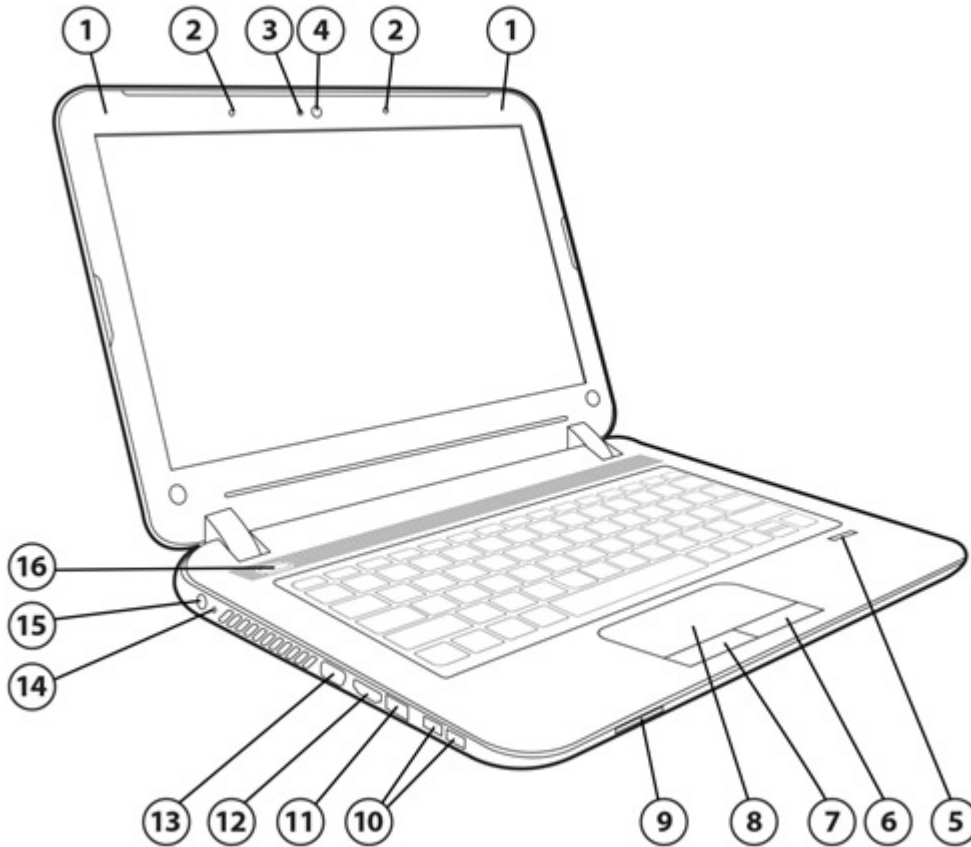
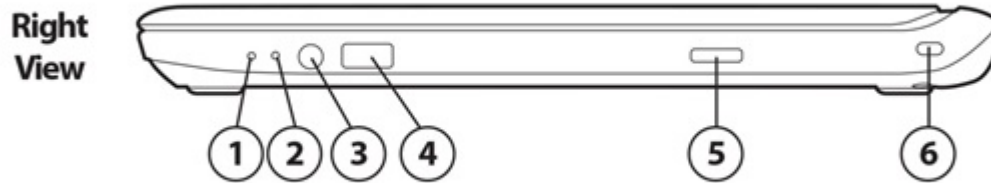


