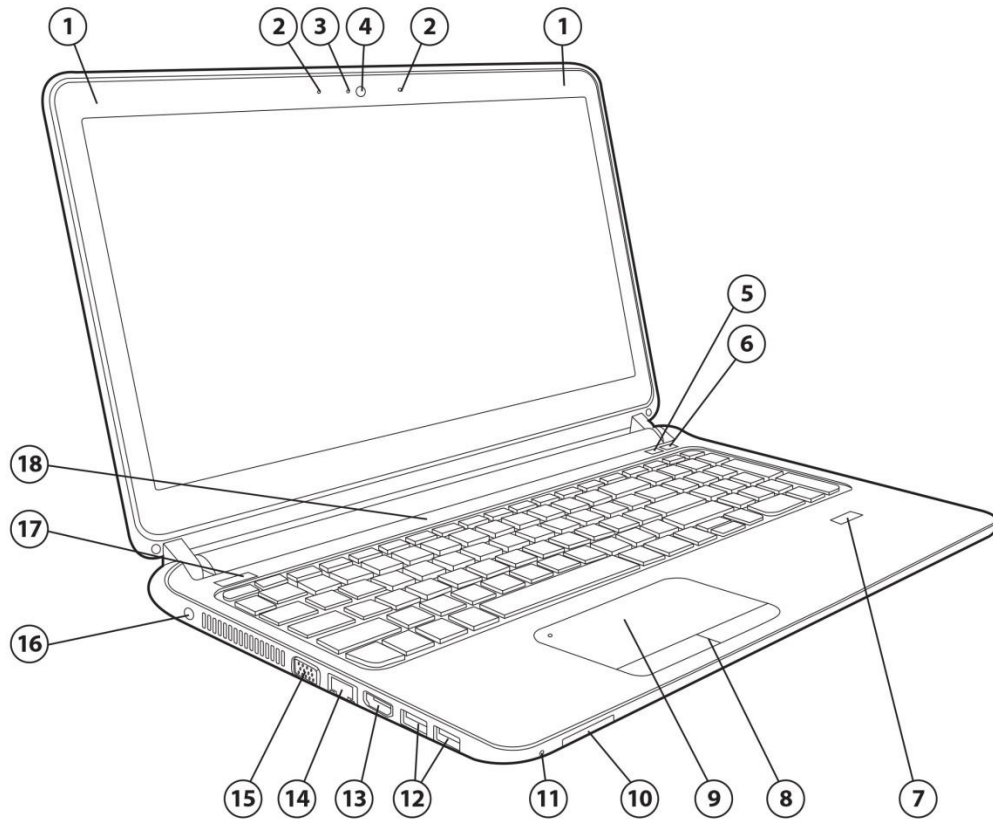


Overview

HP ProBook 455 G2 Notebook PC



Front

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

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

** Only available with optional webcam.



Overview



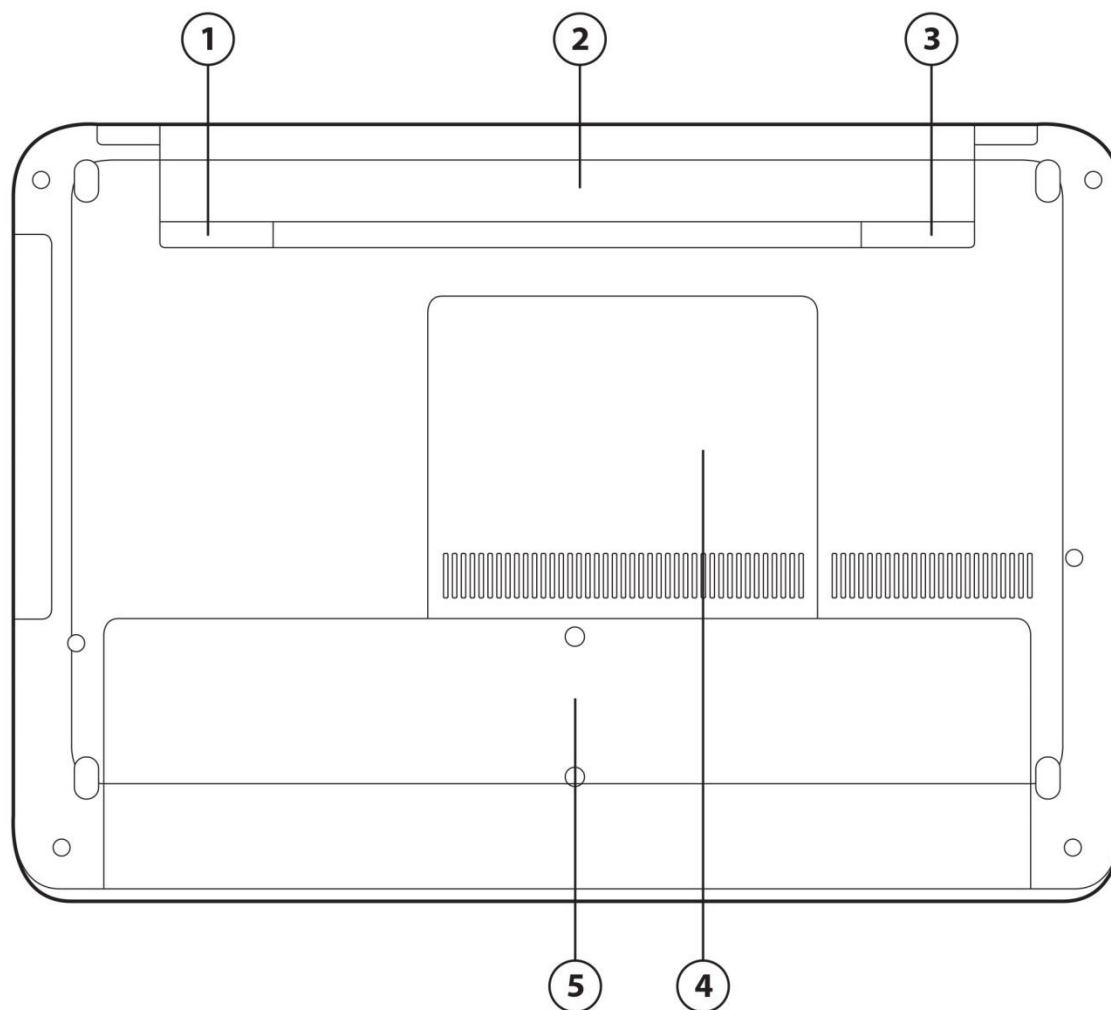
1. Headphone/Microphone Combo Jack
2. USB 2.0 ports (2)

