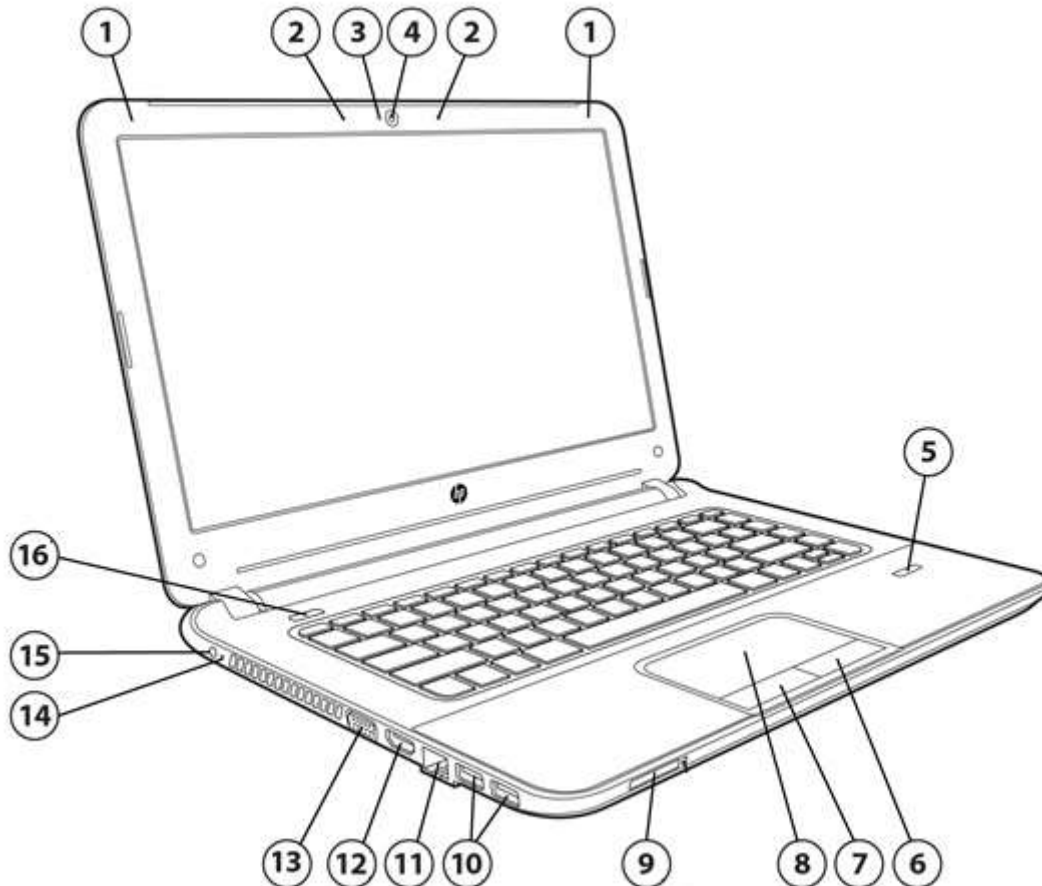


Overview

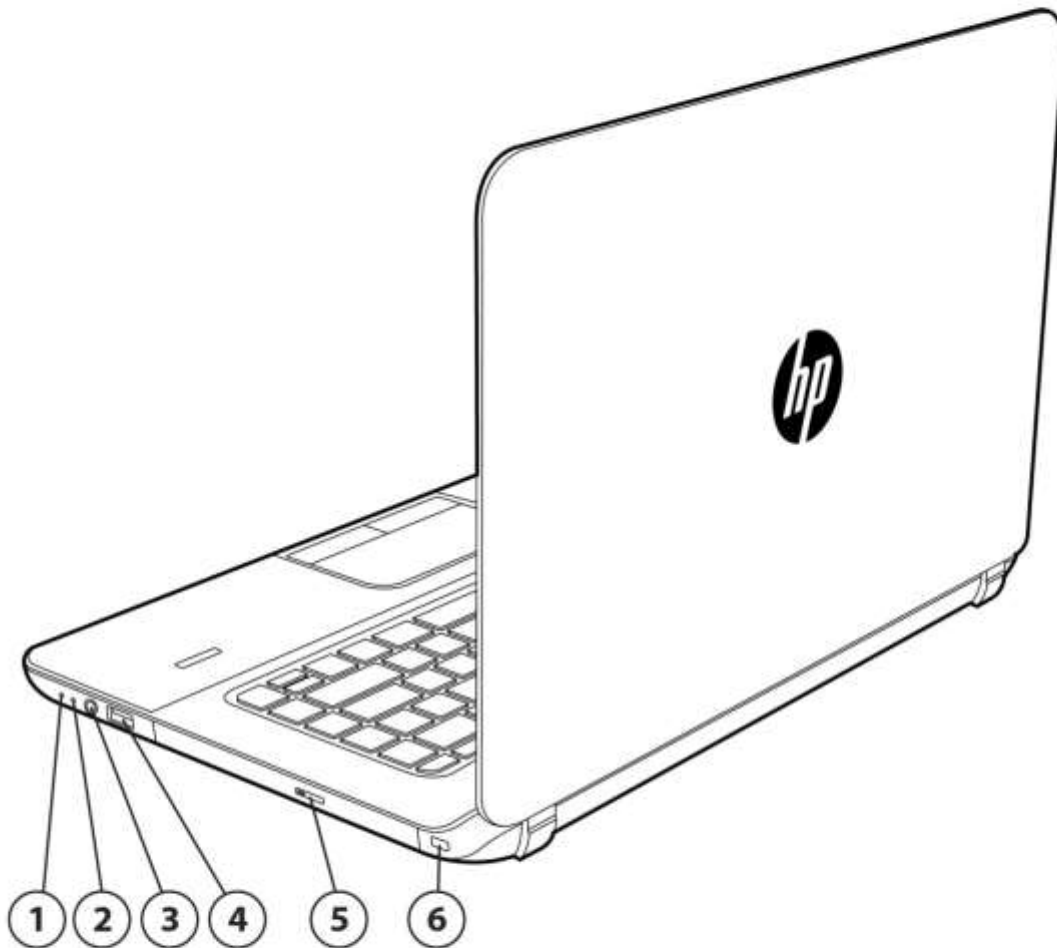
HP 345 G2 Notebook PC



- | | |
|---|-----------------------|
| 1. WLAN antennas | 9. SD Card reader |
| 2. Internal microphones | 10. USB 3.0 ports (2) |
| 3. Webcam LED | 11. RJ-45 (Ethernet) |
| 4. HP HD Webcam | 12. HDMI port |
| 5. Finger print reader (select models only) | 13. VGA port |
| 6. Right TouchPad button | 14. AC Plug LED |
| 7. Left TouchPad button | 15. Power connector |
| 8. Touchpad with scroll zone | 16. Power button |



Overview



- | | |
|---|-------------------------|
| 1. Duplicate power LED | 4. USB 2.0 Port |
| 2. Hard drive LED | 5. Optical drive button |
| 3. Headphone / Microphone in Combo Jack | 6. Security cable slot |



Overview

AT A GLANCE

- Windows 10 versions, Windows 8.1 versions, Windows 7 versions, Ubuntu Linux, FreeDOS 2.0
- AMD Radeon™ R5 M240 discrete graphics (1 GB or 2 GB DDR3, Switchable Graphics)
- Durable, sophisticated design with smooth surfaced silver color.
- Full-sized island-style, spill resistant
- Spill-resistant keyboard and HP 3D Drive Guard protects your system from accidental spills or drops
- HDMI port for connecting to high-resolution displays
- Integrated HP HD Webcam, integrated microphone
- Wireless options available:
 - 802.11 b/g/n 1x1 wireless LAN module
 - 802.11 b/g/n 1x1 wireless LAN module + Bluetooth® 4.0 combo
 - 802.11 a/b/g/n 2x2 wireless LAN module + Bluetooth® 4.0 combo
- 14.0" diagonal LED-backlit HD anti-glare (1366 x 768)

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



Features

PRODUCT NAMES

HP 345 G2 Notebook PC

OPERATING SYSTEM

Preinstalled

Windows 8.1 Pro 64*
Windows 8.1 64*
Windows 7 Professional 64 (available through downgrade rights form Windows 8.1 Pro)**
Windows 7 Professional 64*
Ubuntu Linux
FreeDOS 2.0

Web-only support

Windows 10 Pro 64*
Windows 10 Home 64*
Windows 8.1 Pro 64*
Windows 8.1 64*
Windows 7 Professional 64 (available through downgrade rights form Windows 8.1 Pro)*
Windows 7 Professional 64*
Windows 7 Home Basic 64*

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

** This system is preinstalled with Windows 7 Professional software and also comes with a license and media for Windows 8.1 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.

