according to applicable local laws, and such rights are not in any way affected by the HP terms and conditions of service or the HP Limited Warranty provided with your HP Product. 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.

Not all configuration components are available in all regions/countries.
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Not all configuration components are available in all regions/countries.
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Technical Specifications

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)	Nominal Operating Voltage	19 V		
	Average Operating Power	Win 7	Win8	Max
	ProBook 440			
	Integrated graphics	6.78W	6.78W	38.88W
	Discrete graphics	4.49W	4.49W	31.87W
	ProBook 450			
	Integrated graphics	8.89W	8.89W	39.33W
	Discrete graphics	6.79W	6.79W	38.42W
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 G3, HP ProBook 440 G3 and HP ProBook 450 G3 that are ENERGY STAR® qualified are identified as HP ProBook 430 G3 ENERGY STAR, HP ProBook 440 G3 ENERGY STAR and HP ProBook 450 G3 ENERGY STAR on HP websites and on www.energystar.gov.

** EPEAT® registration varies by country. See www.epeat.net for registration status by country. EPEAT status listed above applies to U.S. For accessibility information on HP products, please visit: http://www.hp.com/accessibility.

DISPLAYS

13.3" diagonal HD1 anti-glare LED-backlit (1366 x 768)	Outline Dimensions (W x H x D)	314.6 x 189.2 mm max. (w/ bracket & PCB) D(Flat): 3.6mm max. D(Slim): 3.0mm max.

Technical Specifications

Active Area	293.42 x 164.97 mm		
Weight	Flat: 290g max. Slim: 260 max.		
Diagonal Size	13.3"		
Surface Treatment	Anti-glare		
Contrast Ratio	300:1 (typ)		
Refresh Rate	60Hz		
Brightness	220 nit typ		
Pixel Resolution	1366 x 768 (HD)		
Interface	eDP 1.2 (1 lane)		
LCD Mode	SVA		
PPI	118		
Viewing Angle	SVA 45/45/25/35		

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

Outline Dimensions (W x H x D)	320.9x205.6x3.0mm max (panel + PCBA)		
Active Area	309.14x173.89		
Weight	290g max. (To be updated w/ real measure data)		
Diagonal Size	14.0"		
Surface Treatment	Anti-glare		
Contrast Ratio	300:1 (typ) - AG		
Refresh Rate	60Hz		
Brightness	220 nit typ		
Pixel Resolution	1920 x 1080 (FHD)		
Interface	eDP 1.2 (2 lane)		
LCD Mode	SVA		
PPI	157		
Viewing Angle	SVA 45/45/25/35		

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

Dimensions (W x H)	12.63 x 7.39 in (32.09 x 18.76 cm)		
Weight	320g max.		
Diagonal Size	14.0 in (35.6cm)		
Surface Treatment	Anti-glare		
Contrast Ratio	400:1 (typical)		
Refresh Rate	60 Hz		
Brightness	220 nit (typical)		
Pixel Resolution	**Pitch**	0.227 mm	
	Format	1366 x 768	
	Configuration	RGB Stripe	

Not all configuration components are available in all regions/countries.
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Backlight	LED
PPI	112 ppi
Viewing Angle	±30° Horizontal, ±10° Vertical (minimum) 30/30/20/10 (Left/Right/Down/Up) (minimum) or 45/45/35/25 (Left/Right/Down/Up) (typical)

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

Outline Dimensions (W x H x D)	360.0 x 224.3 x 3.8mm max.
Active Area	344.2 x 193.5
Weight	420 max.
Diagonal Size	15.6"
Surface Treatment	Anti-glare
Contrast Ratio	300:1 (typ) - AG
Refresh Rate	60Hz
Brightness	220 nit typ
Pixel Resolution	1366 x 768 (HD)
Interface	eDP 1.2 (1 lane)
LCD Mode	SVA
PPI	101
Viewing Angle	SVA 40/40/15/30

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

Outline Dimensions (W x H x D)	360.0 x 224.3 x 3.2mm max.
Active Area	344.16 x 193.59
Weight	370g max.
Diagonal Size	15.6"
Surface Treatment	Anti-glare
Contrast Ratio	300:1 (typ) - AG
Refresh Rate	60Hz
Brightness	220 nit typ
Pixel Resolution	1920 x 1080 (FHD)
Interface	eDP 1.2 (2 lane)
LCD Mode	SVA
PPI	142
Viewing Angle	SVA 45/45/25/35

Not all configuration components are available in all regions/countries.
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STORAGE AND DRIVES

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)	
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	5400 rpm	
Logical Blocks	976,773,168	
Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
Features	ATA Security	