Right

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



Overview



- 1. Battery lock
- 2. Battery bay
- 3. Battery release latch

Bottom

- 4. Service door
- 5. Service door



Overview

AT A GLANCE

- Windows 8.1 versions, Windows 7 Pro 64 (available through downgrade rights from Windows 8.1 Pro 64), Windows 7 versions, FreeDOS 2.0
- Durable multi-layer soft touch painted LCD cover and brushed aluminum keyboard deck that keeps system looking good longer
- Full-sized spill-resistant keyboard with a thin layer of Mylar film to prevent minor spills; full separate numeric keypad
- Larger Touchpad with gestures support, on/off button with LED indicator
- Enhanced security features including HP Client Security Manager and optional HP Fingerprint Reader and TPM 1.2
- HP 3D DriveGuard helps protect critical information while you're on the move.
- Optional backlit keyboard (available in Summer 2014)
- Optional 4-cell (40Whr) long life battery
- Optional HD webcam with dual-microphone array for video conferencing
- HDMI port for connecting to high-resolution displays; USB 3.0 ports
- DTS Sound+ optimized for high fidelity audio
- Widescreen LED-backlit HD display with 16:9 aspect ratio with available 15.6-inch diagonal HD
- Accelerated Processing Unit and graphics from AMD
- Models with switchable discrete graphics.
- AMD Radeon™ Dual Graphics to automatically manage how the graphics processor in the AMD APU and the AMD Radeon™ discrete graphics processor are used. (AMD A8, A10, FX APU skus only)
- Wireless on/off and speaker mute button to conveniently manage the connectivity and speaker.
- Flexible wireless connectivity options controlled by HP Connection Manager:
 - Integrated 802.11 b/g/n wireless LAN module
 - Integrated 802.11 b/g/n (1x1) with Bluetooth® 4.0 High Speed combo card
 - Integrated 802.11 a/b/g/n (2x2) with Bluetooth 4.0 High Speed combo card

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



Features

PRODUCT NAME

HP ProBook 455 G2 Notebook PC

OPERATING SYSTEM

Preinstalled

Windows 8.1 Pro 64*
Windows 7 Pro 64 (available through downgrade rights from Windows 8.1 Pro 64)**
Windows 8.1 64*
Windows 7 Professional 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 <http://www.microsoft.com> for details.

** This system is preinstalled with Windows® 7 Pro software and also comes with a license and media for Windows 8.1 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 <http://www.microsoft.com/windows/windows-7/> for details.

ACCELERATED PROCESSING UNIT

AMD FX-7500 APU with Radeon™ R7 Graphics, Quad Cores, 3.3GHz/2.1GHz, 2MB L2 Cache
AMD A10-7300 APU with Radeon™ R6 Graphics, Quad Cores, 3.2GHz/1.9GHz, 2MB L2 Cache
AMD A8-7100 APU with Radeon™ R5 Graphics, Quad Cores, 3.0GHz/1.8GHz, 2MB L2 Cache
AMD A6 Pro-7050B APU with Radeon™ R4 Graphics, Dual Cores, 3.0GHz/2.2GHz, 1MB L2 Cache

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

CHIPSET

AMD A76M FCH

GRAPHICS

Integrated graphics:

AMD A10-7300 APU with Radeon™ R6 Graphics
AMD A8-7100 APU with Radeon™ R5 Graphics
AMD A6 Pro-7050B APU with Radeon™ R4 Graphics

Switchable Discrete Graphics

A6 series APU - AMD Radeon™ R5 M255, with 2 GB dedicated DDR3 video memory

FX series APU - AMD Radeon™ R7 M265DX Dual graphics*, with 2 GB dedicated DDR3 video memory

A10 series APU - AMD Radeon™ R7 M260DX Dual graphics*, with 2 GB dedicated DDR3 video memory

A8 series APU - AMD Radeon™ R6 M255DX Dual graphics*, with 2 GB dedicated DDR3 video memory

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



Features

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

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

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

* Minimum DDR3-1600 required. Dual graphics may be enabled by single channel memory configurations but is not recommended as some memory sensitive applications might have lower dual graphics performance.

