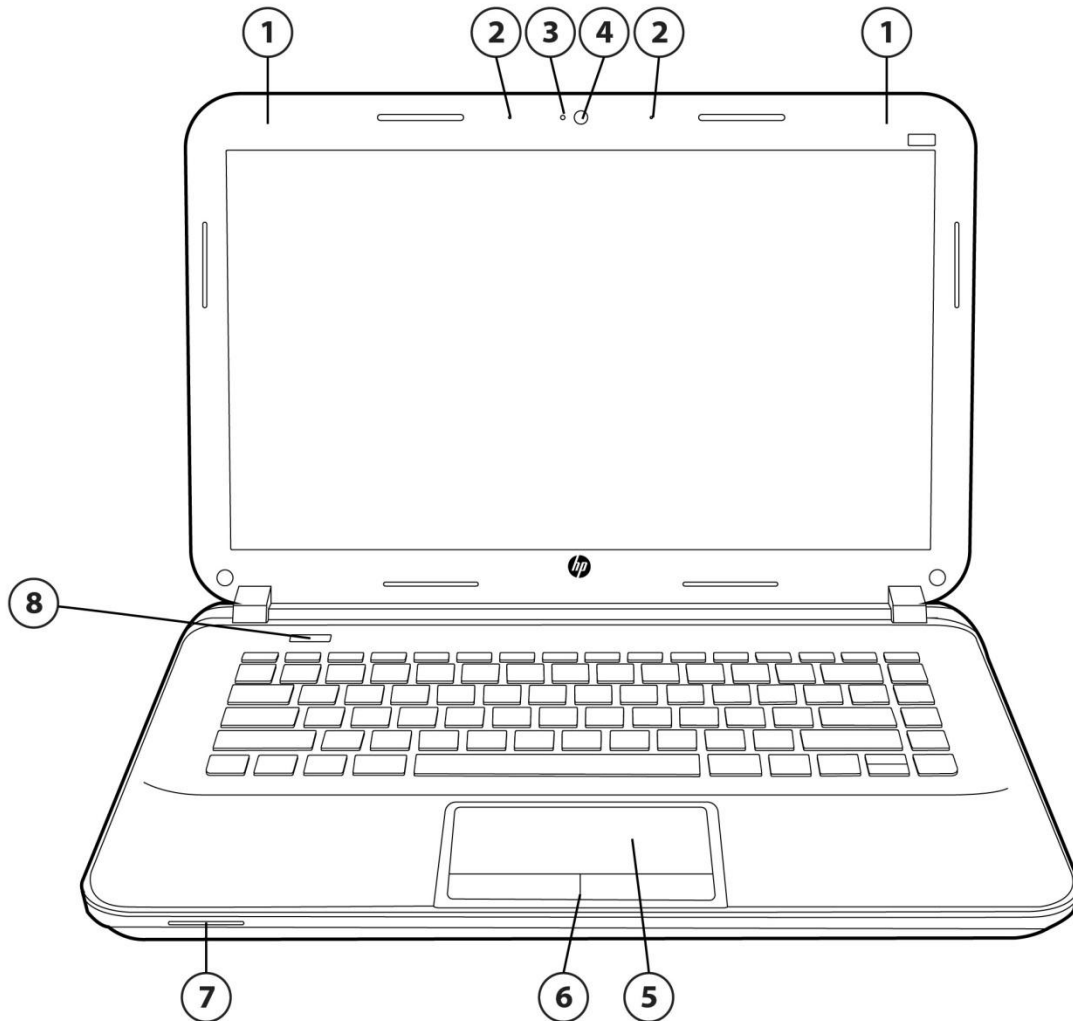


## Overview

### HP 240 G2 Notebook PC



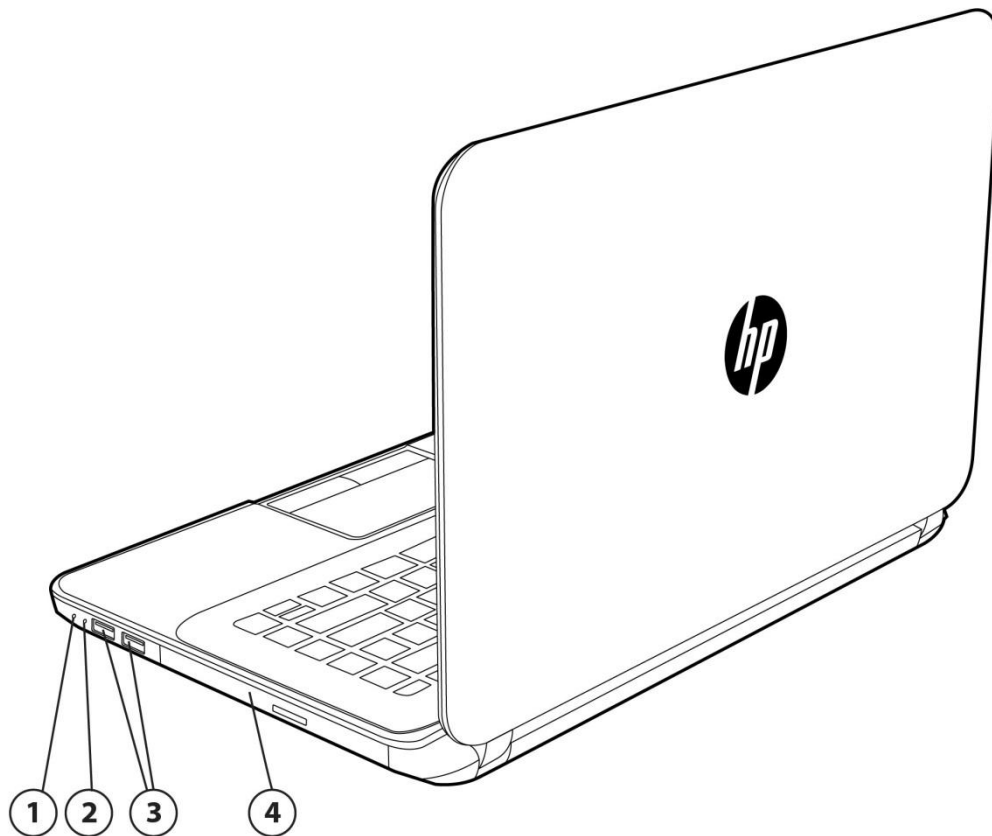
1. WLAN antennas (select models only)
2. Internal microphone
3. Webcam light
4. Webcam