500 GB* 7200 rpm SATA Hard Drive

Drive Weight	0.25 lbs (115g)	
Capacity	500 GB	
Height	0.276 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	

1 TB* 5400 rpm SATA Hard Drive

Drive Weight	117g	
Capacity	1TB	
Height	9.5mm	
Width	70.1mm	
Interface	ATA-8, SATA 3.0	
Transfer Rate	Synchronous 600MB/s (maximum)	
Seek Time (typical reads, including settling)	**Single Track**	2ms
	Average	12ms
	Maximum	22ms

Not all configuration components are available in all regions/countries.
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Technical Specifications

	Rotational Speed	5400rpm	
	Logical Blocks	1,953,525,168	
	Operating Temperature	0-60℃	
	Features	ATA Security, S.M.A.R.T., NCQ, Ultra DMA	
2 TB* - 5400 RPM Hard Drive	**Drive Weight**	130g	
	Capacity	2TB	
	Height	9.5mm	
	Width	70.1mm	
	Interface	ATA-8, SATA 3.0	
	Transfer Rate	**Synchronous** (maximum)	600MB/s
	Seek Time (typical reads, including settling)	**Single Track**	2ms
		Average	12ms
		Maximum	22ms
	Rotational Speed	5400rpm	
	Logical Blocks	3,907,029,168	
	Operating Temperature	0-60℃	
	Features	ATA Security, S.M.A.R.T., NCQ, Ultra DMA	

SOLID STATE DRIVES

SSD 128GB 2280 M2 SATA-3	**Drive Weight**	0.022 lb (10 g)	
	Capacity	128 GB	
	Height	0.14 in (3.7 mm)	
	Width	0.87 in (22 mm)	
	Interface	ATA-8, SATA 3.0	
	Performance	**Maximum Sequential Read**	**Maximum Sequential Write**
		Up to 520 MB/s	Up to 140 MB/s
	Logical Blocks	250069680	
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]	
	Features	DIPM; TRIM; DEVSLP	
	Security Features	ATA Security	

SSD 256GB 2280 M2 SATA-3	**Drive Weight**	0.022 lb (10 g)	
	Capacity	256 GB	
	Height	0.14 in (3.58 mm)	
	Width	0.87 in (22 mm)	
	Interface	ATA-8, SATA 3.0	
	Performance	**Maximum Sequential Read**	**Maximum Sequential Write**
		Up to 520 MB/s	Up to 270 MB/s
	Logical Blocks	250069680	

Not all configuration components are available in all regions/countries.
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Technical Specifications

Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
Features	DIPM; TRIM; DEVSLP
Security Features	ATA Security

OPTICAL DRIVES

DVD+/-RW SuperMulti DL Drive	**Access Times**	Random	<140ms CD (typical) < 160 ms DVD (typical)
	Weight	170g max.	
	Max Data Transfer Rate	24X CD-ROM	
		8X DVD	
		24X CD-R	
		24X CD-RW	
		8X DVD+R	
		8X DVD+RW	
		8X DVD-R	
		6X DVD-RW	
		6X - DVD+R Dual Layer	
		6X - DVD-R Dual Layer	
		5X DVD-RAM	
	Transfer Mode	UDMA Mode 5	
	Interface	Gen 1 SATA	
	Supported Media (read)	CD-DA, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	
	Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM, DVD+R DL, DVD-R DL	
	Max Media Capacity (read)	8.5 GB	
	Max Media Capacity (write)	8.5 GB	
	Transport	Tray Loading	
Blu-ray ROM DVD+/-RW SuperMulti DL Drive*	**Access Times**	Random	<190 ms CD-ROM (typical) < 180ms DVD-ROM (typical) <230 ms BD-ROM (typical)
	Weight	170g max.	
	Max Data Transfer Rate	24X CD-ROM	
		8X DVD-ROM	
		24X CD-R	
		16X CD-RW	

Not all configuration components are available in all regions/countries.
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	8X DVD+R
	8X DVD+RW
	8X DVD-R
	6X DVD-RW
	4X - DVD+R Dual Layer
	4X - DVD-R Dual Layer
	5X DVD-RAM
	6X BD-ROM
Transfer Mode	UDMA Mode 5
Interface	Gen 1 SATA
Supported Media (read)	CD-DA, , CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW. DVD-RAM, BD-ROM, BD-R, BD-RE
Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+R DL, DVD+RW, DVD-R, DVD-R DL, DVD-RW, DVD-RAM
Max Media Capacity (read)	50.0 GB
Max Media Capacity (write)	8.5GB
Transport	Tray Loading