DISPLAY

Internal

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

External

Up to 32-bit per pixel color depth

VGA

Port supports resolutions up to 1920 x 1200 external resolution @60 Hz

HDMI

Supports direct connection to high-definition displays with up to 1920 x 1200@120Hz 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/1/1.5 TB 5400 rpm SMART SATA HDD;

500 GB 7200 rpm SMART SATA HDD

Solid State Drive

128 GB SSD SATA

HP 3D DriveGuard (Windows only)

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

NOTE: For hard drives, GB = 1 billion bytes. Actual formatted capacity is less. Up to 16 GB (for Windows 7) and 36 GB (for Windows 8.1) of system disk is reserved for the system recovery software.

OPTICAL DRIVES

Fixed 9.5 mm SATA optical drive

DVD+/-RW SuperMulti DL Drive*

DVD-ROM Drive*

No optical drive option

* Sold separately as an optional feature.

MEMORY



Features

Standard

DDR3L SDRAM (1600 MHz)
Two SODIMM slots supporting dual-channel memory
2 GB, 4 GB, and 8 GB SODIMMs

Maximum

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

Dual-channel

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

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

NETWORKING/COMMUNICATIONS

Wireless

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

Wireless LAN (WLAN)*

Realtek 802.11 b/g/n (1x1)
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

Communications

Realtek 10/100/1000** Ethernet Controller

* Sold separately as an optional feature.

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

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, volume down
Stereo Audio-out (headphone)/Audio-in(microphone)

Webcam

Optional* 720p HD** webcam

- HD format (widescreen)
- Supports videoconferencing 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



Features

- Skype-ready***, ****

* Available on select models.

** HD content required to view HD images.

*** Internet access required.

**** Not available in China

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard

The HP spill-resistant keyboard 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. Backlit keyboard available as an option.

Pointing Devices

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

Buttons and Function Keys

Separate launch buttons provide easy access to wireless on/off and speaker mute. Function keys provide control of features including: standby mode, display brightness, external display, microphone mute, volume down, volume up and keyboard backlight on/off (select models only).

SOFTWARE AND SECURITY

Software Included

Security

Windows 8.1

Absolute Persistence Module¹
 Device Access Manager with Just In Time Authentication
 HP File Sanitizer²
 HP Client Security Manager³
 HP SpareKey
 Microsoft Defender
 DigitalPersona Fingerprint Driver
 Validity Fingerprint Driver
 Hardware Root of Trust
 HP Automatic DriveLock
 HP BIOS Protection
 HP Disk Sanitizer⁵
 DASH Support
 HP DriveLock
 HP SpareKey⁶
 Hybrid Boot
 Master Record Security
 Measured Boot
 Power On Authentication
 Pre-Boot Security
 Secure Boot (Windows 8.1)
 Secure Erase⁷

Windows 7

Absolute Persistence Module
 Device Access Manager with Just In Time Authentication
 HP File Sanitizer²
 HP Client Security Manager³
 HP SpareKey
 Microsoft Security Essentials⁴
 DigitalPersona Fingerprint Driver
 Validity Fingerprint Driver
 Hardware Root of Trust
 HP Automatic DriveLock
 HP BIOS Protection
 HP Disk Sanitizer⁵
 DASH Support
 HP DriveLock
 HP SpareKey⁶
 Hybrid Boot
 Master Record Security
 Measured Boot
 Power On Authentication
 Pre-Boot Security
 Secure Boot (Windows 7)
 Secure Erase⁷

MultiMedia

Cyberlink Power2Go
 Cyberlink PowerDVD
 HP Connection Manager

Cyberlink Power2Go
 Cyberlink PowerDVD
 HP Connection Manager

Communications



Features

| | | |
|------------------------------|---|---|
| | HP Wireless Hotspot ⁸ | |
| HP Value Add Software | Microsoft | Digital Energy Star Logo W8 |
| | Digital Energy Star Logo W8 | Getting Started with Windows 8 |
| | Getting Started with Windows 8 | HP 3D DriveGuard |
| | HP 3D DriveGuard | HP Ceement |
| | HP Ceement | HP ePrint ⁹ |
| | HP ePrint ⁹ | HP Hotkey |
| | HP Hotkey | HP PageLift App (Requires Windows 8) |
| | HP PageLift App (Requires Windows 8) | 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 ¹⁰ |
| | HP Support Assistant ¹⁰ | 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 |
| 3rd Party | UEFI System Diagnostics W8 | Box 50GB Offer Desktop Icon ¹¹ |
| | Box 50GB Offer Desktop Icon ¹¹ | Box App |
| | Box App | Foxit PhantomPDF Express |
| | Foxit PhantomPDF Express | Buy Office |
| | Buy Office | |

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

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

³Not all features are remotely manageable.

⁴Opt in and internet connection required for updates.

⁵For 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.

⁶Requires initial user set up.

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

⁸ 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.

⁹Requires 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.

¹⁰Internet access required.

¹¹ Offer available on new 2014 HP commercial PC and requires Box registration. Offer subject to change without notice.