#### Front View

5. Touchpad with scroll zone
6. TouchPad buttons
7. Speaker
8. Power button

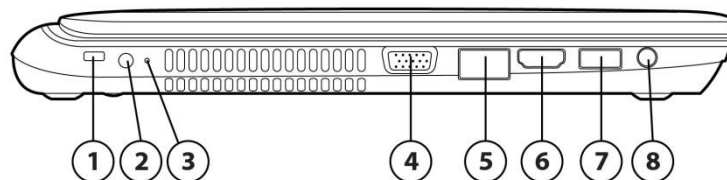


## Overview



### Right/Rear View

- 1. Duplicate power LED
- 2. Hard drive LED
- 3. USB 2.0 ports (2)
- 4. Optical drive door



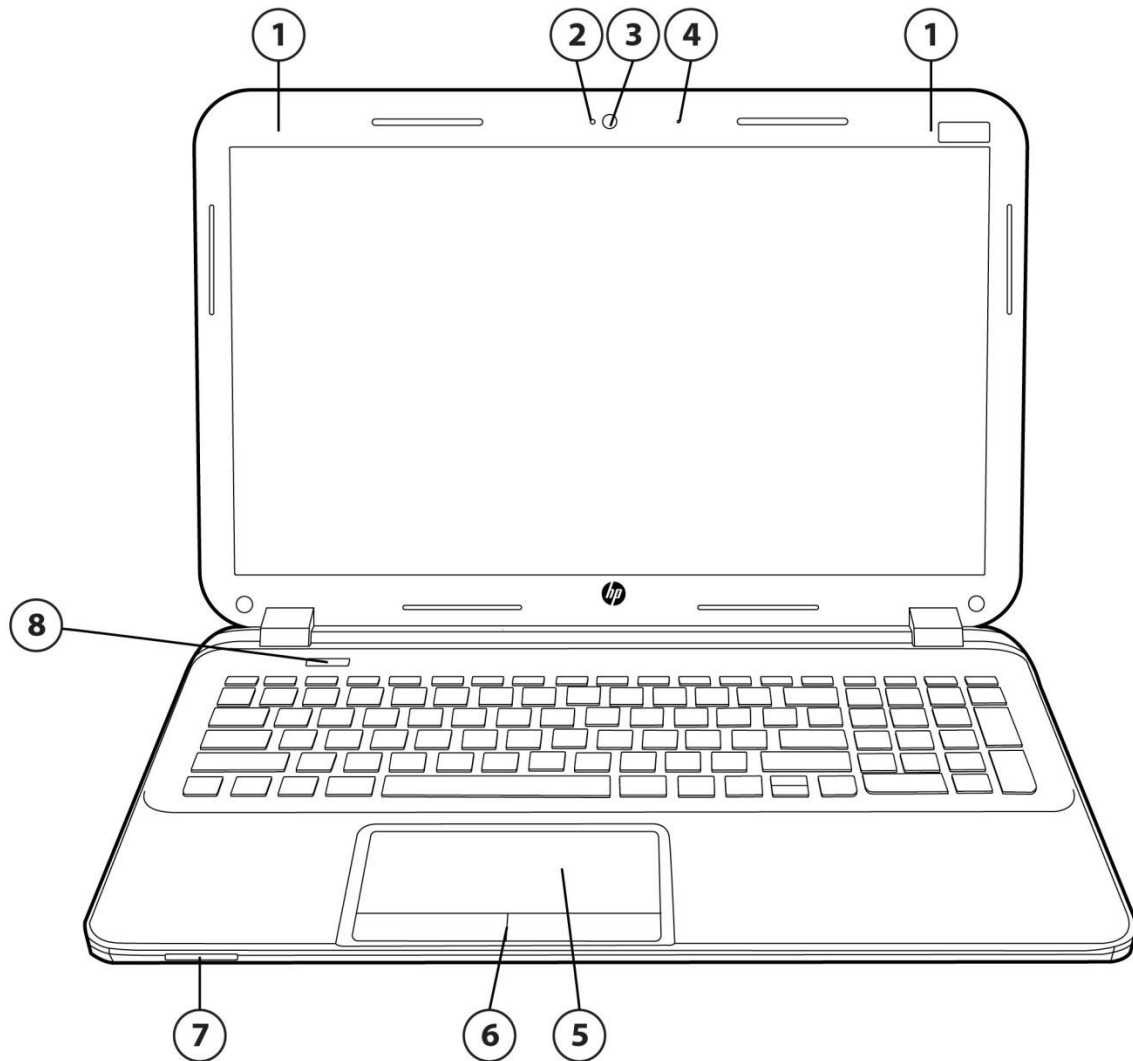
### Left View

- 1. Security cable slot
- 2. Power connector
- 3. AC adaptor LED
- 4. VGA port
- 5. RJ-45 (Ethernet)
- 6. HDMI port
- 7. USB 3.0 port
- 8. Headphone / Microphone-in combo jack