SECURITY

HP Synaptics VFM 495 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	200 pixel wide fingerpring image 16.5 mm x 3 mm sensor area 508 dpi resolution, 256 levels of grayscale

NETWORKING/COMMUNICATIONS

WLAN

Intel® Dual Band Wireless-AC 3160 802.11a/b/g/n/ac (1x1) WiFi and Bluetooth® 4.0 Combo - TBD
Intel® Dual Band Wireless-AC 3165 802.11a/b/g/n/ac (1x1) WiFi and Bluetooth® 4.0 Combo - TBD
Intel® Dual Band Wireless-AC 8260 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo – TBD

Realtek 802.11 b/g/n (1x1)

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Technical Specifications

Wireless LAN Standards	IEEE 802.11b
	IEEE 802.11g
	IEEE 802.11n
Interoperability	Wi-Fi certified
Frequency Band	802.11b/g/n

- 2.402 – 2.482 GHz
  Note:
  The FCC has declared as of September 1, 2014 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.

Data Rates	802.11b: 1, 2, 5.5, 11 Mbps
	802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
	802.11n: MCS 0 ~ MCS 07, (20MHz)
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 CCX4 and CCX Lite
- 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]

- 802.11b : +16dBm minimum
- 802.11g : +14dBm minimum
- 802.11a : +14dBm minimum
- 802.11n HT20(2.4GHz) : +13dBm minimum
- 802.11n HT40(2.4GHz) : +13dBm minimum
- 802.11n HT20(5GHz) : +12dBm minimum
- 802.11n HT40(5GHz) : +12dBm minimum

Power Consumption	Transmit: 2.0 W (max)

Not all configuration components are available in all regions/countries.
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	Receive: 1.6 W (max)
	Idle mode (PSP): 180 mW (WLAN Associated)
	Idle mode: 60 mW (WLAN unassociated)
	Radio disabled: 30 mW
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity[3]	802.11b, 1Mbps : -94dBm maximum
	802.11b, 11Mbps : -86dBm maximum
	802.11g, 6Mbps : -88dBm maximum
	802.11g, 54Mbps : -74dBm maximum
	802.11a, 6Mbps : -86dBm maximum
	802.11a, 54Mbps : -72dBm maximum
	802.11n, MCS07 : -69dBm maximum
	802.11n, MCS15 : -66dBm maximum
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure
	Two embedded 2.4 GHz antennas are provided to the card to support WLAN and Bluetooth communications (Support Dual antenna or Single antenna, depend on platform requirement)
Form Factor	PCI-Express M.2 MiniCard
Dimensions	Type 2230 : 2.3 x 22.0 x 30.0 mm
	Or Type 1630 : 2.3 x 16.0 x 30.0 mm
Weight	Type 2230 : 2.8g
	Or
	Type 1630 : 2g
Operating Voltage	3.3v +/- 9%

Not all configuration components are available in all regions/countries.
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Temperature	Operating	
	Non-operating	
Humidity	Operating	
	Non-operating	
Altitude	Operating	
	Non-operating	
LED Activity	LED Amber – Radio OFF; LED White – 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).

Realtek 802.11 b/g/n (1x1) + Bluetooth® Combo

Wireless LAN Standards	IEEE 802.11b
	IEEE 802.11g
	IEEE 802.11n
Interoperability	Wi-Fi certified
Frequency Band	802.11b/g/n

- 2.402 – 2.482 GHz
  Note:
  The FCC has declared as of September 1, 2014 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.

Data Rates	802.11b: 1, 2, 5.5, 11 Mbps
	802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
	802.11n: MCS 0 ~ MCS 07, (20MHz)
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.

Not all configuration components are available in all regions/countries.
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<table>
<tr>
<td></td>
<td>

WPA2 certification
IEEE 802.11i
Cisco Certified Extensions, all versions through CCX4 and CCX Lite
WAPI

</td>
</tr>
<tr>
<td>Network Architecture Models</td>
<td>Ad-hoc (Peer to Peer)
Infrastructure (Access Point Required)</td>
</tr>
<tr>
<td>Roaming</td>
<td>IEEE 802.11 compliant roaming between access points</td>
</tr>
<tr>
<td>Output Power[2]</td>
<td>

802.11b : +16dBm minimum
802.11g : +14dBm minimum
802.11n HT20(2.4GHz) : +13dBm minimum
802.11n HT40(2.4GHz) : +13dBm minimum
802.11n HT20(5GHz) : +12dBm minimum
802.11n HT40(5GHz) : +12dBm minimum

</td>
</tr>
<tr>
<td>Power Consumption</td>
<td>Transmit: 2.0 W (max)
Receive: 1.6 W (max)
Idle mode (PSP): 180 mW (WLAN Associated)
Idle mode: 60 mW (WLAN unassociated)