Overview



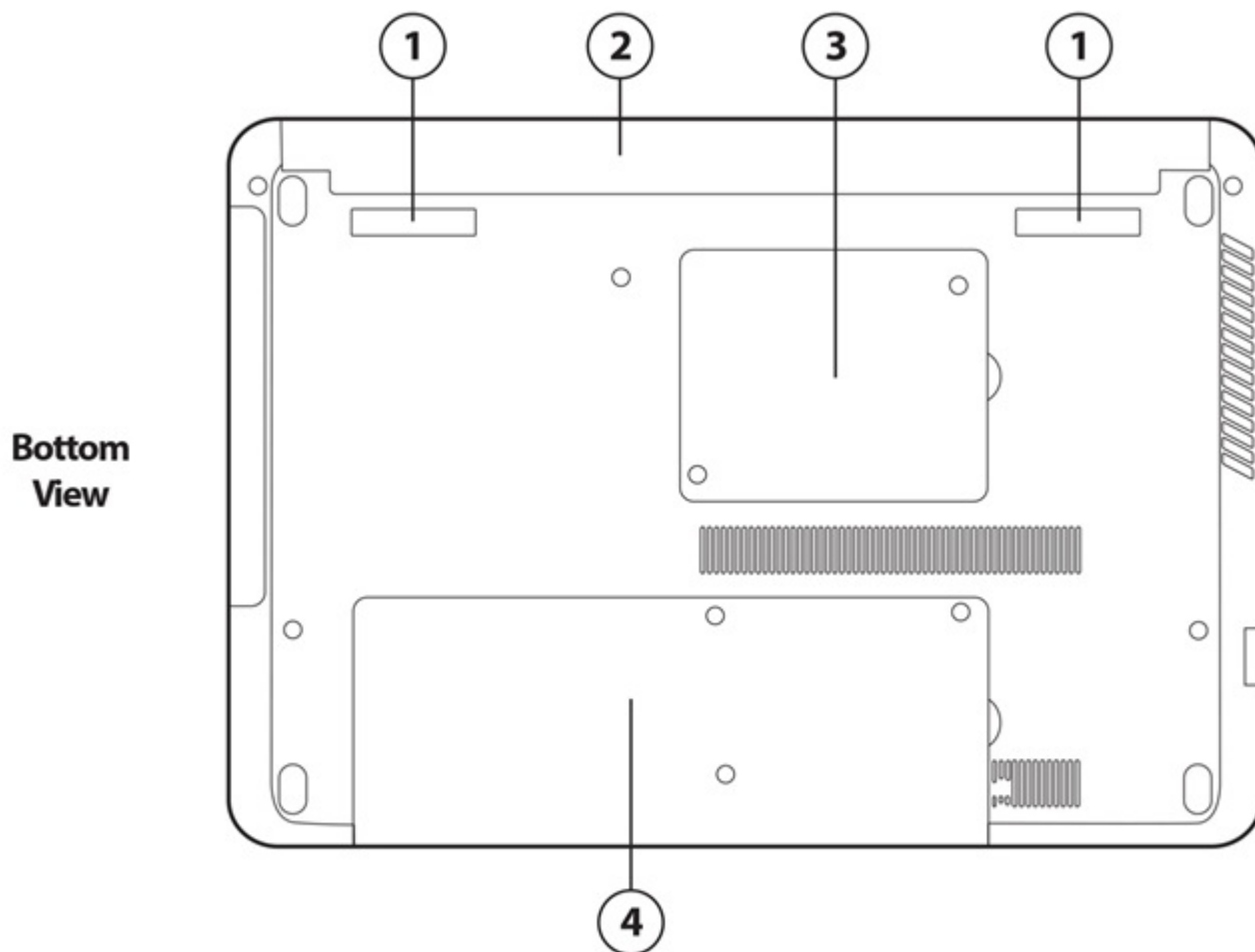
- | | |
|---|-----------------------|
| 1. WLAN antennas (select models only) | 9. SD Card reader |
| 2. Internal microphones | 10. USB 3.0 ports (2) |
| 3. Webcam LED | 11. RJ-45 (Ethernet) |
| 4. HP HD Webcam | 12. HDMI port |
| 5. Finger print reader (select models only) | 13. VGA port |
| 6. Touchpad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

Overview

At A Glance

- Windows 8.1 versions, Windows 7 Professional 64 (available through downgrade rights from Windows 8.1 Pro 64), Ubuntu Linux, FreeDOS 2.0
- Integrated Intel® HD Graphics Family with shared memory or AMD Radeon™ HD 8670M discrete graphics (1 GB or 2 GB DDR3, Switchable Graphics)
- Durable, sophisticated design with smooth surfaced silver color.
- Full-sized keyboard with numeric keypad
- 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
- 802.11 b/g/n 1x1 wireless LAN module, 802.11 b/g/n 1x1 wireless LAN module + Bluetooth® 4.0 combo, and 802.11 a/b/g/n 2x2 wireless LAN module + Bluetooth 4.0 combo
- 15.6" 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 350 G1 Notebook PC

OPERATING SYSTEM

Preinstalled

Windows 8.1*

Windows 8.1 Pro*

Windows 7 Professional 64 (available through downgrade rights from Windows 8.1 Pro 64**)

Ubuntu Linux

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.

PROCESSOR

4th Generation Intel® Core™ i7-4500U (1.8 GHz, 4 MB L3 cache, 2 cores)*

4th Generation Intel® Core™ i5-4200U (1.6 GHz, 3 MB L3 cache, 2 cores)*

4th Generation Intel® Core™ i3-4005U (1.7 GHz, 3 MB L3 cache, 2 cores)*

Intel® Pentium 3558U (1.7 GHz, 2 MB L3 cache, 2 cores)*

Intel® Celeron 2957U (1.4 GHz, 2 MB L3 cache, 2 cores)*

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

CHIPSET

Chipset is integrated with processor

GRAPHICS

Integrated: Intel® HD Graphics 4400 (Core I processor)

Integrated: Intel® HD Graphics (Pentium/Celeron processor)

Discrete: AMD Radeon™ HD 8670M (1 GB or 2 GB DDR3, Switchable Graphics)

Features

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 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**

320/500/750 GB/1 TB 5400 rpm SATA

500 GB 7200 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.

FLASH CACHE

mSATA

32GB mSATA*

* Not available with Celeron/Pentium/i3 CPUs.