## Overview

### HP 250 G2 Notebook PC



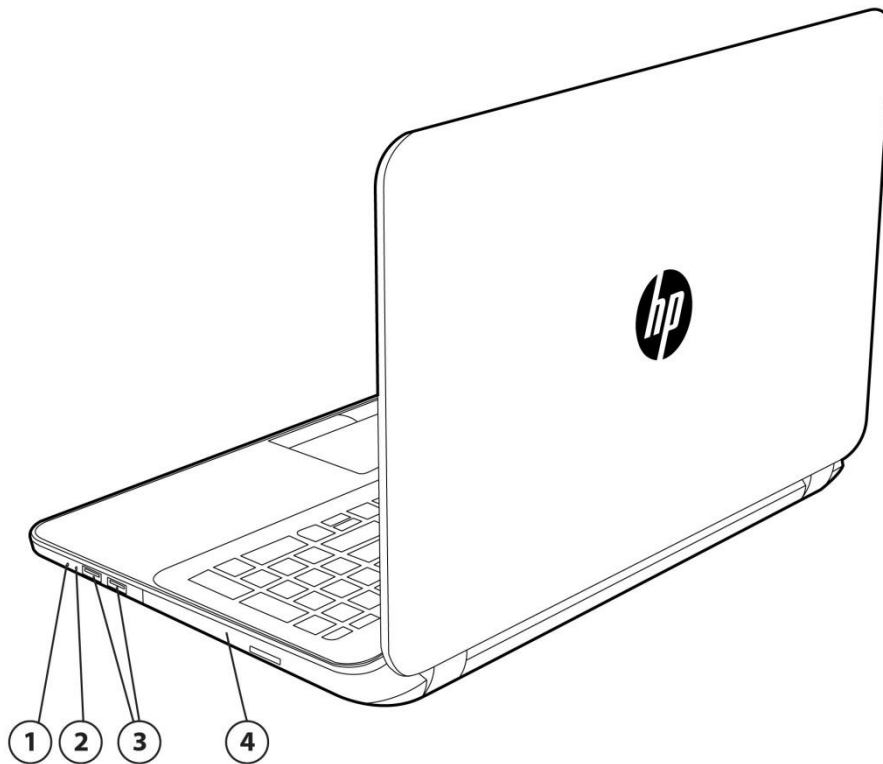
- 1. WLAN antennas (select models only)
- 2. Internal microphone
- 3. Webcam light
- 4. Webcam

#### Front View

- 5. Touchpad with scroll zone
- 6. TouchPad buttons
- 7. Speaker
- 8. Power button



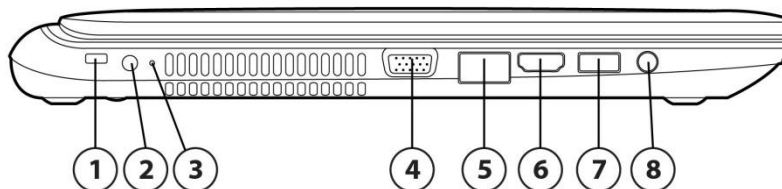
## Overview



1. Duplicate power LED
2. Hard drive LED

### Right/Rear View

3. USB 2.0 ports (2)
4. Optical drive door



1. Security cable slot
2. Power connector
3. AC adaptor LED
4. VGA port

### Left View

5. RJ-45 (Ethernet)
6. HDMI port
7. USB 3.0 port
8. Headphone / Microphone-in combo jack



## Overview

### AT A GLANCE

- Windows 8.1 versions, Windows 7 versions, Ubuntu Linux, FreeDOS 2.0
- Intel® HD Graphics Family with shared memory
- Durable, sophisticated design with textured surfaced black licorice color.
- Full-sized keyboard with numeric keypad (HP 250 G2 Notebook PC only) and action keys enabling functions directly
- VGA port and HDMI port (for connecting to high-resolution displays)
- Integrated 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
- Optional Bluetooth™ 2.1 or Bluetooth™ 4.0
- 14.0" (HP 240 G2 Notebook PC only) and HP 15.6" (HP 250 G2 Notebook PC only) diagonal LED-backlit HD anti-glare display (

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



## Features

### PRODUCT NAMES

HP 240 G2 Notebook PC  
HP 250 G2 Notebook PC

### OPERATING SYSTEM

#### Preinstalled

Windows 8.1 64\*  
Windows 8.1 Pro 64\*  
Windows 7 Professional 64 (available through downgrade rights from Windows 8.1 Pro 64)  
(Available January 2013)\*\*  
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 [microsoft.com](http://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

3<sup>rd</sup> Generation Intel® Core™ i3-3110M (2.4 GHz, 3 MB L3 cache, 2 cores)\*  
Intel® Pentium® N3510 (2.0 GHz, 2 MB L3 cache, 4 cores) \*  
Intel® Pentium® 2020M (2.4 GHz, 2 MB L3 cache, 2 cores) \*  
Intel® Celeron® N2810 (2.0 GHz, 1 MB L3 cache, 2 cores)\*  
Intel® Celeron® 1000M (1.8 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