Security

Standard

HP Client Security Manager (Windows only)



Features

- Microsoft Security Essentials(Windows 7)/Microsoft Defender (Windows 8)*
- HP Drive Encryption**
- HP BIOS Protection***
- Security lock slot
- TPM 1.2 Embedded Security Chip

Optional
HP Fingerprint reader

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

- * Opt in and internet connection required for updates.
- ** HP Drive Encryption requires Windows. Data is protected prior to Drive Encryption login. Turning the PC off or into hibernate logs out of Drive Encryption and prevents data access.
- *** HP Tools partition with an HP BIOS required for automatic recovery.

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

POWER

- Power Supply**
Models with discrete graphics:
External 65W HP Smart AC Adapter
Models with integrated graphics:
External 45W HP Smart AC Adapter

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

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

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

- Primary Battery**
HP 4-cell (44 WHr) Lithium-Ion Battery
HP 4-cell (40 WHr) Long Life Lithium-Ion Battery

| Battery Life | | Hardware Details | Configurations with integrated graphics | Configurations with discrete graphics |
|----------------------------------|-----|------------------|---|---------------------------------------|
| HP ProBook 455 | | | | |
| 4-cell (44 WHr) battery | HDD | | 5 hours 30mins | 5 hours 30mins |
| 4-cell (40Whr) Long life battery | HDD | | 5 hours | 5 hours |

System Standby Time*
Up to 7 days (4-cell battery) or up to 7 days(4-cell long life battery)

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



Features

Power Conservation

AMD PowerPlay technology (discrete models)
Hibernation
Standby
ACPI compliance

WEIGHTS & DIMENSIONS

Weight

Lightest possible configuration across battery and panel options (HD Panel, No-ODD, 4-cell (44Whr) Battery, HDD) at 4.74lb / 2.15kg

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

| | 4-cell (44Whr) |
|--------|----------------|
| No-ODD | 4.74lb/2.15kg |
| ODD | 4.98lb/2.26kg |

Dimensions (w x d x h)

14.76 x 10.35 x 0.92 (front) -1 in (at rear)

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

PORTS/SLOTS

Ports

USB 3.0 – Two
USB 2.0 – Two
HDMI 1.4a – One
VGA – One
Headphone/Microphone Combo Jack – One
Power connector – One
RJ-45 – 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. On-site service is also available. Optional HP Care Pack Services are extended service contracts that go beyond the standard warranties. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at: <http://www.hp.com/go/lookuptool>. Additional HP Care Pack Services information by product is available at: www.hp.com/go/cpc.

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



Technical Specifications

SYSTEM UNIT

| | | |
|--|---|--|
| Stand-Alone Power Requirements (AC Power) | Nominal Operating Voltage | 19.5V |
| | Average Operating Power | 21W |
| | Max Operating Power | Discrete < 65W UMA < 45W |
| 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 |
| Shock | Non-operating | 5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature |
| | Operating | 40 G, 2 ms, half-sine |
| Random Vibration | Non-operating | 200 G, 2 ms, half-sine |
| | Operating | 0.75 grms |
| Altitude (unpressurized) | Non-operating | 1.50 grms |
| | Operating | -50 to 10,000 ft (-15.24 to 3,048 m) |
| Planned Industry Standard Certifications | Non-operating | -50 to 40,000 ft (-15.24 to 12,192 m) |
| | UL | Yes |
| | CSA | Yes |
| | FCC Compliance | Yes |
| | ENERGY STAR® | Select models* |
| | EPEAT® | Registered Gold in United States** |
| | ICES | Yes |
| | Australia / NZ A-Tick Compliance | Yes |
| | CCC | Yes |
| | Japan VCCI Compliance | Yes |
| | KC | Yes |
| | BSMI | Yes |
| | CE Marking Compliance | Yes |
| | BNCI or BELUS | Yes |
| | CIT | Yes |
| | GOST | Yes |
| | Saudi Arabian Compliance (ICCP) | Yes |
| | SABS | Yes |
| | UKRSERTCOMPUTER | Yes |

* Configurations of the HP ProBook 455 G2 that are ENERGY STAR qualified are identified as HP ProBook 455 G2 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

| | | |
|---|---------------------------|-----------------------------------|
| 15.6-inch LED HD (1366 x 768) anti-glare | Dimensions (W x H) | 14.17 x 8.83 in (36.0 x 22.43 cm) |
| | Diagonal Size | 15.6 in (39.6cm) |
| | Surface Treatment | Anti-glare |



Technical Specifications

| | | |
|-------------------------|---|------------|
| Contrast Ratio | 400:1 (min) | |
| Refresh Rate | 60 Hz | |
| Brightness | 200 nit (typical) | |
| Pixel Resolution | Pitch | 0.252 mm |
| | Format | 1366 x 768 |
| | Configuration | RGB Stripe |
| Backlight | LED | |
| PPI | 106 ppi | |
| Viewing Angle | ±30° Horizontal, ±10° Vertical (minimum) 30/30/20/10 (Left/Right/Down/Up) (minimum) or 45/45/35/25 (Left/Right/Down/Up) (typical) | |