Radio disabled: 30 mW</td>
</tr>
<tr>
<td>Power Management</td>
<td>ACPI and PCI Express compliant power management
802.11 compliant power saving mode</td>
</tr>
<tr>
<td>Receiver Sensitivity[3]</td>
<td>802.11b, 1Mbps : -94dBm maximum

802.11b, 11Mbps : -86dBm maximum

802.11g, 6Mbps : -88dBm maximum

802.11g, 54Mbps : -74dBm maximum

802.11n, MCS07 : -69dBm maximum

802.11n, MCS15 : -66dBm maximum</td>
</tr>
<tr>
<td>Antenna type</td>
<td>High efficiency antenna with spatial diversity, mounted in the display enclosure

Two embedded antennas for 2.4GHz are provided to the card to support WLAN and Bluetooth communications.
(Support Dual antenna or Single antenna, depend on platform requirement)</td>
</tr>
</table>

Not all configuration components are available in all regions/countries.
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Technical Specifications

Form Factor	PCI-Express M.2 MiniCard	
Dimensions	Type 2230 : 2.3 x 22.0 x 30.0 mm	
	Or Type 1630 : 2.3 x 16.0 x 30.0 mm	
Weight	Type 2230 : 2.8g	
	Or	
	Type 1630 : 2g	
Operating Voltage	3.3v +/- 9%	
Temperature	Operating Non-operating	14° to 158° F (–10° to 70° C) –40° to 176° F (–40° to 80° C)
Humidity	Operating Non-operating	10% to 90% (non-condensing) 5% to 95% (non-condensing)
Altitude	Operating Non-operating	0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)
LED Activity	LED Amber – Radio OFF; LED White – 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).

HP Integrated Module with Bluetooth 4.0+EDR Wireless Technology

Bluetooth Specification	4.0+EDR Compliant
Frequency Band	2402 to 2480 MHz
Number of Available Channels	79 (1 MHz) available channels
Data Rates and Throughput	3 Mbps data rate; throughput up to 2.17 Mbps
	Synchronous Connection Oriented links up to 3, 64 kbps, voice channels

Not all configuration components are available in all regions/countries.
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Technical Specifications

<table>
<tr><td></td><td>Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric</td></tr>
<tr><td>**Transmit Power**</td><td>The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of +4 dBm for BR and EDR.</td></tr>
</table>

Receiver Sensitivity

Modulation	0.01% BER	0.001% BER
GFSK	-80 dBm	-70 dBm
π/4-DQPSK	-80 dBm	-70 dBm
8DPSK	-80 dBm	-70 dBm

<table>
<tr><td>**Power Consumption**</td><td>Peak (Tx) 330 mW
Peak (Rx) 230 mW
Selective Suspend 17 mW</td></tr>
<tr><td>**Range**</td><td>Up to 33 ft (10 m)</td></tr>
<tr><td>**Electrical Interface**</td><td>USB 2.0 compliant</td></tr>
<tr><td>**Bluetooth Software Supported**</td><td>Microsoft Windows Bluetooth Software</td></tr>
<tr><td>**Link Topology**</td><td></td></tr>
<tr><td>**Electrical Interface**</td><td>Point to Point, Multipoint Pico Nets up to 7 slaves</td></tr>
<tr><td>**Bluetooth Software Supported**</td><td>Full support of Bluetooth Security Provisions</td></tr>
<tr><td>**Security**</td><td></td></tr>
<tr><td>**Power Management**</td><td>Microsoft Windows ACPI, and USB Bus Support</td></tr>
<tr><td>**Power Management**</td><td>Self-configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff</td></tr>
<tr><td>**Certifications**</td><td></td></tr>
<tr><td>**Security**</td><td>All necessary regulatory approvals for supported countries, including:</td></tr>
<tr><td>**Certifications**</td><td>FCC (47 CFR) Part 15C, Section 15.247 & 15.249</td></tr>
<tr><td>**Bluetooth Profiles Supported**</td><td></td></tr>
<tr><td>**Power Management**</td><td>ETS 300 328, ETS 300 826</td></tr>
<tr><td>**Certifications**</td><td>Low Voltage Directive IEC950</td></tr>
</table>

Not all configuration components are available in all regions/countries.
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Technical Specifications

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

Broadcom 802.11 b/g/n (1x1) + Bluetooth® Combo

Wireless LAN Standards	IEEE 802.11b
	IEEE 802.11g
	IEEE 802.11n
Interoperability	Wi-Fi certified
Frequency Band	802.11b/g/n

- 2.402 – 2.482 GHz
  Note:
  The FCC has declared as of September 1, 2014 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.

