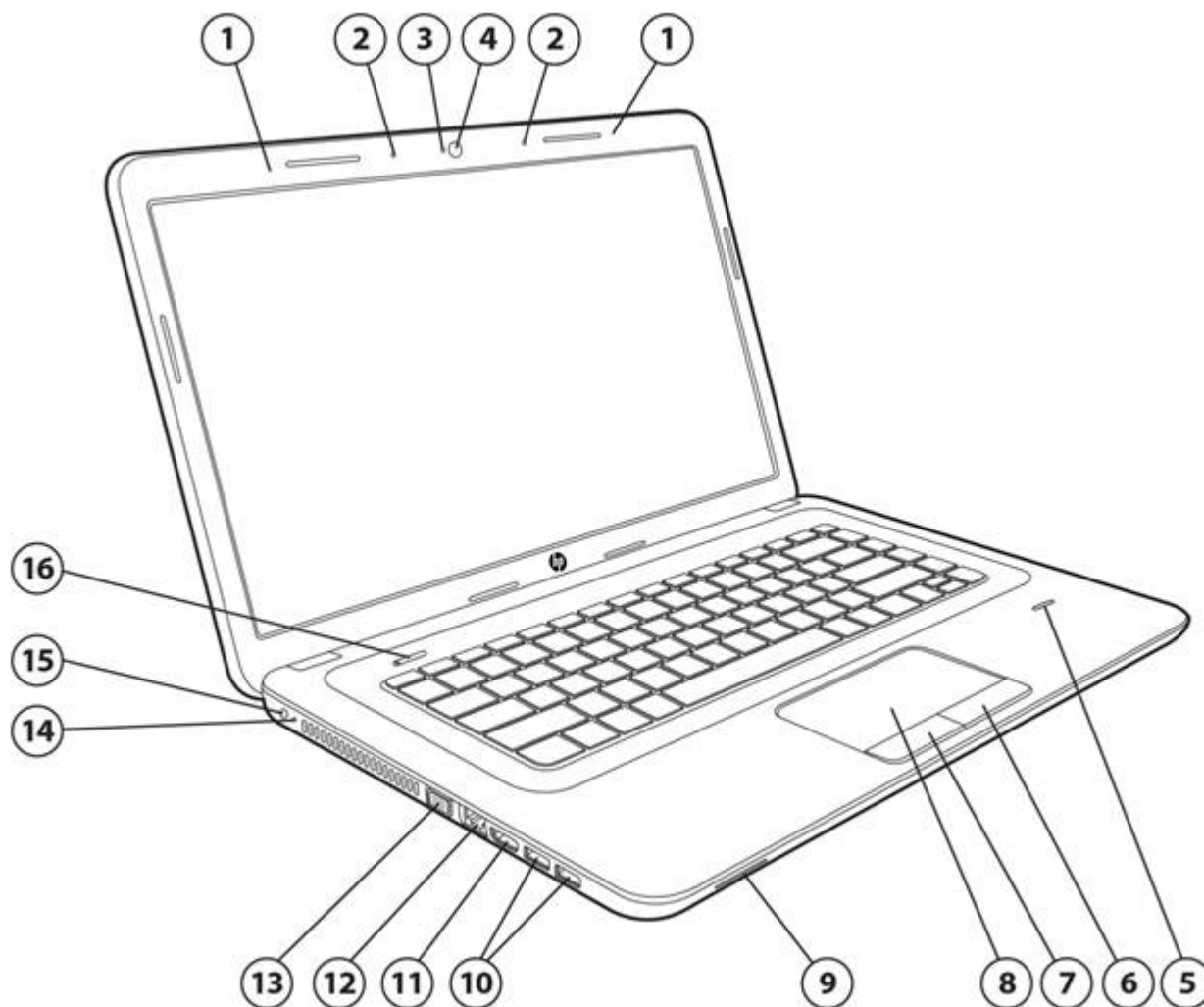


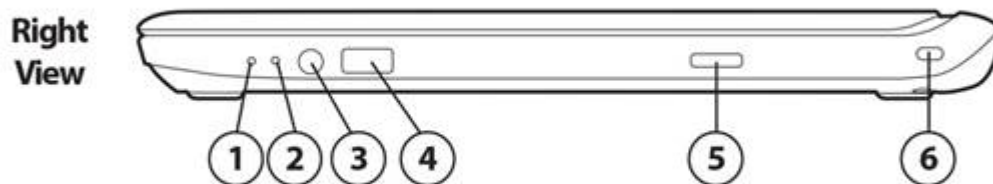
Overview

HP 340 G2 Notebook PC

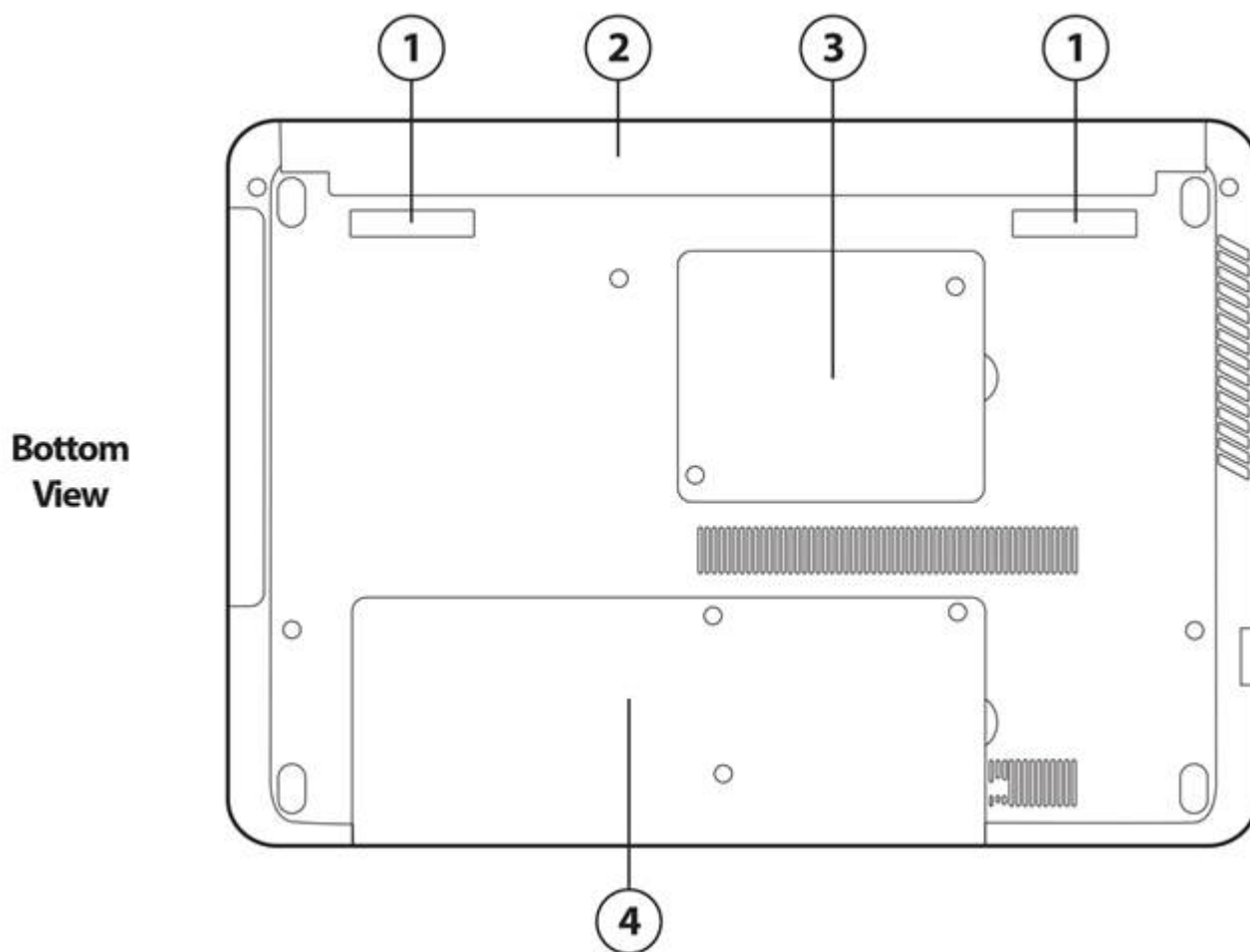


- | | |
|---|-----------------------|
| 1. WLAN antennas (One or two) | 9. SD Card reader |
| 2. Internal microphones | 10. USB 3.0 ports (2) |
| 3. Webcam LED | 11. HDMI port |
| 4. Webcam | 12. RJ-45 (Ethernet) |
| 5. Finger print reader (Select models only) | 13. VGA port |
| 6. Right TouchPad button | 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

- | | | | |
|----|-------------------------|----|---|
| 1. | Battery release latches | 3. | Memory module compartment |
| 2. | Battery bay | 4. | Hard drive bay compartment and wireless compartment |

Overview

AT A GLANCE

- Windows 8.1 versions, Windows 7 versions, Ubuntu Linux, NeoKylin, or FreeDOS 2.0
- Choose from 5th, 4th Generation Intel® Core or Intel® Celeron processors
- Intel® HD Graphics Family with shared memory or AMD Discrete Graphics
- 14.0" diagonal HD LED Anti-glare
- Storage options up to 750 GB Hard drives
- Memory options up to 16 GB
- Battery life up to 6 hours 45 minutes (UMA)