STORAGE AND DRIVES

Internal Storage

500 GB* 7200 rpm SATA Hard Drive

| | |
|---|--|
| Drive Weight | 0.25 lbs (115g) |
| Capacity | 500 GB |
| Height | 0.37 in (9.5 mm) |
| Width | 2.75 in (70 mm) |
| Interface | ATA-8, SATA 2.6, 3.0 Gb/s, NCQ |
| Transfer Rate | Synchronous (maximum) 300 MB/s (Drive Capability) |
| Seek Time (typical reads, including settling) | Single Track 1.5 ms Average 11 ms Maximum 22 ms |
| Rotational Speed | 7200 rpm |
| Logical Blocks | 976,773,168 |
| Operating Temperature | 32° to 140° F (0° to 60° C) [case temp] |
| Features | ATA Security |

320 GB* 5400 rpm SATA Hard Drive

| | |
|---|--|
| Drive Weight | 0.22 lb (101 g) |
| Capacity | 320 GB |
| Height | 0.37 in (9.5 mm) |
| Width | 2.75 in (70 mm) |
| Interface | ATA-8, SATA 2.6, 3.0 Gb/s, NCQ |
| Transfer Rate | Synchronous (maximum) 300 MB/s (Drive Capability) |
| Seek Time (typical reads, including settling) | Single Track 3 ms Average 13 ms Maximum 24 ms |
| Rotational Speed | 5400 rpm |
| Logical Blocks | 625,142,448 |
| Operating Temperature | 32° to 140° F (0° to 60° C) [case temp] |
| Features | ATA Security |



Technical Specifications

| | | |
|---|---|--|
| 500 GB* 5400 rpm SATA Hard Drive | Drive Weight | 0.22 lb (101 g) |
| | Capacity | 500 GB |
| | Height | 0.37 in (9.5 mm) |
| | Width | 2.75 in (70 mm) |
| | Interface | ATA-8, SATA 2.6, 3.0 Gb/s, NCQ |
| | Transfer Rate | Synchronous (maximum) 300 MB/s (Drive Capability) |
| | Seek Time (typical reads, including settling) | Single Track 3 ms Average 13 ms Maximum 24 ms |
| | Rotational Speed | 5400 rpm |
| | Logical Blocks | 976,773,168 |
| | Operating Temperature | 32° to 140° F (0° to 60° C) [case temp] |
| | Features | ATA Security |
| 750 GB* 5400 rpm SATA Hard Drive | Drive Weight | 0.22 lb (101 g) |
| | Capacity | 750 GB |
| | Height | 0.37 in (9.5 mm) |
| | Width | 2.75 in (70 mm) |
| | Interface | ATA-8, SATA 2.6, 3.0 Gb/s, NCQ |
| | Transfer Rate | Synchronous (maximum) 300 MB/s (Drive Capability) |
| | Seek Time (typical reads, including settling) | Single Track 3 ms Average 13 ms Maximum 24 ms |
| | Rotational Speed | 5400 rpm |
| | Logical Blocks | 1,465,149,168 |
| | Operating Temperature | 32° to 140° F (0° to 60° C) [case temp] |
| | Features | ATA Security |
| 1 TB* 5400 rpm SATA Hard Drive | Drive Weight | 0.254 lb (115 g) |
| | Capacity | 1 TB |
| | Height | 0.37 in (9.5 mm) |
| | Width | 2.75 in (70 mm) |
| | Interface | ATA-8, SATA 2.6, 3.0 Gb/s, NCQ |
| | Transfer Rate | Synchronous (maximum) 300 MB/s (Drive Capability) |
| | Seek Time (typical reads, including settling) | Single Track 3 ms Average 13 ms Maximum 24 ms |
| | Rotational Speed | 5400 rpm |
| | Logical Blocks | 1,953,525,168 |
| | Operating Temperature | 32° to 140° F (0° to 60° C) [case temp] |
| | Features | ATA Security |
| 1.5 TB* 5400 rpm SATA Hard Drive | Drive Weight | TBD |
| | Capacity | 1.5 TB |
| | Height | TBD in (TBD mm) |



Technical Specifications

| | |
|---|--|
| Width | TBD in (TBD mm) |
| Interface | TBD |
| Transfer Rate | Synchronous TBD MB/s (Drive Capability) (maximum) |
| Seek Time (typical reads, including settling) | Single Track TBD ms Average TBD ms Maximum TBD ms |
| Rotational Speed | 5400 rpm |
| Logical Blocks | TBD |
| Operating Temperature | TBD ° F (TBD ° C) [case temp] |
| Features | TBD |

| | | | |
|---|------------------------------|---|---------------------------------|
| SATA 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 | |

* 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.