Intel® HM76 Express Chipset (3<sup>rd</sup> generation Intel® Core, Pentium and Celeron processors)  
Intel® Bay Trail - M SoC (Intel® Pentium and Celeron processors)

### GRAPHICS

Integrated: Intel® HD Graphics  
Intel® HD Graphics (Intel® Pentium® or Intel® Celeron® processor)  
Intel® HD Graphics 4000 (3<sup>rd</sup> Generation Intel® Core™ i3 processor)

### DISPLAY

**HP 240 G2 Notebook PC**



## Features

### Internal

14.0" diagonal LED-backlit HD\* 16:9 widescreen anti-glare (1366 x 768)

14.0" diagonal LED-backlit HD\* 16:9 widescreen anti-glare (1366 x 768) (touch-enabled)

### External

Up to 32-bit per pixel color depth

### VGA

Port supports resolutions up to 2048 x 1536 external resolution @75 Hz (Intel® HM76 Express Chipset)

Port supports resolutions up to 2560 x 1600 external resolution @ 60Hz (Intel® Bay Trail - M SoC)

### HDMI

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

### HP 250 G2 Notebook PC

### Internal

15.6" diagonal LED-backlit HD 16:9 widescreen anti-glare (1366 x 768)

15.6" diagonal LED-backlit HD 16:9 widescreen anti-glare (1366 x 768) (touch-enabled)

### External

Up to 32-bit per pixel color depth

### VGA

Port supports resolutions up to 2048 x 1536 external resolution @75 Hz (Intel® HM76 Express Chipset)

Port supports resolutions up to 2560 x 1600 external resolution @ 60Hz (Intel® Bay Trail - M SoC)

### 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 SMART SATA II

**NOTE:** For hard drives, GB = 1 billion 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

### Fixed Optical Drive

DVD+/-RW SuperMulti DL\* Drive

\* 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.

## MEMORY

### Standard

DDR3L SDRAM (1600 MHz)

Two SODIMM slots supporting dual-channel memory\*

Standard memory up to 8192 MB\*\*



## Features

### Maximum

Upgradeable to 16384 MB with optional 8192 MB\*\* SODIMMs in slots 1 and 2 (Intel® HM76 Express Chipset only)

### 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 of 1 slot available for units with Intel® Bay Trail - M SoC.

\*\* Maximum memory capacities assume Windows 64-bit operating systems or Linux.

## NETWORKING/COMMUNICATIONS

### Wireless

#### HP 240 G2 Notebook PC and HP 250 G2 Notebook PC

802.11 b/g/n (1x1) wireless LAN module<sup>1,2</sup>

Qualcomm 802.11 b/g/n (1x1) wireless LAN module<sup>1,2</sup>

Optional Ralink 802.11 b/g/n (1x1) + Bluetooth™ 4.0 Combo<sup>1,2</sup>

Optional 802.11 b/g/n (1x1) + Bluetooth™ 4.0 Combo<sup>1,2</sup>

### Communications

Realtek Ethernet (10/100 NIC) (Intel® Bay Trail - M SoC)

Realtek Ethernet (10/100/1000 NIC) (Intel® HM76 Express Chipset, only with Core i3 and non-Touch Display)

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

High Definition Audio support

Integrated Stereo Speaker

Headphone / Microphone in Combo Jack

Integrated microphone

### Webcam

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

\* HD content required to view HD images.

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

## KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS





## Features

### Keyboard

The 101/102-key compatible keyboard features a full-pitch key layout with desktop keyboard features, such as editing keys, both left and right control and alt keys, and function keys. US and International key layouts are available. Includes a separate numeric keypad (HP 250 G2 only).

### 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 \*  
Getting Started with Windows 8.1

### Security

Security Lock slot (lock must be purchased separately)

For more information on HP security solutions refer to: [hp.com/go/security](http://hp.com/go/security).

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

## POWER

### Power Supply

#### HP 240 G2 Notebook PC and HP 250 G2 Notebook PC

External 45W AC adapter  
External 65W AC adapter

### Primary Battery

HP 4-cell (41 WHr) Li-Ion battery  
HP 3-cell (31 WHr) Li-Ion battery (Available December 2013)

### Battery life

	Configurations with integrated graphics	Configurations with discrete graphics
<b>HP 240 G2 Notebook PC</b>		
4-cell (41 WHr) battery	Up to TBD hours	Up to TBD hours
3-cell (31 WHr) battery	Up to TBD hours	Up to TBD hours
<b>HP 250 G2 Notebook PC</b>		
4-cell (41 WHr) battery	Up to TBD hours	Up to TBD hours
3-cell (31 WHr) battery	Up to TBD hours	Up to TBD hours



## Features

### **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\*

Standby\*

ACPI compliance\*

\* Only Linux will feature power conservation.