- Durable, sophisticated design with smooth surfaced silver color
- Full size island style and spill resistant keyboard
- HDMI port for connecting to high-resolution displays
- Optional HD webcam, integrated microphone
- Supports a broad range of wireless options
- Starting at 4.41 lbs (1.99 kg)
- DTS Sound™ optimized for high fidelity audio

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

Features

PRODUCT NAMES

HP 340 G2 Notebook PC

OPERATING SYSTEM

Preinstalled

Windows 8.1 Pro 64*
Windows 8.1 64*
Windows 8.1 Single Language 64*
Windows 7 Professional 64 (available through downgrade rights from Windows 8.1 Pro Update 64)**
Ubuntu Linux
FreeDOS 2.0

Web only supported

Windows 8.1 Update Multi Language 64*
Windows 8.1 Single Language 64*
Windows 8.1 Pro 64*
Windows 7 Professional 64*

* Not all features are available in all editions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers and/or software to take full advantage of Windows 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 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

Intel® 5th Generation Processors

Intel® Core™ i7-5500U with Intel HD Graphics 5500 (2.4 GHz, up to 3 GHz with Intel Turbo Boost Technology, 4 MB cache, 2 cores)*

Intel® Core™ i5-5200U with Intel HD Graphics 5500 (2.2 GHz, up to 2.7 GHz with Intel Turbo Boost Technology, 3 MB cache, 2 cores)*

Intel® Core™ i3-5010U with Intel HD Graphics 5500 (2.1 GHz, 3 MB cache, 2 cores)*

Intel® 4th Generation Processors

Intel® Core™ i5-4200U (1.6 GHz, 3 MB L3 cache, 2 cores)*

Up to 2.6 GHz with Intel Turbo Boost Technology

Intel® Core™ i3-4005U (1.7 GHz, 3 MB L3 cache, 2 cores)*

Intel® Celeron® Processors

Intel® Celeron® 3205U with Intel HD Graphics (1.5 GHz, 2 MB cache, 2 cores)*

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

CHIPSET

Chipset is integrated with processor

Features

GRAPHICS

Integrated

Intel® UMA Graphics
Intel® HD Graphics 5500
Intel® HD Graphics

Switchable Discrete Graphics

AMD Radeon™ R5 M240
2G DDR3 with up to 2GB of dedicated video memory

DISPLAY

Internal

14.0" diagonal HD* LED Anti-glare (1366 x 768)

External

Up to 32-bit per pixel color depth

VGA

Port supports resolutions up to 1920 x 1080 external resolution @ 60 Hz

HDMI**

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

*HD content required to view HD images.