ACCELERATED PROCESSING UNIT

AMD

AMD A8-6410 APU (2.0GHz, 2MB L2 cache, 4 core)* with AMD Radeon™ R5 Graphics
AMD A6-6310 APU (1.8 GHz/2.4 GHz, 2 MB L2 cache, 4 cores)* with AMD Radeon™ R4 Graphics
AMD A4-6210 APU (1.8 GHz, 2 MB L2 cache, 4 cores)* with AMD Radeon™ R3 Graphics

*This system requires a separately purchased 64-bit operating system and 64-bit software products to take advantage of the 64-bit processing capabilities of AMD technology. Multi-core processing with AMD technology is designed to improve performance of this system. Given the wide range of SW applications available, performance will vary. AMD's numbering is not a measurement of clock speed.

CHIPSET

AMD Chipset is integrated with APU



Features

GRAPHICS

Integrated:

AMD Radeon™ R5 Graphics (AMD A8-6410 APU)

AMD Radeon™ R4 Graphics (AMD A6-6310 APU)

AMD Radeon™ R3 Graphics (AMD A4-6210 APU)

Discrete:

AMD Radeon™ R5 M240 with up to 2048MB of dedicated video memory (Switchable Graphics)

DISPLAY

Internal

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

External

Up to 32-bit per pixel color depth

VGA

Port supports resolutions up to 1080p, 1920 x 1080 at 60Hz

HDMI*

1.4 port supports up to 1080p, 1920 x 1080 at 60Hz

*HDMI cable sold separately.

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

STORAGE AND DRIVES

Primary Storage Bay

Hard Drives

500/750 GB/1 TB 5400 rpm SATA

NOTE: For Solid State Drives (SSD), GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 16 GB (for Windows 7) and up to 30 GB (for Windows 8 and 10) is reserved for system recovery software

OPTICAL DRIVES

Fixed Optical Drive

DVD+/-RW SuperMulti DL* Drive

Weight Saver option

** Double-layer discs can store more data than single layer discs. However, double-layer discs burned with this drive may not be compatible with many existing single-layer DVD drives and players. Note that this drive cannot read or write to 2.6 GB single-sided/5.2 GB double-sided – version 1.0 media. Don't copy copy-right protected materials.



Features

MEMORY

Standard

DDR3L-1600 (Transfer rates up to 1600 MT/s)
Two SODIMM slots supporting dual-channel memory
Standard memory up to 8192 MB*

Maximum

Upgradeable to 16384 MB

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.

* Maximum memory capacities assume Windows 64-bit operating systems or Linux. With Windows 32-bit operating systems, memory above 3 GB may not all be available due to system resource requirements.

NETWORKING/COMMUNICATIONS

Wireless

Qualcomm Atheros 802.11b/g/n (1x1) WiFi^{1,2}
Realtek 802.11b/g/n (1x1) and Bluetooth® 4.0 Combo^{1,2}
Broadcom 802.11a/b/g/n (2x2) and Bluetooth® 4.0 Combo^{1,2}

Communications

Realtek Gigabit Network Connection (10/100/1000 NIC)

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

AUDIO/MULTIMEDIA

Audio

DTS Sound
Integrated Stereo Speaker
Headphone / Microphone in Combo Jack
Integrated microphone

Webcam

HP HD* Webcam**

- Supports videoconferencing and still image capture
- Improved quality for video streaming and still image capture (1280x720 resolution)
- Up to 30 frames/sec
- Fixed focus lens

* HD content required to view HD images.

** Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited.



Features

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard

The full-sized island-style, spill resistant 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.

Pointing Devices

Touchpad with 2-piece pick button with left and right click functions
Multi-touch gestures supported

Buttons and Function Keys

On/off button

SOFTWARE AND SECURITY

Preinstalled Software with Windows Operating System

Buy Office
Recovery Manager Installer
Cyberlink Youcam DE
Cyberlink Power DVD (available on select models)
McAfee Internet Security 2013*
Getting Started with Windows 8.1

Security

Security Lock slot (lock must be purchased separately)
Fingerprint Reader (select models only)

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

* Internet access required. First 60 days included. Subscription required for live updates afterwards.