Data Rates	802.11b: 1, 2, 5.5, 11 Mbps
	802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
	802.11n: MCS 0 ~ MCS 07, (20MHz)
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

Not all configuration components are available in all regions/countries.
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Technical Specifications

- WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.
- WPA2 certification
- IEEE 802.11i
- Cisco Certified Extensions, all versions through CCX4 and CCX Lite
- 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]

- 802.11b : +16dBm minimum
- 802.11g : +14dBm minimum
- 802.11n HT20(2.4GHz) : +13dBm minimum
- 802.11n HT40(2.4GHz) : +13dBm minimum
- 802.11n HT20(5GHz) : +12dBm minimum
- 802.11n HT40(5GHz) : +12dBm minimum

Power Consumption   Transmit: 2.0 W (max)
Receive: 1.6 W (max)
Idle mode (PSP): 180 mW (WLAN Associated)
Idle mode: 60 mW (WLAN unassociated)

Radio disabled: 30 mW

Power Management   ACPI and PCI Express compliant power management
802.11 compliant power saving mode

Receiver Sensitivity[3]   802.11b, 1Mbps : -94dBm maximum

802.11b, 11Mbps : -86dBm maximum

802.11g, 6Mbps : -88dBm maximum

802.11g, 54Mbps : -74dBm maximum

802.11n, MCS07 : -69dBm maximum

802.11n, MCS15 : -66dBm maximum

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

Two embedded antennas for 2.4GHz are provided to the card to support WLAN and Bluetooth communications.
(Support Dual antenna or Single antenna, depend on platform requirement)

Not all configuration components are available in all regions/countries.
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Technical Specifications

Form Factor	PCI-Express M.2 MiniCard	
Dimensions	Type 2230 : 2.3 x 22.0 x 30.0 mm	
	Or Type 1630 : 2.3 x 16.0 x 30.0 mm	
Weight	Type 2230 : 2.8g	
	Or	
	Type 1630 : 2g	
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 Amber − Radio OFF; LED White – 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).

HP Integrated Module with Bluetooth 4.0+EDR Wireless Technology

Bluetooth Specification	4.0+EDR Compliant
Frequency Band	2402 to 2480 MHz
Number of Available Channels	79 (1 MHz) available channels
Data Rates and Throughput	3 Mbps data rate; throughput up to 2.17 Mbps
	Synchronous Connection Oriented links up to 3, 64 kbps, voice channels
	Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric

Not all configuration components are available in all regions/countries.
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QuickSpecs

Technical Specifications

Transmit Power	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of +4 dBm for BR and EDR.

Receiver Sensitivity	Modulation	0.01% BER	0.001% BER
	GFSK	-80 dBm	-70 dBm
	π/4-DQPSK	-80 dBm	-70 dBm
	8DPSK	-80 dBm	-70 dBm

Power Consumption	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW
Range	Up to 33 ft (10 m)
Electrical Interface	USB 2.0 compliant
Bluetooth Software Supported	Microsoft Windows Bluetooth Software
Link Topology	
Electrical Interface	Point to Point, Multipoint Pico Nets up to 7 slaves
Bluetooth Software Supported	Full support of Bluetooth Security Provisions
Security	
Power Management	Microsoft Windows ACPI, and USB Bus Support
Power Management	Self-configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff
Certifications	
Security	All necessary regulatory approvals for supported countries, including:
Certifications	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
Bluetooth Profiles Supported	
Power Management	ETS 300 328, ETS 300 826
Certifications	Low Voltage Directive IEC950
Certifications	UL, CSA, and CE Mark
Bluetooth Profiles Supported	Serial Port Profile (SPP)[1] Service Discovery Application Profile (SDAP)

Not all configuration components are available in all regions/countries.
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Technical Specifications

Dial-Up Networking (DUN)[1,2]
Generic Object Exchange Profile (GOEP)[1,2]
Object Push Profile (OPP)[1,2]
File Transfer Profile (FTP)
Synchronization Profile (SYNC)
Hard Copy Cable Replacement (HCRP)[1,2]
Personal Area Networking Profile (PAN)[1,2]
Human Interface Device Profile (HID)[1,2]
FAX Profile (FAX)
Basic Imaging Profile (BIP)[2]
Headset Profile (HSP)
Hands Free Profile (HFP)
Advanced Audio Distribution Profile (A2DP)

Broadcom 802.11a/b/g/n (2x2) and Bluetooth® 4.0 Combo

Wireless LAN Standards	IEEE 802.11a
	IEEE 802.11b
	IEEE 802.11g
	IEEE 802.11n
Interoperability	Wi-Fi certified
Frequency Band	802.11b/g/n

- 2.402 – 2.482 GHz

Note:
The FCC has declared as of January 1, 2015 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.