**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**

Support all 7mm/9.5mm, SATA 2.5" HDDs
Support Intel® Smart Response Technology
Accelerometer / HDD protection support

500 GB 5400 rpm SATA

500 GB 7200 rpm SATA

750 GB 5400 rpm SATA

NOTE: For hard drives, GB = 1 billion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 8.1) of system disk is reserved for the system recovery software.

OPTICAL DRIVES

Fixed Optical Drive

DVD+/-RW Double-Layer* SuperMulti

No optical drive 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 DVD-RAM 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

2048 MB Total System Memory

4096 MB Total System Memory

6144 MB Total System Memory

8192 MB Total System Memory

16384 MB Total System Memory

Maximum

Upgradeable to 16384 MB with 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.

* 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

802.11 b/g/n (1x1) wireless LAN module^{*, **}

802.11 b/g/n (1x1) + Bluetooth® Combo^{*, **}

802.11 a/b/g/n (2x2) + Bluetooth® Combo^{*, **}

*Sold separately or as an optional feature.

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

Communications

Integrated Ethernet 10/100/1000 NIC

AUDIO/MULTIMEDIA

Features

Audio

DTS Sound™

Two integrated Stereo Speaker

Headphone / Microphone in Combo Jack

Dual digital microphone

Webcam

Optional 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

*Internet access required.

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard

Full size island style keyboard

Spill resistant

Touchpad

Multitouch gestures enabled

Taps enabled as default

SOFTWARE AND SECURITY

Preinstalled Software with Windows Operating System

HP Recovery Manager

CyberLink YouCam 5

CyberLink PowerDVD 12

McAfee™ LiveSafe– Internet Security*

McAfee Central (only Win8.1)

Getting Started with Win8-Metro (Win8.1)/ Getting Started (Win 7)

HP SimplePass

Intel Small Business Advantage **

HP 3D DriveGuard (requires Windows)

HP ePrint***

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

**Not available with Pentium/Celeron/I3 CPUs

***HP ePrint 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/businessmobileprinting

Security

Security lock slot (Lock sold separately.)

Optional* Fingerprint Reader

Optional* TPM 1.2

Features

*Sold separately.

POWER

Power Supply

45W Smart AC Adapter

65W Smart AC Adapter

65W Smart AC Adapter – EM

Primary Battery

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

Battery life

UMA Up to 6 hours 45 minutes*

Discrete Up to 6 hours 30 minutes*

* Windows 8.1 MM12 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

TBD

WEIGHTS & DIMENSIONS

Weight

4.41 lbs (1.99 kg)

Dimensions (w x d x h)

13.66 x 9.65 x 0.90 in

34.7 x 24.5 x 2.29 cm

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

RJ-45 / Ethernet – One

AC Smart Pin adapter plug – One

USB Ports

Two - USB 3.0 on one side

One - USB 2.0 on other side

HP Multi-Format Digital Media Reader

Support SD/SDHC/SDXC

Push-Push Insertion/Removal

Note: All cables are sold separately.

Features

SERVICE AND SUPPORT

HP Care 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 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: 12.741 W
	Max Operating Power	< 65 W
Temperature	Operating	32° to 95° F (0° to 35° C) (not writing optical)
	Non-operating	41° to 95° F (5° to 35° C) (writing optical)
	Operating	-4° to 140° F (-20° to 60° C)
Relative Humidity	Non-operating	10% to 90%, non-condensing
	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®	TBD models*
	EPEAT®	Registered Silver in United States**
	Australia /	Yes
	NZ A-Tick Compliance	
	CCC	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 340 G2 Notebook PC that are ENERGY STAR qualified are identified as HP 340 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>.