POWER

Power Supply

External 65W HP AC adapter 3-wire plug 1.0m (with ground pin)

Primary Battery

HP 4-cell (41 WHr) Li-Ion battery

Battery life

4-cell (41 WHr) battery Up to TBD hours (With Windows 7)

System Standby Time

Up to 1 week*

*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.

Power Conservation

Hibernation*



Features

Standby*
ACPI compliance*

* Only Linux will feature power conservation.

WEIGHTS & DIMENSIONS

Weight

Starting at 4.41 lbs (2.0 kg)
Weight will vary by configuration.

Dimensions (w x d x h)

9.61 x 13.59 x 0.90 in
244 x 345.25 x 22.9 mm

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

PORTS/SLOTS

Ports

VGA – One
HDMI* – One
Headphone / Microphone in Combo Jack – One
Power Connector – One
RJ-45 (Ethernet) – One
USB 3.0 – Two
USB 2.0 – One

Expansion Slots

HP Multi-Format Digital Media Reader - supports SD/SDHC/SDXC
Supports mini versions with adapter

* HDMI cable sold separately.

SERVICE AND SUPPORT

HP Services offers limited 1-year warranty options depending on country; 1-year limited warranty on primary battery. On-site service and warranty upgrades are also available. Optional* HP Care Pack Services** are extended service contracts which go beyond your standard warranties. For more details visit: <http://www.hp.com/go/lookuptool>.

*Sold separately or as an optional feature.

** 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. 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	18.5/19.5V
	Average Operating Power	Integrated graphics: TBD W
	Max Operating Power	< 65 W
Temperature	Operating	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)
	Non-operating	-4° to 140° F (-20° to 60° C)
Relative Humidity	Operating	10% to 90%, non-condensing
	Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
Shock	Operating	40 G, 2 ms, half-sine
	Non-operating	200 G, 2 ms, half-sine
Random Vibration	Operating	0.75 grms
	Non-operating	1.50 grms
Altitude (unpressurized)	Operating	-50 to 10,000 ft (-15.24 to 3,048 m)
	Non-operating	-50 to 40,000 ft (-15.24 to 12,192 m)
Planned Industry Standard Certifications	UL	Yes
	CSA	Yes
	FCC Compliance	Yes
	EPEAT®	Registered TBD 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

* 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>.



Technical Specifications

DISPLAY

14.0-inch LED HD (1366 x 768) Anti-glare	Active Area (w x h)	12.16 x 6.85 in (30.9 x 17.4 cm)
	Diagonal Size	14.0 in (35.6cm)
	Surface Treatment	Anti-glare
	Contrast Ratio	300:1 (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	101 ppi
	Viewing Angle	±40° Horizontal, ±10°/-30° Vertical (minimum) 40/40/30/10 (Left/Right/Down/Up)

STORAGE AND DRIVES

Internal Storage

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

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



Technical Specifications

	Logical Blocks	1,465,149,168	
	Operating Temperature	32° to 140° F (0° to 60° C) [case temp]	
	Features	ATA Security	
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)	150 MB/s (Drive Capability)
	Seek Time	Single Track	3 ms
	(typical reads, including settling)	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	

* For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 8.1) of system disk is reserved for the 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 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	



Technical Specifications

NETWORKING/COMMUNICATIONS

Networking

**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 (100BASE-T; IEEE 802.3ab; IEEE 802.3 clauses 21-30) (Support in RTL8161FH-CG only)

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)

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)

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

NIC Device Driver Name

PCI Express 1.1 x1 to fully support ASPM L0s/L1 and CLKREQ

Realtek PCIe FE Ethernet Family Controller

Communications

**Atheros 802.11b/g/n
WiFi Adapter*, ****

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

802.11n150Mbps for MCS7

Frequency Support

20 MHz: 2.4 GHz bands

Modulation

Direct Sequence Spread Spectrum

DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM

Security¹

Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST.