Optical Drives

| | | | |
|--------------------------------------|-------------------------------|-----------------------|---|
| DVD+/-RW SuperMulti DL Drive* | Access Times | Random | <140ms CD (typical) < 160 ms DVD (typical) |
| | Max Data Transfer Rate | 24X CD-ROM | |
| | | 8X DVD | |
| | | 24X CD-R | |
| | | 24X CD-RW | |
| | | 8X DVD+R | |
| | | 8X DVD+RW | |
| | | 8X DVD-R | |
| | | 6X DVD-RW | |
| | | 6X - DVD+R Dual Layer | |
| | | 6X - DVD-R Dual Layer | |
| | | 5X DVD-RAM | |
| | Transfer Mode | UDMA Mode 5 | |
| | Interface | Gen 1 SATA | |



Technical Specifications

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

SECURITY

| | | |
|--|-----------------------------------|--|
| 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 9.7 mm x 0.81 mm 500 ppi High-Resolution Images |

NETWORKING/COMMUNICATIONS

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



Technical Specifications

| | | |
|--|---------------------------------|---|
| Realtek 802.11 b/g/n (1x1)* | | 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 1.1 x1 to fully support ASPM L0s/L1 and CLKREQ |
| | NIC Device Driver Name | Realtek PCIe GBE Ethernet Family Controller |
| | 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 |
| | Security¹ | IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only AES-CCMP: 128 bit in hardware 802.1x authentication types WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. WPA2 certification IEEE 802.11i Cisco Certified Extensions, all versions through V5 WAPI |
| | Network Architecture | Ad-hoc (Peer to Peer) |
| | Models | Infrastructure (Access Point Required) |
| | Roaming | IEEE 802.11 compliant roaming between access points |
| | Output Power² | 13.5 dBm, nominal |



Technical Specifications

| | |
|---|---|
| Power Consumption | Transmit: 2.0 W (max) Receive: 1.6 W (max) Associated to Access Point, Idle: 250 mW nominal Wireless Button Off: 100 mW nominal Radio disabled: 75 mW nominal |
| Power Management | ACPI compliant power management 802.11 compliant power saving mode |
| Receiver Sensitivity³ | 802.11b:-95 dBm (1 Mbps), -93 dBm (2 Mbps), -91 dBm (5.5 Mbps), -88 dBm (11 Mbps) 802.11g:-90 dBm (6 Mbps), -89 dBm (9 Mbps), -87 dBm (12 Mbps), -85 dBm (18 Mbps), -82 dBm (24 Mbps), -79 dBm (36 Mbps), -76 dBm (48 Mbps), -74 dBm (54 Mbps) 802.11n:-70dBm (72.2 Mbps) High efficiency antenna with spatial diversity, mounted in the display enclosure |
| Antenna type | |
| Form Factor | PCI-Express Half-MiniCard |
| Weight | 0.013 lb (6 g) |
| Dimensions | 0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm) |
| Operating Voltage | 3.3v +/- 9% |
| Temperature | Operating 14° to 158° F (-10° to 70° C) 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 | Amber – Radio OFF; White – Radio ON |
| | <ol style="list-style-type: none"> 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). |

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

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

| | |
|-------------------------------|---|
| Wireless LAN Standards | IEEE 802.11b IEEE 802.11g IEEE 802.11n |
| Interoperability | Wi-Fi certified |
| 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 |



Technical Specifications

| | | |
|--|---|--------------------------------|
| Security¹ | IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only AES-CCMP: 128 bit in hardware 802.1x authentication types WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. WPA2 certification IEEE 802.11i Cisco Certified Extensions, all versions through V5 WAPI | |
| Network Architecture | Ad-hoc (Peer to Peer) | |
| Models | Infrastructure (Access Point Required) | |
| Roaming | IEEE 802.11 compliant roaming between access points | |
| Output Power² | 13.5 dBm, nominal | |
| Power Consumption | Transmit: 2.0 W (max) Receive: 1.6 W (max) Associated to Access Point, Idle: 250 mW nominal Wireless Button Off: 100 mW nominal Radio disabled: 75 mW nominal | |
| Power Management | ACPI compliant power management 802.11 compliant power saving mode | |
| Receiver Sensitivity³ | 802.11b:-95 dBm (1 Mbps), -93 dBm (2 Mbps), -91 dBm (5.5 Mbps), -88 dBm (11 Mbps) 802.11g:-90 dBm (6 Mbps), -89 dBm (9 Mbps), -87 dBm (12 Mbps), -85 dBm (18 Mbps), -82 dBm (24 Mbps), -79 dBm (36 Mbps), -76 dBm (48 Mbps), -74 dBm (54 Mbps) 802.11n:-70dBm (72.2 Mbps) | |
| Antenna type | High efficiency antenna with spatial diversity, mounted in the display enclosure | |
| Form Factor | PCI-Express Half-MiniCard | |
| Weight | 0.013 lb (6 g) | |
| Dimensions | 0.19 x 1.06 x 1.18 in (4.75 x 26.8 x 30 mm) | |
| Operating Voltage | 3.3v +/- 9% | |
| Temperature | Operating | 14° to 158° F (–10° to 70° C) |
| | 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 | Amber – Radio OFF; White – Radio ON | |
| | <ol style="list-style-type: none"> 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 4.0 Wireless Technology | | |
| Bluetooth Specification | 2.1+EDR, 3.0, 4.0 Compliant | |
| Dimensions | 1.18 x 0.26 x 0.13 in (30 x 6.5 x 3.25 mm) | |