## **WEIGHTS & DIMENSIONS**

### **HP 240 G2 Notebook PC**

#### **Weight**

Starting at < 4.85 lb (2200 g) (Non-Touch) (Weight will vary by configuration)

Starting at < 5.29 lb (2400 g) (Touch) (Weight will vary by configuration)

#### **Dimensions (w x d x h)**

Non-Touch

13.62 x 9.45 x 1.11 in

346 x 240 x 281 mm

Touch

13.62 x 9.45 x 1.16 in

346 x 240 x 29.5 mm

### **HP 250 G2 Notebook PC**

#### **Weight**

Starting at < 5.51 lb (2500 g) (Non-Touch) (Weight will vary by configuration)

Starting at < 6.17 lb (2800 g) (Touch) (Weight will vary by configuration)

#### **Dimensions (w x d x h)**

Non-Touch

14.90 x 10.2 x 1.11 in

378.4 x 259.2 x 28.1 mm

Touch

14.90 x 10.2 x 1.17 in

378.4 x 259.2 x 29.8 mm

**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 – One

USB 2.0 – Two

#### Digital Media Slots

Supports SD (Secure Digital)

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: [hp.com/go/lookuptool](http://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

<b>Stand-Alone Power Requirements</b> (AC Power)	<b>Nominal Operating Voltage</b>	18.5/19.5V
	<b>Average Operating Power</b>	Integrated graphics: 12.741 W*** *Support models with Intel® HM75/HM70 Express Chipset
	<b>Max Operating Power</b>	< 65 W
<b>Temperature</b>	<b>Operating</b>	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)
	<b>Non-operating</b>	-4° to 140° F (-20° to 60° C)
<b>Relative Humidity</b>	<b>Operating</b>	10% to 90%, non-condensing
	<b>Non-operating</b>	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
<b>Shock</b>	<b>Operating</b>	40 G, 2 ms, half-sine
	<b>Non-operating</b>	200 G, 2 ms, half-sine
<b>Random Vibration</b>	<b>Operating</b>	0.75 grms
	<b>Non-operating</b>	1.50 grms
<b>Altitude</b> (unpressurized)	<b>Operating</b>	-50 to 10,000 ft (-15.24 to 3,048 m)
	<b>Non-operating</b>	-50 to 40,000 ft (-15.24 to 12,192 m)
<b>Planned Industry Standard Certifications</b>	<b>UL</b>	Yes
	<b>CSA</b>	Yes
	<b>FCC Compliance</b>	Yes
	<b>ENERGY STAR®</b>	TBD models*
	<b>EPEAT</b>	Registered TBD in United States**
	<b>ICES</b>	Yes
	<b>Australia / NZ A-Tick Compliance</b>	Yes
	<b>CCC</b>	Yes
	<b>Japan VCCI Compliance</b>	Yes
	<b>KC</b>	Yes
	<b>BSMI</b>	Yes
	<b>CE Marking Compliance</b>	Yes
	<b>BNCI or BELUS</b>	Yes
	<b>CIT</b>	Yes
	<b>GOST</b>	Yes
	<b>Saudi Arabian Compliance (ICCP)</b>	Yes
<b>SABS</b>	Yes	
<b>UKRSERTCOMPUTER</b>	Yes	

\* Configurations of the HP 240 G2 and HP 250 G2 Notebook PCs that are ENERGY STAR qualified are identified as HP 240 G2 ENERGY STAR and HP 250 G2 ENERGY STAR on HP websites and on [energystar.gov](http://energystar.gov).

\*\* EPEAT registration varies by country. See [epeat.net](http://epeat.net) for registration status by country.

EPEAT status listed above applies to U.S.

For accessibility information on HP products, please visit: [hp.com/accessibility](http://hp.com/accessibility).



## Technical Specifications

### DISPLAY

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

<b>Active Area (w x h)</b>	12.16 x 6.85 in (30.9 x 17.4 cm)
<b>Diagonal Size</b>	14.0 in (35.6cm)
<b>Surface Treatment</b>	Anti-glare
<b>Contrast Ratio</b>	300:1 (min)
<b>Refresh Rate</b>	60 Hz
<b>Brightness</b>	200 nit (typical)
<b>Pixel Resolution</b>	<b>Pitch</b> 0.252 mm
	<b>Format</b> 1366 x 768
	<b>Configuration</b> RGB Stripe
<b>Backlight</b>	LED
<b>PPI</b>	101 ppi
<b>Viewing Angle</b>	±40° Horizontal, ±10°/-30° Vertical (minimum) 40/40/30/10 (Left/Right/Down/Up)

**15.6-inch LED HD  
(1366 x 768)  
Anti-glare**

<b>Active Area (w x h)</b>	13.54 x 7.59 in (34.4 x 19.4 cm)
<b>Diagonal Size</b>	15.6 in (39.6cm)
<b>Surface Treatment</b>	Anti-glare
<b>Contrast Ratio</b>	300:1 (min)
<b>Refresh Rate</b>	60 Hz
<b>Brightness</b>	200 nit (typical)
<b>Pixel Resolution</b>	<b>Pitch</b> 0.252 mm
	<b>Format</b> 1366 x 768
	<b>Configuration</b> RGB Stripe
<b>Backlight</b>	LED
<b>PPI</b>	101 ppi
<b>Viewing Angle</b>	±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**

<b>Drive Weight</b>	0.254 lb (115 g)
<b>Capacity</b>	1 TB
<b>Height</b>	0.37 in (9.5 mm)
<b>Width</b>	2.75 in (70 mm)
<b>Interface</b>	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ
<b>Transfer Rate</b>	<b>Synchronous (maximum)</b> 300 MB/s (Drive Capability)
<b>Seek Time</b> (typical reads, including settling)	<b>Single Track</b> 3 ms
	<b>Average</b> 13 ms
	<b>Maximum</b> 24 ms
<b>Rotational Speed</b>	5400 rpm