Technical Specifications

	Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 5) with Microsoft Windows 7 only.
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output Power²	13.5 dBm, minimum
Power Consumption	Idle associated: 250 mW avg (CLKREQ enabled) Idle unassociated: 100 mW avg Transmit/Receive channel: 2.0 /1.6 W
Power Management	ACPI compliant power management 802.11 compliant power saving mode
Receiver Sensitivity³	11b:-88dBm@11 Mbps, 11g:-74 dBm@54 Mbps, 11n:-70dBm@72 Mbps
Antenna type	High efficiency dual antenna with spatial diversity, usually mounted in the display enclosure
Form Factor	PCI-Express Half-MiniCard
Weight	4 g
Dimensions	3.3 x 26.65 x 29.85 mm
Operating Voltage	3.3v +/- 9%
Temperature	Operating -10° to 70° C Non-operating -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 LED on-Radio OFF; White LED on-Radio ON

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

NOTE: WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista and Win7.

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

** Sold separately or as an optional add-on feature.

Realtek 802.11b/g/n
Bluetooth 4.0 Combo Card*, **

Wireless LAN Standards IEEE 802.11b
IEEE 802.11g
IEEE 802.11n



Technical Specifications

Interoperability	Wi-Fi certified)
Frequency Band	2.402 – 2.482 GHz
Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: 150Mbps for MCS7
Modulation	Direct Sequence Spread Spectrum
Security¹	DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST. WAPI Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 5) with Microsoft Windows Vista and XP only.
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK
Network Architecture	Ad-hoc (Peer to Peer)
Models	Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output Power (for CCK) ²	13.5dBm , minimum
Power Consumption	Idle associated: 250 mW Idle unassociated: 150 mW Transmit: 2.0 W (max) Receive: 2.0 W (max)
Power Management	ACPI compliant power management 802.11 compliant power saving mode
Receiver Sensitivity³	11b:-88dBm@11Mbps, 11g:-74 dBm@54Mbps, 11n:-70dBm@72.Mbps.
Antenna type	High efficiency dual antenna with spatial diversity, mounted in the display enclosure
Form Factor	PCI-Express Half-MiniCard v1.2
Weight	6 g
Dimensions	3.3 x 26.65 x 29.85 mm
Operating Voltage	3.3v +/- 10%
Temperature	Operating 14° to 149° F (-10° to 65° C) Non-operating -40° to 176° F (-40° to 80° C)
Humidity	Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing)
Altitude	Operating 0 to 10,000 ft (3,048 m) Non-operating 0 to 50,000 ft (15,240 m)
LED Activity	LED Off – Radio OFF; Solid LED On – RadioON

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



Technical Specifications

NOTE: WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista and Win7.

Bluetooth Specification

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

Number of Available Channels 79 (1 MHz) available channels

Data Rates and Throughput 3 Mbps data rate; throughput up to 2.17 Mbps

Synchronous Connection Oriented links up to 3, 64 kbps, voice channels

Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric

Transmit Power -6 dBm to 4 dBm (Bluetooth Class II)

Receiver Sensitivity Better than -80 dBm at 0.1 % raw bit error rate

Power Consumption Peak (Tx) 330 mW

Peak (Rx) 230 mW

Sleep <17 mW

Antenna Internally integrated within module

Range Up to 33 ft (10 m)

Electrical Interface USB 2.0 compliant

Microsoft Windows Plug and Play compliant

Bluetooth Software Supported Broadcom Bluetooth for Windows

Microsoft Windows Bluetooth Software

Link Topology Point to Point, Multipoint Pico Nets up to 7 slaves

Security Full support of Bluetooth Security Provisions

Power Management Microsoft Windows ACPI, and USB Bus Support

Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff

Certifications All necessary regulatory approvals for supported countries, including:

FCC (47 CFR) Part 15C, Section 15.247 & 15.249

ETS 300 328, ETS 300 826

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)



Technical Specifications

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.

** Sold separately or as an optional add-on feature.

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

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

Interoperability
Frequency Band

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: card will support rates for NSS=1 and NSS=2 for RX and TX for 20 and 40 MHz channels. Short and long guard interval shall be supported.