Technical Specifications

| | |
|-------------------------------------|--|
| Frequency Band | 2402 to 2480 MHz |
| Number of Available Channels | 79 (1 MHz) available channels |
| Data Rates and Throughput | 3 Mbps data rate; throughput up to 2.17 Mbps Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric |
| Transmit Power | Max 4 dBm (Bluetooth Class II) |
| Receiver Sensitivity | Better than -80 dBm at 0.1 % raw bit error rate |
| Power Consumption | Average 230mW Sleep <1 mW |
| Antenna | Internally integrated within module |
| Range | Up 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 Low Voltage Directive IEC950 UL, CSA, and CE Mark |
| Temperature | Operating -4° to 158° F (-20° to 70° C) Non-operating -40° to 176° F (-40° to 80° C) |
| Humidity | Operating 10% to 90% Non-operating 5% to 95% |
| Altitude | Operating 15,000 ft (4,572 m) Non-operating 40,000 ft (12,192 m) |
| Bluetooth Profiles Supported | Serial Port Profile (SPP) ¹ Service Discovery 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) ^{1,2,3} |



Technical Specifications

FAX Profile (FAX)
 Basic Imaging Profile (BIP)²
 Headset Profile (HSP)
 Hands Free Profile (HFP)
 Advanced Audio Distribution Profile (A2DP)

¹ indicates the profile is supported by Microsoft Windows XP SP2

² indicates the profile is part of Windows Vista

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

Broadcom 802.11 a/b/g/n Wireless LAN Standards (2x2) with Bluetooth® v4.0 combo*

Interoperability Frequency Band

IEEE 802.11a
 IEEE 802.11b
 IEEE 802.11g
 IEEE 802.11n

Wi-Fi certified
 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: MCS 0 ~ MCS 15, (20MHz, and 40MHz)

Modulation

Direct Sequence Spread Spectrum
 BPSK, QPSK, CCK, 16-QAM, 64-QAM

Security¹

- IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only
- AES-CCMP: 128 bit in hardware
- 802.1x authentication
- 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 Roaming

Ad-hoc (Peer to Peer)
 Infrastructure (Access Point Required)
 IEEE 802.11 compliant roaming between access points



Technical Specifications

| | |
|--|--|
| Output Power² | <ul style="list-style-type: none"> 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 Sensitivity³ | 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 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) |
| Weight | 3.1g |
| 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 |



Technical Specifications

| | |
|-------------------------------------|--|
| | 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 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) |

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

AUDIO/MULTIMEDIA - DTS SOUND+

Hardware

Implementation

Realtek ALC3227-CG High Definition CODEC



Technical Specifications

| | | |
|-----------------------------------|-------------------------------------|---|
| Audio Output Quality | Function Key Volume Controls | Volume up, volume down, and speaker mute |
| | Full Duplex | Yes |
| | Microphone In | Stereo |
| | Headphone/Line Out | Stereo |
| | Integrated Microphone | Yes, dual digital microphone array when equipped with optional webcam |
| | Frequency Response | 20 Hz – 20 kHz |
| | Signal to Noise Ratio | >85 dB |
| | Total Harmonic Distortion | 0.01% |
| | Noise Floor | –110 dB |
| | Play/Record Sampling Rate(s) | 8 kHz – 48kHz |
| Integrated Stereo Speakers | DAC | 16, 20 or 24-bit |
| | ADC | 16 or 20-bit |
| | Power Rating | 2 Watts |
| | Impedance | 4 Ohms |

POWER

| | | | |
|--|--------------------------------------|--|---|
| HP 65W Smart AC (discrete configurations) | Dimensions | 4.17 x 1.85 x 1.1 in (10.6 x 4.7 x 2.8 cm) | |
| | Weight | 0.62 lb (280 g) | |
| | Input | 100 to 240 VAC | |
| | | Input Efficiency | 87% min at 115 VAC |
| | | Input frequency range | 47 to 63 Hz |
| | Output | Input AC current | 1.7 A at 90 VAC, 0.85 A at 180 VAC |
| | | Output power | 65W |
| | | DC output | 18.5V |
| | | Hold-up time | 5 msec at 115 VAC input |
| | | Output current limit | <11A, Over voltage protection- 29V max automatic shutdown |
| | | | |
| | Connector | 3 pin/grounded, mates with interchangeable cords | |
| | Environmental Design | Operating temperature | 32° to 104° F (0° to 40° C) |
| | | Non-operating (storage) temperature | –4° to 149° F (–20° to 65° C) |
| | | Altitude | 0 to 10,000 ft (0 to 3,048 m) |
| | | Humidity | 20% to 80% |
| | | Storage Humidity | 10% to 90% |
| | EMI and Safety Certifications | CE Mark - full compliance with LVD and EMC directives; Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals | |



Technical Specifications

- 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 45W Smart AC Adapter (Configurations with integrated graphics)

| | |
|--------------------------------------|--|
| Dimensions | 3.78 x 1.95 x 0.88 in (9.6 x 4.95 x 2.24 cm) |
| Input | 90 to 265 VAC |
| Input Efficiency | 87% min at 115 VAC |
| Input frequency range | 47 to 63 Hz |
| Input AC current | 1.4 A at 90 VAC and maximum load |
| Output | Output power 45W |
| | DC output 19.5V |
| | 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) | TBD in (TBD cm) |
| Weight | TBD lb (TBD kg) |
| Cells/Type | 4-cell Lithium-Ion |
| Energy | 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 TBD hours |
| | System ON TBD 6 hours (depending on system power consumption) |