## Technical Specifications

<b>Logical Blocks</b>	1,953,525,168
<b>Operating Temperature</b>	32° to 140° F (0° to 60° C) [case temp]
<b>Features</b>	ATA Security

### 750 GB\* 5400 rpm SATA Hard Drive

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

### 500 GB\* 5400 rpm SATA Hard Drive

<b>Drive Weight</b>	0.22 lb (101 g)	
<b>Capacity</b>	500 GB	
<b>Height</b>	0.37 in (9.5 mm)	
<b>Width</b>	2.75 in (70 mm)	
<b>Interface</b>	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
<b>Transfer Rate</b>	<b>Synchronous</b> (maximum)	150 MB/s (Drive Capability)
<b>Seek Time</b>	<b>Single Track</b>	3 ms
(typical reads, including settling)	<b>Average</b>	13 ms
	<b>Maximum</b>	24 ms
<b>Rotational Speed</b>	5400 rpm	
<b>Logical Blocks</b>	976,773,168	
<b>Operating Temperature</b>	32° to 140° F (0° to 60° C) [case temp]	
<b>Features</b>	ATA Security	

### 320 GB\* 5400 rpm SATA Hard Drive

<b>Drive Weight</b>	0.22 lb (101 g)	
<b>Capacity</b>	320 GB	
<b>Height</b>	0.37 in (9.5 mm)	
<b>Width</b>	2.75 in (70 mm)	
<b>Interface</b>	ATA-8, SATA 2.6, 3.0 Gb/s, NCQ	
<b>Transfer Rate</b>	<b>Synchronous</b> (maximum)	150 MB/s (Drive Capability)
<b>Seek Time</b>	<b>Single Track</b>	3 ms
(typical reads, including settling)	<b>Average</b>	13 ms
	<b>Maximum</b>	24 ms
<b>Rotational Speed</b>	5400 rpm	
<b>Logical Blocks</b>	625,142,448	
<b>Operating Temperature</b>	32° to 140° F (0° to 60° C) [case temp]	
<b>Features</b>	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.



## Technical Specifications

### Optical Drives

<b>DVD+/-RW</b>	<b>Access Times</b>	Random	<140ms CD (typical)
<b>SuperMulti DL Drive</b>			< 160 ms DVD (typical)
	<b>Max Data Transfer Rate</b>	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	
	<b>Transfer Mode</b>	UDMA Mode 5	
	<b>Interface</b>	Gen 1 SATA	
	<b>Supported Media (read)</b>	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	
	<b>Supported Media (write)</b>	CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM, DVD+R DL, DVD-R DL	
	<b>Max Media Capacity (read)</b>	8.5 GB	
	<b>Max Media Capacity (write)</b>	8.5 GB	
	<b>Transport</b>	Tray Loading	

## NETWORKING/COMMUNICATIONS

### Networking

<b>Integrated Realtek 10/100 NIC</b>	<b>Ethernet Features</b>	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) 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)
	<b>Power Management</b>	ACPI compliant - multiple power modes Situation-sensitive features reduce power consumption Advanced link down power saving for reducing link down power consumption
	<b>Performance Features</b>	TCP/IP/UDP Checksum Offload (configurable) Large send offload and Giant send offload Receiving Side Scaling
	<b>Manageability</b>	Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet



## Technical Specifications

		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 PCI Express 1.1 x1 to fully support ASPM L0s/L1 and CLKREQ Realtek PCIe FE Ethernet Family Controller
	<b>Interface NIC Device Driver Name</b>	
<b>Integrated Realtek 10/100/1000 NIC</b>	<b>Ethernet Features</b>	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)
	<b>Power Management</b>	ACPI compliant - multiple power modes Situation-sensitive features reduce power consumption Advanced link down power saving for reducing link down power consumption
	<b>Performance Features</b>	TCP/IP/UDP Checksum Offload (configurable) Large send offload and Giant send offload Receiving Side Scaling
	<b>Manageability</b>	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 PCI Express 1.1 x1 to fully support ASPM L0s/L1 and CLKREQ Realtek PCIe FE Ethernet Family Controller
	<b>Interface NIC Device Driver Name</b>	
<b>Communications Atheros 802.11b/g/n WiFi Adapter*, **</b>	<b>Wireless LAN Standards</b>	IEEE 802.11b IEEE 802.11g IEEE 802.11n
	<b>Interoperability</b>	Wi-Fi certified
	<b>Frequency Band</b>	2.402 - 2.482 GHz
	<b>Data Rates</b>	802.11b: 1, 2, 5.5, 11 Mbps