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 x17.4 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

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	300 MB/s (Drive Capability)
		(maximum)	
	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	

Technical Specifications

500 GB* 7200 rpm SATA Hard Drive	Drive Weight	0.25 lb (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 300 MB/s (Drive Capability) (maximum)
	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

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 300 MB/s (Drive Capability) (maximum)
	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

* For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 8.1) of system disk is reserved for the system recovery software.

Technical Specifications

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

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

Technical Specifications

	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 FE Ethernet Family Controller
Communications		
Atheros 802.11 b/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 802.11n: 150Mbps 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. 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@11Mbps, 11g:-74 dBm@54Mbps, 11n:-70dBm@72.Mbps.

Technical Specifications

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	
	<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 (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 Windows 7.

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

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

Ralink 802.11b/g/n Bluetooth 4.0 Combo Card*, **	Wireless LAN	IEEE 802.11b
	Standards	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: 150Mbps for MCS7
	Modulation	Direct Sequence Spread Spectrum
		DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM
	Security ¹	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.

Technical Specifications

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 Sensitivity ³	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).

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

Technical Specifications

Transmit Power	Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric
Receiver Sensitivity	-6 dBm to 4 dBm (Bluetooth Class II)
Power Consumption	Better than -80 dBm at 0.1 % raw bit error rate 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.

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

**Broadcom 802.11 a/b/g/n Wireless LAN
(2x2) + Bluetooth™ 4.0 Standards
combo *, ****

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

Technical Specifications

Interoperability	Wi-Fi certified
Frequency Band	<p>802.11b/g/n</p> <ul style="list-style-type: none"> o 2.402 - 2.482 GHz <p>802.11a/n</p> <ul style="list-style-type: none"> o 4.9 - 4.95 GHz (Japan) o 5.15 - 5.25 GHz o 5.25 - 5.35 GHz o 5.47 - 5.725 GHz o 5.825 - 5.850 GHz o 2.402 - 2.482 GHz
Data Rates	<p>802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps</p> <p>802.11b: 1, 2, 5.5, 11 Mbps</p> <p>802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps</p> <p>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.</p>
Modulation	<p>Direct Sequence Spread Spectrum</p> <p>BPSK, QPSK, CCK, 16-QAM, 64-QAM</p>
Security¹	<ul style="list-style-type: none"> o IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only o AES-CCMP: 128 bit in hardware o 802.1x authentication o WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. o WPA2 certification o IEEE 802.11i o Cisco Certified Extensions, all versions through V5 o WAPI
Network Architecture	Ad-hoc (Peer to Peer)
Models	Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output Power²	<ul style="list-style-type: none"> o 2.4G: +13.5dBm minimum o 5G: +12dBm minimum o 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

Technical Specifications

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)
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
<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 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

Technical Specifications

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
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.

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

AUDIO/MULTIMEDIA

Technical Specifications

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 45W Smart AC Adapter

Dimensions	Input	3.78 x 1.95 x 0.88 in (9.6 x 4.95 x 2.24 cm)
		90 to 265 VAC
Output	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 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)

Technical Specifications

		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.		
HP 65W Smart AC Adapter	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	
	Output	Input frequency range	47 to 63 Hz	
		Input AC current	1.7 A at 90 VAC, 0.85 A at 180 VAC	
		Output power	65W	
		DC output	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		
	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 - 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.		

Technical Specifications

HP 65W EM 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 (290 g) 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 <11A, 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 185° F (-20° to 85° C)
		Altitude 0 to 10,000 ft (0 to 3,048 m)
		Humidity 20% to 95%
	EMI and Safety Certifications	Storage Humidity 10% to 95%
		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	Dimensions (h x w x l)	TBD in (TBD cm)
	Weight	TBD lb (TBD kg)
	Cells/Type	4-cell Lithium-Ion
	Energy Temperature	Watt-hour capacity 41 WHr
		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 or Standby Mode 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

Environmental Data	Eco-Label Certifications	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:
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Technical Specifications