Modulation

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

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

Ad-hoc (Peer to Peer)
 Infrastructure (Access Point Required)



Technical Specifications

Roaming	IEEE 802.11 compliant roaming between access points
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	3.3g
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



Technical Specifications

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



Technical Specifications

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

Audio Hardware

Implementation	Realtek ALC3201-GR High Definition audio
Volume Controls	Up, down, and mute function keys
Full Duplex	Yes
Microphone In	Stereo
Headphone/Line Out	Stereo
Integrated Microphone	Yes

Audio Output Quality

Frequency Response	10 Hz ~ 22 KHz
Signal to Noise Ratio	Typical 95 dB FSA (DAC)
Total Harmonic Distortion	Typical -88 dB FS (DAC)
Noise Floor	-110 dB
Play/Record Sampling Rate(s)	Up to 192 KHz
DAC	24 bits
ADC	24 bits

Integrated Stereo Speakers

Power Rating	1.5 W
Impedance	4 ohms

Multimedia

Integrated HD Webcam

Supports videoconferencing and still image capture
Improved quality for video streaming and still image capture (1280x720 resolution)
Up to 30 frames/sec
Fixed focus lens

POWER

HP 65W AC Adapter

Dimensions	4.21 x 1.85 x 1.18 in (10.7 x 4.7 x 3.0 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
	Input AC current	1.7 A at 90 VAC
Output	Output power 65W	
	DC output 18.5/19.5V	
	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	



Technical Specifications

	Environmental Design	Operating temperature	41° to 95° F (5° to 35° C)
		Non-operating (storage) temperature	-4° to 185° F (-20° to 85° C)
		Altitude	0 to 5,000 ft (0 to 1,524 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.	
4-Cell (41 WHr) Lithium-Ion battery	Cells/Type	4-cell Lithium-Ion	
	Energy	Watt-hour capacity	41 WHr
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 140° F (-10° to 60° C)
	Battery Re-Charge Time	Non-operating System in OFF or Standby Mode	-4° to 140° F (-20° to 60° C) 2.5 hours
		System ON	3 to 5 hours (depending on system power consumption)
		HP Fast Charge Technology	Charges the battery up to 90% within 90 minutes when system is OFF

ENVIRONMENTAL

TBD

COUNTRY OF ORIGIN

China



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

NOTE: Options/capabilities listed in the QuickSpecs represent those capabilities available through Base Units or Build to Order configurations. The various product features and capabilities will vary in terms of configurable vs. aftermarket options (AMOs). There may be options and capabilities available through CTO that are not available as AMOs.

Type	Description	Part #
Docking	HP 3005pr USB 3.0 Port Replicator	H1L08AA#xxx
	HP 2005pr USB 2.0 Port Replicator	H1L07AA#xxx
	HP 3001 USB 3.0 Port Replicator	F3S42AA#xxx
	HP Display and Notebook Stand	AW662AA
Input/Output	HP Stylish USB Keyboard and Mouse	H4B80AA#xxx
	HP Stylish Wireless Keyboard and Mouse	H4B79AA#xxx
	HP Comfort Grip Wireless Mouse	H2L63AA
	HP X4000b Bluetooth Mouse	H3T50AA#xxx
	HP 3-Button USB Laser Mouse	H4B81AA
	HP USB Optical Travel mouse	RH304AA
	USB Graphics Adapter (DBU PL)	NL571AA
Power	HP 45W Smart AC Adapter (4.5mm) 90W Smart AC/Auto/Air Combo Adapter	H6Y88AAAJ652AA#xx x
	HP 65W Smart AC Adapter (4.5mm)90W Smart Auto/Truck Adapter	H6Y89AAED493AA
	HP 90W Smart AC Adapter (4.5mm)HP 65W Slim Adapter	H6Y90AAAX727AA#X XX
Security	HP UltraSlim Keyed Cable Lock	H4D73AA
Storage - External Storage	HP External USB Optical Drive	F2B56AA
Other	HP HDMI to VGA Adapter	F5A28AA
Monitors	HP EliteDisplay E271i 27-inch IPS LED Monitor	D7Z72AA/A8/AS/AT
	HP EliteDisplay E231 23-inch LED Monitor	C9V75AA/A8/AS/AT
	HP EliteDisplay E201 20-inch LED Monitor	C9V73AA/A8/AS/AT
	HP ProDisplay P221 21.5" LED Monitor	C9E49AA/A8/AS/AT
	HP ProDisplay P201 20" LED Monitor	C9F26AA/A8/AS/AT



Summary of Changes

Date of change	Version History		Description of change
March 19, 2015	V1 to v2	Changed	Memory speed units on page 5
June 29, 2015	V2 to v3	Added	Windows 10 to Overview on page 3; OS list and footnotes on pages 4.5

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