802.11a

- 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

Note:
   Indonesia only supports 5.725 - 5.825 GHz (CH149 - CH161)

Antenna Structure	2 transmit; 2 receive (2x2)
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: MCS 0 ~ MCS 15, (20MHz, and 40MHz)

Not all configuration components are available in all regions/countries.
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Technical Specifications

Modulation	Direct Sequence Spread Spectrum CCK, BPSK, QPSK, 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 CCX4 and CCX Lite • WAPI
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between band Access Points
Output Power[2]	• 802.11b : +16dBm minimum • 802.11g : +14dBm minimum • 802.11a : +14dBm minimum • 802.11n HT20(2.4GHz) : +13dBm minimum • 802.11n HT40(2.4GHz) : +13dBm minimum • 802.11n HT20(5GHz) : +12dBm minimum • 802.11n HT40(5GHz) : +12dBm minimum
Power Consumption	Transmit: 2.0 W (max) Receive: 1.6 W (max) Idle mode (PSP): 180 mW (WLAN Associated) Idle mode: 60 mW (WLAN unassociated) Radio disabled: 30 mW
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity[3]	802.11b, 1Mbps : -94dBm maximum 802.11b, 11Mbps : -86dBm maximum 802.11g, 6Mbps : -88dBm maximum 802.11g, 54Mbps : -74dBm maximum 802.11a, 6Mbps : -86dBm maximum 802.11a, 54Mbps : -72dBm maximum 802.11n, MCS07 : -69dBm maximum 802.11n, MCS15 : -66dBm maximum
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 and Bluetooth communications
Form Factor	PCI-Express M.2 MiniCard
Dimensions	Type 2230 : 2.3 x 22.0 x 30.0 mm Or Type 1630 : 2.3 x 16.0 x 30.0 mm
Weight	Type 2230 : 2.8g

Not all configuration components are available in all regions/countries.
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Technical Specifications

	Or	
	Type 1630 : 2g	
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-
	Non-operating	condensing)
		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 Amber - Radio OFF; LED White - 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).

HP Integrated Module with Bluetooth 4.0+EDR Wireless Technology

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	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	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of +4 dBm for BR and EDR.

Receiver Sensitivity

Modulation	0.01% BER	0.001% BER
GFSK	-80 dBm	-70 dBm
π/4-DQPSK	-80 dBm	-70 dBm
8DPSK	-80 dBm	-70 dBm

Power Consumption	Peak (Tx) 330 mW
	Peak (Rx) 230 mW
	Selective Suspend 17 mW
Range	Up to 33 ft (10 m)
Electrical Interface	USB 2.0 compliant
Bluetooth Software Supported Link Topology	Microsoft Windows Bluetooth Software
Electrical Interface	Point to Point, Multipoint Pico Nets up to 7 slaves
Bluetooth Software Supported Security	Full support of Bluetooth Security Provisions
Power Management	Microsoft Windows ACPI, and USB Bus Support
Power Management Certifications	Self-configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff
Security	All necessary regulatory approvals for supported countries, including:
Certifications Bluetooth Profiles Supported	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
Power Management Certifications	ETS 300 328, ETS 300 826
	Low Voltage Directive IEC950

Not all configuration components are available in all regions/countries.
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Technical Specifications

Certifications **Bluetooth Profiles Supported**		UL, CSA, and CE Mark Serial Port Profile (SPP)[1] Service Discovery Application Profile (SDAP) Dial-Up Networking (DUN)[1,2] Generic Object Exchange Profile (GOEP)[1,2] Object Push Profile (OPP)[1,2] File Transfer Profile (FTP) Synchronization Profile (SYNC) Hard Copy Cable Replacement (HCRP)[1,2] Personal Area Networking Profile (PAN)[1,2] Human Interface Device Profile (HID)[1,2] FAX Profile (FAX) Basic Imaging Profile (BIP)[2] Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP)
Realtek Ethernet **(10/100/1000)**	**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

Not all configuration components are available in all regions/countries.
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Technical Specifications

NIC Device Driver Name	Realtek PCIe GBE Ethernet Family Controller

AUDIO/MULTIMEDIA

DTS STUDIO SOUND™

Hardware	**Implementation**	Conexant
	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**	20Hz – 20kHz
	Signal to Noise Ratio	106 dB (DAC), 102dB (ADC)
	Total Harmonic Distortion	91dB THD+n on Line Out/HP (0.003%)
	Play Sampling Rate(s)	Up to 192kHz
	Record Sampling Rate(s)	Up to 96Khz
	DAC	16, 20 or 24-bit
	ADC	16, 20 or 24-bit