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 SDRAM (1600 MHz)

Two SODIMM slots supporting dual-channel memory

Standard memory up to 8192 MB*

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^{1,2}

802.11 b/g/n (1x1) + Bluetooth 4.0 Combo^{1,2}

802.11 a/b/g/n (2x2) + 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 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
HP SimplePass Identity Protection
HP CoolSense
Intel® Small Business Advantage

Security

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

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.

Features

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 8.5 hours (With Windows 7)

System Standby Time

Up to 1 week**

* Windows 7 battery life will vary depending on numerous 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.

**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*

Standby*

ACPI compliance*

* Only Linux will feature power conservation.

WEIGHTS & DIMENSIONS

Weight

Starting at 5.07 lbs (2.30 kg)

Weight will vary by configuration.

Dimensions (w x d x h)

10.28 x 15.12 x .91 in

26.1 x 38.4 x 2.31 cm

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

Features

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
Temperature	Max Operating Power	< 65 W
	Operating	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)
Relative Humidity	Non-operating	-4° to 140° F (-20° to 60° C)
	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 Silver 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	

Technical Specifications

* Configurations of the HP 350 G1 Notebook PC that are ENERGY STAR qualified are identified as HP 350 G1 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" diagonal LED-backlit HD anti-glare flat (1366 x 768)	Active Area (w x h)	13.54 x 7.59 in (34.4 x 19.4 cm)	
	Diagonal Size	15.6 in (39.6cm)	
	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) (minimum)		

STORAGE AND DRIVES

Internal Storage

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 (maximum)	300 MB/s (Drive Capability)
	Seek Time	Single Track	1.5 ms
	(typical reads, including settling)	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	

Technical Specifications

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
Logical Blocks	1,465,149,168
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) 150 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	

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) 150 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	

* 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

Technical Specifications

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 802.11b/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. 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

Technical Specifications

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.

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

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

Technical Specifications

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).

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

Technical Specifications

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 802.11a/b/g/n (2x2) + Bluetooth 4.0 combo *, **	Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n
	Interoperability	Wi-Fi certified
	Frequency Band	802.11b/g/n
		<ul style="list-style-type: none"> ● 2.402 - 2.482 GHz

Technical Specifications

	802.11 a/n
	<ul style="list-style-type: none">● 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	<ul style="list-style-type: none">● IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only● AES-CCMP: 128 bit in hardware● 802.1x authentication● WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.● WPA2 certification● IEEE 802.11i● Cisco Certified Extensions, all versions through V5● WAPI
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output 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)

Technical Specifications

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	
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	

Technical Specifications

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

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

Technical Specifications

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
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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	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	
	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%		

Technical Specifications

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 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)

ENVIRONMENTAL

Environmental Data	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:		
		<ul style="list-style-type: none"> ● 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)	8.17 W	8.13 W	6.85 W
	Normal Operation (Long idle)	4.33 W	4.74 W	4.32 W
	Sleep	0.98 W	1.08 W	0.97 W
	Off	0.85 W	0.95 W	0.48 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

Technical Specifications

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)	28 BTU/hr	28 BTU/hr	23 BTU/hr
Normal Operation (Long idle)	15 BTU/hr	16 BTU/hr	15 BTU/hr
Sleep	3 BTU/hr	4 BTU/hr	3 BTU/hr
Off	3 BTU/hr	3 BTU/hr	2 BTU/hr

* 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 (LWAd, bels)	Sound Pressure (LpAm, decibels)
Typically Configured - Idle	2.6	25
Fixed Disk - Random writes	3.1	25

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

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 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.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 94.9% recycle-able when properly disposed of at end of life.

Packaging Materials

- External:
 - PAPER/Corrugated 405.4 g
- Internal:
 - PLASTIC/EPE (Expanded Polyethylene) 34 g
 - PLASTIC/Polyethylene low density 13.9 g
- The plastic packaging material contains at least 50% recycled content.
- The corrugated paper packaging materials contains at least 70%

Technical Specifications

Material Usage	<p>recycled content.</p> <p>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):</p> <ul style="list-style-type: none">● 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 (PBBEs)● Polybrominated Biphenyl Oxides (PBBOs)● Polychlorinated Biphenyl (PCB)● Polychlorinated Terphenyls (PCT)● Polyvinyl Chloride (PVC) - except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.● Radioactive Substances● Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)
Packaging Usage	<p>HP follows these guidelines to decrease the environmental impact of product packaging:</p> <ul style="list-style-type: none">● 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	<p>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.</p>

Technical Specifications

Hewlett-Packard Corporate Environmental Information

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.

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

TBD

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	90W Smart AC/Auto/Air Combo Adapter	AJ652AA#xxx
	90W Smart Auto/Truck Adapter	ED493AA
	HP 65W Slim Adapter	AX727AA#XXX
	90W Slim Adapter	BT796AA#XXX
	90W Slim Combo Adapter	H4A41AA
	90W w/USB Universal Adapter	H3A43AA
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

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

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