& declarations

- IT ECO declaration
- ~~US ENERGY STAR®~~
- EPEAT Silver 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 (Sort idle)	9.08 W	8.59 W	8.5 W
Normal Operation (Long idle)	4.82 W	5.01 W	4.8 W
Sleep	0.99 W	1.01 W	1.01 W
Off	0.32 W	0.37 W	0.32 W

Note:

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

Heat Dissipation*

	115VAC, 60Hz	230VAC, 50Hz	100VAC, 60Hz
Normal Operation (Short idle)	31 BTU/hr	29 BTU/hr	29 BTU/hr
Normal Operation (Long idle)	16 BTU/hr	17 BTU/hr	16 BTU/hr
Sleep	3 BTU/hr	3 BTU/hr	3 BTU/hr

Technical Specifications

Off	1 BTU/hr	1 BTU/hr	1 BTU/hr
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*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)
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Typically Configured – Idle

2.1	20
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Fixed Disk – Random writes

3.3	32
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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??

<edit list of features as required>

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 the1ppm by weight
- Cadmium greater than 20ppm by weight

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

Additional Information

- ~~This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.~~
- ~~This HP product is designed to comply with the Waste Electrical and~~

Technical Specifications

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 silver level, see www.epeat.net
- Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.
- This product contains 0 % post-consumer recycled plastic (by wt.)
- This product is 94.8 % recycle-able when properly disposed of at end of life.

Packaging Materials	External:	PAPER/Corrugated	385.7 g
	Internal:	PLASTIC/EPE (Expanded Polyethylene)	43.5 g
		PLASTIC/Polyethylene low density	13.8 g
		PLASTIC/Polyester	6.5 g

The plastic packaging material contains at least 50 % recycled content.

The corrugated paper packaging materials contains at least 70 % 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/gse.pdf>):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants – may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBEBs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

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

Technical Specifications

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)

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 number
Case	HP Essential Top Load Case (up to 15.6")	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
	HP Business 4 Wheel Roller Case	H5M93AA
Docking	HP Adjustable Display Stand	AW663AA#
	HP LCD Monitor Stand	QM196AA
	HP USB 3.0 Port Replicator (Spin)	H1L08AA#
	HP 3001pr USB 3 Port Replicator	F3S42AA
Input/Output	HP Wireless Mobile Mouse	H2L63AA
	HP 3-button USB Laser Mouse	H4B81AA
	HP USB Essential Keyboard/Mouse	H6L29AA
	HP Stylish Wireless KB/Mouse	H4B79AA
Adapters	USB Graphics Adapter	NL571AA/AT
	HDMI to VGA Adapter	H4F02AA
	HP HDMI to DVI Adapter	F5A28AA
	Adapter, USB Graphics - dual output	C5U89AA/AT
	HP 45W Smart AC Adapter (4.5mm) (PL MP only)	H6Y88AA#xxx
	HP 65W Smart AC Adapter (4.5mm)	H6Y89AA#xxx
	HP 65W Slim AC Adapter	H6Y82AA#xxx
	HP 90W Slim AC Adapter	H6Y83AA#xxx
Security	HP 14.0" Notebook Privacy Filter	J6E65AA
	HP 15.6" Notebook Privacy Filter	J7H71AA
	HP UltraSlim Keyed Cable Lock	H4D73AA
Heath and Education	20 Notebook Managed Charging Cart	QL489AA#xxx
	20 Notebook Charging Cart	QL488AA
	30 Notebook Managed Charging Cart	QL490AA
	30 Notebook Charging Cart	H4F31AA
Displays	HP EliteDisplay S240ml 23.8-in IPS LED Backlit MHL Monitor	F4M47AA
	HP EliteDisplay S140u 14-inch USB Portable Monitor	G8R65AA
	HP ProDisplay P221 21.5-inch LED Backlit Monitor	C9E49AA

Summary of Changes

Date of change:	Version History:		Description of change:
March 19, 2015	V1 to V2	Updated	Memory speed units on page 7
March 26, 2015	V2 to V3	Added	Battery life page 4 and 9

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