Not all configuration components are available in all regions/countries.
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Technical Specifications

Integrated Speakers	Stereo	Power Rating	2 Watts
		Impedance	4 Ohms

POWER

HP 45W Smart AC Adapter	Dimensions		3.74 x 1.57 x 1.04 in (9.5 x 4.0 x 2.65 cm)
	Weight		0.386 lb (175g) max
	Input		90 to 265 VAC
		Input Efficiency	87.74% at 115Vac and 88.4% at 230Vac
		Input frequency range	47 to 63 Hz
		Input AC current	1.4 A at 90 VAC
	Output	Output power	45W
		DC output	19.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<8.0A
		Over voltage protection	< 29V max automatic shutdown
		Over short protection	Auto-recovery and no damage
	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 185° F (-20° to 85° C)
		Altitude	0 to 16,400 ft (0 to 5,000 m)
		Humidity	20% to 95%
		Storage Humidity	10% to 95%
	EMI and Safety Certifications		*CE Mark - full compliance with LVD and EMC directives * Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. * MTBF - over 200,000 hours at 25°C ambient condition.
HP 65W EM Smart AC Adapter (PRC, India only)	Dimensions		4.98 x 1.97 x 1.18 in (12.65 x 5.0 x 3.0 cm)
	Weight		0.62 lb (290g) max
	Input		90 to 265 VAC
		Input Efficiency	87% min at 115 VAC
		Input frequency range	47 to 63 Hz
		Input AC current	1.7 A at 90 VAC
	Output	Output power	65W

Not all configuration components are available in all regions/countries.
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Technical Specifications

	DC output	19.5V
	Hold-up time	5 msec at 115 VAC input
	Output current limit	<11.0A
	Over voltage protection	< 29V max automatic shutdown
	Over short protection	Auto-recovery and no damage
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 185° F (-20° to 85° C)
	Altitude	0 to 16,400 ft (0 to 5,000 m)
	Humidity	20% to 95%
	Storage Humidity	10% to 95%
EMI and Safety Certifications	*CE Mark - full compliance with LVD and EMC directives * Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. * MTBF - over 200,000 hours at 25°C ambient condition.	

HP 65W Smart AC Adapter	**Dimensions**	4.98 x 1.97 x 1.18 in (12.65 x 5.0 x 3.0 cm)	
	Weight	0.62 lb (290g) max	
	Input	90 to 265 VAC	
		Input Efficiency	87% min at 115 VAC
		Input frequency range	47 to 63 Hz
		Input AC current	1.7 A at 90 VAC
	Output	**Output power**	65W
		DC output	19.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<11.0A
		Over voltage protection	< 29V max automatic shutdown
		Over short protection	Auto-recovery and no damage
	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 185° F (-20° to 85° C)
		Altitude	0 to 16,400 ft (0 to 5,000 m)
		Humidity	20% to 95%
		Storage Humidity	10% to 95%
	EMI and Safety Certifications	*CE Mark - full compliance with LVD and EMC directives * Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. * MTBF - over 200,000 hours at 25°C ambient condition.	

Not all configuration components are available in all regions/countries.
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QuickSpecs

Technical Specifications

Battery
430/440 G3

HP 4-cell, Long Life 44 WHr Li-ion

Dimensions (H x W x L)	34.96x277.2x21.63 mm (1.38x10.91x0.85 inch)	
Weight	0.32 kg (0.72lb)	
Cells/Type	4cell Lithium-Ion	
Energy	**Voltage**	14.8V
	Amp-hour capacity	3.0Ah
	Watt-hour capacity	44Wh
Temperature	**Operating (Charging)**	32˚ to 113˚ F (0˚ to 45˚ C)
	Operating (Discharging)	14˚ to 122˚ F(-10˚ to 60˚ C)
	Non-operating	-4˚ to 122˚ F (-20˚ to 60˚ C)
Battery Re-Charge Time	**System in OFF or Standby Mode**	<3 hours
Fuel Gauge LED	No	
Warranty	1 year	
Optional Travel Battery Available	No	

HP 6-cell, Long Life 55 WHr Li-ion.	**Dimensions (H x W x L)**	35.31x49.59x277.2	
	Weight	340g	
	Cells/Type	Cylindrical ICR18650 C4	
	Energy	10.68V	**Voltage**
		5.15Ah	**Amp-hour capacity**
		55Wh	**Watt-hour capacity**
	Temperature	32˚ to 113˚ F (0˚ to 45˚ C)	**Operating (Charging)**
		14 to 140˚ F (-10˚ to 60˚ C)	**Operating (Discharging)**
		-4˚ to 140˚ F (-20˚ to 60˚ C)	**Non-operating**
	Battery Re-Charge Time	3 hours	**System in OFF or Standby Mode**
		3 to 5 hours	**System ON**
	Fuel Gauge LED	NA	
	Warranty	3years or 1000 cycles	