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

| | |
|-------------------------------|--------------------|
| Dimensions (H x W x L) | TBD in (TBD cm) |
| Weight (max) | TBD lb, (TBD kg) |
| Cells/Type | 4-cell Lithium-Ion |
| Energy | Voltage TBDV |



Technical Specifications

| | | |
|--|-------------------------------|-------------------------------|
| | Amp-hour capacity | TBD Ah |
| | Watt-hour capacity | 40Wh |
| Temperature | Operating (Charging) | 32° to 113° F (0° to 45° C) |
| | Operating (Discharging) | 14° to 122° F (-10° to 50° C) |
| | Non-operating | -4° to 122° F (-20° to 50° C) |
| Battery Re-Charge Time | System in OFF or Standby Mode | TBD hours |
| | System ON | TBD hours |
| Fuel Gauge LED | No | |
| Warranty | 1 year | |
| Optional Travel Battery Available | No | |

ENVIRONMENTAL

Eco-Label Certifications declarations

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

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

System Configuration

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

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

| | 115VAC, 60Hz | 230VAC, 50Hz | 100VAC, 60Hz |
|----------------------------------|--------------|--------------|--------------|
| Normal Operation (Short idle) | 12.19 W | 12.65 W | 11.96 W |
| Normal Operation (Long idle) | 10.34 W | 10.16 W | 10.19 W |
| Sleep | 0.80 W | 0.83 W | 0.79 W |
| Off | 0.29 W | 0.32 W | 0.29 W |

Note:

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



Technical Specifications

| Heat Dissipation* | 115VAC, 60Hz | 230VAC, 50Hz | 100VAC, 60Hz |
|----------------------------------|--------------|--------------|--------------|
| Normal Operation (Short idle) | 42 BTU/hr | 43 BTU/hr | 41 BTU/hr |
| Normal Operation (Long idle) | 35 BTU/hr | 35 BTU/hr | 35 BTU/hr |
| Sleep | 3 BTU/hr | 2 BTU/hr | 2 BTU/hr |
| Off | 1 BTU/hr | 1 BTU/hr | 1 BTU/hr |

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

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

Sound Power
(L_{WAd}, bels)

Sound Pressure
(L_{pAm}, decibels)

Typically Configured –
Idle

3.1

22

Fixed Disk – Random
writes

3.1

22

Longevity and Upgrading

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

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

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

Batteries

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

Batteries used in the product do not contain:

Mercury greater the 1ppm by weight

Cadmium greater than 20ppm by weight

Battery size: CR2032 (coin cell)

Battery type: Lithium

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

Battery type:



Technical Specifications

| | | | |
|------------------------|--|-----------------------------------|--------|
| Additional Information | <ul style="list-style-type: none">This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).This product is in compliance with the IEEE 1680 (EPEAT) standard at the <Gold> level, see www.epeat.netPlastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.This product contains 0% post-consumer recycled plastic (by wt.)This product is 96.2% recycle-able when properly disposed of at end of life.Low halogen is supported | | |
| | | | |
| Packaging Materials | External: | PAPER/Corrugated | 398 g |
| | Internal: | PLASTIC/Polyethylene low density | 18.1 g |
| | | PLASTIC/EPE-Expanded Polyethylene | 36 g |
| | The plastic packaging material contains at least 75% recycled content. | | |
| | The corrugated paper packaging materials contains at least 75% recycled content. | | |
| Material Usage | This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/qse.pdf): | | |
| | <ul style="list-style-type: none">AsbestosCertain Azo ColorantsCertain Brominated Flame Retardants – may not be used as flame retardants in plasticsCadmiumChlorinated HydrocarbonsChlorinated ParaffinsFormaldehydeHalogenated Diphenyl MethanesLead carbonates and sulfatesLead and Lead compoundsMercuric Oxide BatteriesNickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.Ozone Depleting SubstancesPolybrominated 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 SubstancesTributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO) | | |



Technical Specifications

Packaging Usage

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

End-of-life Management and Recycling

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

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

Hewlett-Packard Corporate Environmental Information

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

Global Citizenship Report

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

Eco-label certifications

<http://www8.hp.com/us/en/hp-information/environment/ecolabels.html>

ISO 14001 certificates:

http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf

and

<http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf>

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#xxx |
| | 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#xxx |
| 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#XXX |
| | HP 65W Slim Adapter | AX727AA#XXX |
| Security | HP UltraSlim Keyed Cable Lock | H4D73AA |
| Monitors | HP ProDisplay P201 20-inch LED Backlit Monitor | C9F26AA |
| | HP ProDisplay P201m 20-inch LED Backlit Monitor (With Integrated Speakers) | C9F73AA |
| | HP ProDisplay P221 21.5-inch LED Backlit Monitor | C9E49AA |
| | HP ProDisplay P231 23-inch LED Backlit Monitor | E4S07AA |

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

Summary of Changes

| Date of change: | Version History: | | Description of change: |
|--------------------|--------------------------|---------|---------------------------------|
| June 5, 2014 | From vApril'14 to v'June | Changed | Environmental specs, change log |
| June 20, 2014 | From v2 to v3 | Changed | Changes throughout the document |
| September 15, 2014 | From v3 to v4 | Changed | Battery life |
| October 28, 2014 | From v4 to v5 | Removed | Windows 7 versions |