## Technical Specifications

<b>Frequency Support</b>	802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n150Mbps for MCS7
<b>Modulation</b>	20 MHz: 2.4 GHz bands Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM
<b>Security<sup>1</sup></b>	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.
<b>Sub-channels</b>	Multinational support with frequency bands and channels compliant to local regulations.
<b>Media Access Protocol</b>	CSMA/CA (Collision Avoidance) with ACK
<b>Network Architecture Models</b>	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
<b>Roaming</b>	IEEE 802.11 compliant roaming between access points
<b>Output Power<sup>2</sup></b>	13.5 dBm, minimum
<b>Power Consumption</b>	Idle associated: 250 mW avg (CLKREQ enabled) Idle unassociated: 100 mW avg Transmit/Receive channel: 2.0 /1.6 W
<b>Power Management</b>	ACPI compliant power management 802.11 compliant power saving mode
<b>Receiver Sensitivity<sup>3</sup></b>	11b:-88dBm@11Mbps, 11g:-74 dBm@54Mbps, 11n:-70dBm@72.Mbps.
<b>Antenna type</b>	High efficiency dual antenna with spatial diversity, usually mounted in the display enclosure
<b>Form Factor</b>	PCI-Express Half-MiniCard
<b>Weight</b>	4 g
<b>Dimensions</b>	3.3 x 26.65 x 29.85 mm
<b>Operating Voltage</b>	3.3v +/- 9%
<b>Temperature</b>	Operating -10° to 70° C Non-operating -40° to 80° C
<b>Humidity</b>	Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing)
<b>Altitude</b>	Operating 0 to 10,000 ft (3,048 m) Non-operating 0 to 50,000 ft (15,240 m)
<b>LED Activity</b>	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



## Technical Specifications

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.

### Qualcomm 802.11b/g/n WiFi Adapter\* \*\*

<b>Wireless LAN Standards</b>	IEEE 802.11b IEEE 802.11g IEEE 802.11n Wi-Fi certified)
<b>Interoperability</b>	
<b>Frequency Band</b>	2.402 - 2.482 GHz
<b>Data Rates</b>	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n150Mbps for MCS7
<b>Frequency Support</b>	20 MHz: 2.4 GHz bands
<b>Modulation</b>	Direct Sequence Spread Spectrum
<b>Security<sup>1</sup></b>	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.  Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 5) with Microsoft Windows7only.
<b>Sub-channels</b>	Multinational support with frequency bands and channels compliant to local regulations.
<b>Media Access Protocol Network Architecture Models</b>	CSMA/CA (Collision Avoidance) with ACK Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
<b>Roaming</b>	IEEE 802.11 compliant roaming between access points
<b>Output Power<sup>2</sup></b>	13.5 dBm, minimum
<b>Power Consumption</b>	Idle associated: 250 mW avg (CLKREQ enabled) Idle unassociated: 100 mW avg Transmit/Receive channel: 2.0 /1.6 W
<b>Power Management</b>	ACPI compliant power management 802.11 compliant power saving mode
<b>Receiver Sensitivity<sup>3</sup></b>	11b:-88dBm@11Mbps, 11g:-74 dBm@54Mbps, 11n:-70dBm@72.Mbps.
<b>Antenna type</b>	High efficiency dual antenna with spatial diversity, usually mounted in the display enclosure
<b>Form Factor</b>	PCI-Express Half-MiniCard v1.2
<b>Weight</b>	4 g
<b>Dimensions</b>	3.3 x 26.65 x 29.85 mm
<b>Operating Voltage</b>	3.3v +/- 9%
<b>Temperature</b>	Operating -10° to 70° C Non-operating -40° to 80° C
<b>Humidity</b>	Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing)



## Technical Specifications

<b>Altitude</b>	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
<b>LED Activity</b>	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.

<b>Ralink 802.11b/g/n Bluetooth 4.0 Combo Card* **</b>	<b>Wireless LAN Standards</b>	IEEE 802.11b IEEE 802.11g IEEE 802.11n
	<b>Interoperability</b>	Wi-Fi certified
	<b>Frequency Band</b>	2.402 – 2.482 GHz
	<b>Data Rates</b>	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: 150Mbps for MCS7
	<b>Modulation</b>	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM, BPSK, QPSK, 16-QAM, 64-QAM
	<b>Security<sup>1</sup></b>	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.
	<b>Sub-channels</b>	Multinational support with frequency bands and channels compliant to local regulations.
	<b>Media Access Protocol Network Architecture Models</b>	CSMA/CA (Collision Avoidance) with ACK Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
	<b>Roaming</b>	IEEE 802.11 compliant roaming between access points
	<b>Output Power (for CCK)<sup>2</sup></b>	13.5dBm , minimum
	<b>Power Consumption</b>	Idle associated: 250 mW Idle unassociated: 150 mW Transmit: 2.0 W (max) Receive: 2.0 W (max)
	<b>Power Management</b>	ACPI compliant power management 802.11 compliant power saving mode
	<b>Receiver Sensitivity<sup>3</sup></b>	11b:-88dBm@11Mbps, 11g:-74 dBm@54Mbps, 11n:-70dBm@72.Mbps.
<b>Antenna type</b>	High efficiency dual antenna with spatial diversity, mounted in the	



## Technical Specifications

<b>Form Factor</b>	display enclosure	
<b>Weight</b>	PCI-Express Half-MiniCard v1.2	
<b>Dimensions</b>	6 g	
<b>Operating Voltage</b>	3.3 x 26.65 x 29.85 mm	
<b>Temperature</b>	3.3v +/- 10%	
<b>Humidity</b>	Operating	14° to 149° F (-10° to 65° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
<b>Altitude</b>	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
<b>LED Activity</b>	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)

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.