Not all configuration components are available in all regions/countries.
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QuickSpecs

Technical Specifications

Optional Travel Battery Available	NA

450 G3

HP 4-cell, Long Life 44 WHr Li-ion

Dimensions (H x W x L)			33.40*275.80*20.60 mm (1.32x10.86x0.81 inch)
Weight			0.3 kg (0.66lb)
Cells/Type			4cell Lithium-Ion
	Energy	**Voltage**	14.8V
		Amp-hour capacity	3.0Ah
		Watt-hour capacity	44Wh
	Temperature	**Operating (Charging)**	32˚ to 113˚ F (0˚ to 45˚ C)
		Operating (Discharging)	14˚ to 122˚ F(-10˚ to 60˚ C)
		Non-operating	-4˚ to 122˚ F (-20˚ to 60˚ C)
	Battery Re-Charge Time	**System in OFF or Standby Mode**	<3 hours
	Fuel Gauge LED		No
	Warranty		1 year
	Optional Travel Battery Available		No

HP 6-cell, Long Life 55 WHr Li-ion	**Dimensions (H x W x L)**	45.59x275.8x33.89	
	Weight	330g	
	Cells/Type	Cylindrical ICR18650 C4	
	Energy	10.68V	**Voltage**
		5.15Ah	**Amp-hour capacity**
		55Wh	**Watt-hour capacity**

Not all configuration components are available in all regions/countries.
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QuickSpecs

Technical Specifications

Temperature	32˚ to 113˚ F (0˚ to 45˚ C)	**Operating (Charging)**	
	14 to 140˚ F (-10˚ to 60˚ C)	**Operating (Discharging)**	
	-4˚ to 140˚ F (-20˚ to 60˚ C)	**Non-operating**	
Battery Re-Charge Time	3 hours	**System in OFF or Standby Mode**	
	3 to 5 hours	**System ON**	
Fuel Gauge LED	NA		
Warranty	3years or 1000 cycles		
Optional Travel Battery Available	NO		

ENVIRONMENTAL

TBD

Country of Origin

China

Not all configuration components are available in all regions/countries.
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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
	HP Business Backpack (up to 17.3")	H5M90AA
	HP Business Case(up to 15.6")	H5M92AA
Docking	HP 3001pr USB 3 Port Replicator	F3S42AA
	HP 3005pr USB 3.0 Port Replicator	H1L08AA
	HP Adjustable Display Stand	AW663AA
Input/Output – Mice	HP Stylish USB Keyboard and Mouse	H4B80AA
	HP Stylish Wireless Keyboard and Mouse	H4B79AA
	HP 2.4 GHz Keyboard and Mouse	G1K29AA
	HP Ultra Mobile Wireless Mouse	H6F25AA
	HP Comfort Grip Wireless Mouse	H2L63AA
	HP 3-Button USB Laser Mouse	H4B81AA
	HP USB Travel Mouse	G1K28AA
	HP Ultrathin Wireless Mouse	L9V78AA
	HP Conferencing Keyboard	K8P74AA
	HP Speaker Phone	K7V16AA
	HP Wired Headset	K7V17AA
	HP HDMI to DVI Adapter	F5A28AA
	HP Wireless Display Adapter	J1V25AA
Power	HP 45W Smart AC Adapter 4.5mm	H6Y88AA
	HP 65W Smart AC Adapter	H6Y89AA
	HP 65W Slim AC Adapter	H6Y82AA
	HP Power Bank	N9F71AA
Storage	HP External USB Optical Drive	F2B56AA
	HP 500GB 7200rpm HDD	F3B97AA
	HP External Portable USB3.0 HDD	K6A93AA
Security	HP UltraSlim Keyed Cable Lock	H4D73AA
	HP USB Smart Card Reader	F6V67AA
	HP 14.0" NB Privacy Filter	J6E65AA
Displays	HP ProDisplay P242va 24-inch Monitor	K7X32AA
	HP EliteDisplay E222 21.5-inch Monitor	M1N96AA
	HP EliteDisplay E240 23.8-inch Monitor	M1N99AA
	HP EliteDisplay E240c 23.8-inch Monitor	M1P00AA
	HP EliteDisplay S270c 27-inch Curved Display	K1M38AA

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