<b>Bluetooth Specification</b>	V4.0 High Speed, V2.1+EDR, backwards compatible with V1.1, 1.2 and 2.0
<b>Number of Available Channels</b>	79 (1 MHz) available channels
<b>Data Rates and Throughput</b>	3 Mbps data rate; throughput up to 2.17 Mbps
<b>Transmit Power</b>	Synchronous Connection Oriented links up to 3, 64 kbps, voice channels
<b>Receiver Sensitivity</b>	Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric
<b>Power Consumption</b>	-6 dBm to 4 dBm (Bluetooth Class II) Better than -80 dBm at 0.1 % raw bit error rate Peak (Tx) 330 mW Peak (Rx) 230 mW Sleep <17 mW
<b>Antenna</b>	Internally integrated within module
<b>Range</b>	Up to 33 ft (10 m)
<b>Electrical Interface</b>	USB 2.0 compliant Microsoft Windows Plug and Play compliant Broadcom Bluetooth for Windows Microsoft Windows Bluetooth Software
<b>Bluetooth Software Supported</b>	Point to Point, Multipoint Pico Nets up to 7 slaves
<b>Link Topology</b>	Full support of Bluetooth Security Provisions
<b>Security</b>	Microsoft Windows ACPI, and USB Bus Support
<b>Power Management</b>	Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff
<b>Certifications</b>	All necessary regulatory approvals for supported countries, including:



## Technical Specifications

**Bluetooth Profiles Supported**

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  
 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**  
**Volume Controls**  
**Full Duplex**  
**Microphone In**  
**Headphone/Line Out**  
**Integrated Microphone**

Realtek ALC3201-GR High Definition audio  
 Up, down, and mute function keys  
 Yes  
 Stereo  
 Stereo  
 Yes

**Audio Output Quality**

**Frequency Response**  
**Signal to Noise Ratio**  
**Total Harmonic Distortion**  
**Noise Floor**  
**Play/Record Sampling Rate(s)**  
**DAC**  
**ADC**

10 Hz ~ 22 KHz  
 Typical 95 dB FSA (DAC)  
 Typical -88 dB FS (DAC)  
 -110 dB  
 Up to 192 KHz  
 24 bits  
 24 bits

**Integrated Stereo Speakers**

**Power Rating**  
**Impedance**

1.5 W  
 4 ohms



## Technical Specifications

### 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 (Integrated for all models)

<b>Dimensions</b>	4.21 x 1.85 x 1.18 in (10.7 x 4.7 x 3.0 cm)
<b>Weight</b>	0.62 lb (280 g)
<b>Input</b>	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
<b>Output</b>	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
<b>Connector</b>	3 pin/grounded, mates with interchangeable cords
<b>Environmental Design</b>	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%
<b>EMI and Safety Certifications</b>	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

<b>Dimensions (h x w x l)</b>	TBD in (TBD cm)
<b>Weight</b>	TBD lb (TBD kg)
<b>Cells/Type</b>	4-cell Lithium-Ion
<b>Energy Temperature</b>	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)
<b>Battery Re-Charge Time</b>	System in OFF or Standby Mode 2.5 hours
	System ON 3 to 5 hours (depending on system power consumption)

**HP 3-cell (31 WHr) Lithium-Ion Dimensions (H x W x L)** 0.8 x 1.2 x 8.1 in (2 x 3 x 20.5cm)



## Technical Specifications

<b>Primary battery</b>	<b>Weight (max)</b>	0.37lb, (0.166kg)	
	<b>Cells/Type</b>	Lithium-Ion	
	<b>Energy</b>	<b>Voltage</b>	11.1V
		<b>Amp-hour capacity</b>	2.8Ah
		<b>Watt-hour capacity</b>	31Wh
	<b>Temperature</b>	<b>Operating (Charging)</b>	32° to 113° F (0° to 45° C)
		<b>Operating (Discharging)</b>	14° to 122° F (-10° to 50° C)
		<b>Non-operating</b>	-4° to 122° F (-20° to 50° C)
	<b>Battery Re-Charge Time</b>	<b>System in OFF or Standby Mode</b>	2.5 hours
		<b>System ON</b>	3 to 5 hours
	<b>Fuel Gauge LED</b>	No	
<b>Warranty</b>	1 year		

## ENVIRONMENTAL

### 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 #
<b>Docking</b>	HP USB 3.0 Port Replicator	H1L08AA#xxx
	HP Dual Hinge Notebook Stand	AW661AA#xxx
<b>Carrying Cases</b>	HP Essential Top Load Case (up to 15.6")	H2W17AA#xxx
	HP Professional Series Carrying Case (up to 15.6")	H4J90AA
	HP Business Backpack (up to 17.3")	H5M90AA
	HP Business 4 Wheel Roller Case	H5M93AA
<b>Input/Output</b>	HP USB Essential Keyboard/Mouse	H6L29AA
	HP Ultra Mobile Wireless Mouse	H6F25AA
	HP Stylish USB Keyboard/Mouse	H4B80AA
<b>Adapters</b>	HP 65W Slim Adapter	AX727AA#XXX
	65W Smart AC Adapter	ED494AA#xxx
	90W Smart AC Adapter	ED495AA#xxx
	90W Slim Adapter	BT796AA#xxx
	HP 65W Smart AC Adapter	H6Y89AA
	HP 90W Smart AC Adapter	H6Y90AA
	HP 65W Slim AC Adapter	H6Y82AA
	HP 90W Slim AC Adapter	H6Y83AA
<b>Health and Education</b>	20 Notebook Managed Charging Cart	QL489AA#xxx
	30 Notebook Managed Charging Cart	QL490AA
<b>Security</b>	HP UltraSlim Keyed Cable Lock	H4D73AA
<b>Storage</b>	HP Mobile USB DVDRW Non-LS	A2U57AA
<b>Monitors</b>	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

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