

### Overview

### HP Elite x2 1012 G2



- |  |                           |
|--|---------------------------|
| 1. Infrared camera                             | 10. Clip                  |
| 2. Infrared camera light                       | 11. Select                |
| 3. Audio-out/Audio-in combo jack               | 12. Erase                 |
| 4. USB-A 3.0                                   | 13. Tip                   |
| 5. Power LED                                   | 14. Keyboard guide pins   |
| 6. USB Type-C™ with Thunderbolt                | 15. Webcam light          |
| 7. Micro SIM Card Slot*                        | 16. Webcam                |
| 8. Kickstand                                   | 17. Microphones           |
| 9. Application Launch Button (Default OneNote) | 18. Front-firing speakers |

\*only available on configurations with WWAN enabled

### Overview



1. Power
2. Volume Up/Volume down
3. Micro SD Memory Card Slot
4. Security Cable Slot
5. Pen Lanyard Slots

### Overview



- 1. Camera
- 2. Camera Flash

- 3. Fingerprint Sensor (optional)

### Overview



#### HP Elite x2 1012 G2 Collaboration Keyboard

1. ClickPad

2. Pen Holder

3. Guide Pins

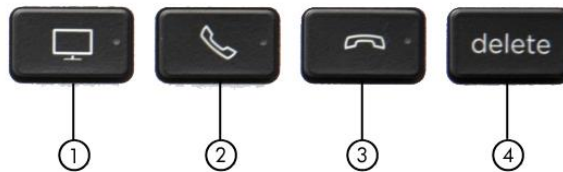
#### Collaboration Keys:

4. Present

5. Call answer/initiate

6. Call end

#### Collaboration Keys Detail



1. Present

2. Call answer/initiate

3. Call end

4. Delete



#### HP Elite x2 1012 G1 Advanced Keyboard

1. ClickPad/NFC Area

2. Smart card Slot

3. Guide Pins

### Technical Specifications

#### At A Glance

- Designed for excellent mobility, this stylish and thin 2-in-1 design is built to the standards of Elite durability
- The quiet design and up to 10 hours and 15 minutes of battery life<sup>1</sup> lets you work, surf, and connect with colleagues
- Windows 10 versions
- 7<sup>th</sup> Generation Intel® Core™ (U-series) processors, some with vPro™ support<sup>2</sup>
- 12.3" diagonal ultra-slim LED-backlit better than QHD (2736 x 1824) Multi-Touch Display
- Solid State Drives up to 512GB including FIPS 140.2 (CIS only); OPAL 2 drives support up to 256GB PCIe NVMe drives support up to 1024GB
- Weight starting at 803g for Tablet
- Height starting at 8.05mm for Tablet
- Passed MIL-STD 810G testing:
  - MIL-STD is not intended to demonstrate fitness for U.S. Department of Defense contract requirements or for military use. MIL-STD test results are not a guarantee of future performance under these test conditions. Damage from drops requires separately purchase Accidental Damage Protection HP Care Pack.
- Audio by Bang & Olufsen
- Optional IR camera
- Dual microphone array with HP Advanced Noise Reduction Software
- Front and Back facing camera and webcam
- Supports a broad range of wireless broadband and Wi-Fi options for connectivity on the go
- Optimized security using industry standard technologies such as TPM2.0, optional integrated fingerprint reader and an optional smart card reader in the optional Advanced keyboard
- Passed EN 60601-1-2:2007 and IEC 60601-1-2:2014 tests
- ENERGY STAR® certified. EPEAT® Gold registered where applicable/supported. Registration may vary by country. See [www.epeat.net](http://www.epeat.net) for registration status by country.
- Protect your device and data using the latest HP security technology solutions: HP Sure Start, HP BIOSphere and HP Client Security.
- Standard commercial 1 year limited warranty with extended service available with optional HP Care Packs.

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

<sup>1</sup> Windows 10 MM14 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](http://www.bapco.com) for additional details.

<sup>2</sup> vPro™ support not available on all configurations.

### Technical Specifications

#### PRODUCT NAME

HP Elite x2 1012 G2

#### OPERATING SYSTEM

<b>Preinstalled</b>	Windows 10 Pro 64 <sup>1</sup> Windows 10 Pro 64 (National Academic License) <sup>2</sup> Windows 10 Home 64 <sup>1</sup> Windows 10 Home Single Language 64 <sup>1</sup>
<b>Web-only Support</b>	Windows 10 Enterprise 64

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

2. Some devices for academic use will automatically be updated to Windows 10 Pro Education with the Windows 10 Anniversary Update. Features vary; see <https://aka.ms/ProEducation> for Windows 10 Pro Education feature information.

NOTE: Your product does not support Windows 8 or Windows 7

In accordance with Microsoft's support policy, HP does not support the Windows<sup>®</sup> 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows<sup>®</sup> 8 or Windows 7 drivers on <http://www.support.hp.com>

#### PROCESSOR\*

##### 7th Generation Intel<sup>®</sup> Core<sup>™</sup> i3, i5 and i7 Processors:

Intel<sup>®</sup> Core<sup>™</sup> i3-7100U with Intel<sup>®</sup> HD Graphics 620  
(2.4 GHz, 3 MB cache, 2 cores)

Intel<sup>®</sup> Core<sup>™</sup> i5-7200U with Intel<sup>®</sup> HD Graphics 620  
(2.5 GHz, up to 3.1 GHz with Intel<sup>®</sup> Turbo Boost Technology\*\*, 3 MB cache, 2 cores)

Intel<sup>®</sup> Core<sup>™</sup> i5-7300U with Intel<sup>®</sup> HD Graphics 620  
(2.6 GHz, up to 3.5 GHz with Intel<sup>®</sup> Turbo Boost Technology\*\*, 3 MB cache, 2 cores), vPro<sup>™</sup> Support

Intel<sup>®</sup> Core<sup>™</sup> i7-7600U with Intel<sup>®</sup> HD Graphics 620  
(2.8 GHz, up to 3.9 GHz with Intel<sup>®</sup> Turbo Boost Technology\*\*, 4 MB cache, 2 cores), vPro<sup>™</sup> Support

\* 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.. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering is not a measurement of higher performance.

\*\* Intel<sup>®</sup> Turbo Boost technology requires a PC with a processor with Intel Turbo Boost capability. Intel Turbo Boost performance varies depending on hardware, software and overall system configuration. See <http://www.intel.com/technology/turboboost> for more information.

#### CHIPSET

Integrated with processor

## Technical Specifications

### GRAPHICS

Intel® HD Graphics 620

### DISPLAY

#### Internal

#### Touch screen

12.3" diagonal BrightView LED-backlit better than QHD\* UWVA eDP 1.3 Ultra-slim (2736 x 1824) Touch screen Chemically-strengthened Corning® Gorilla® Glass 4 top cover directly bonded to display

<b>Refresh Rate</b>	60 Hz
<b>Brightness</b>	450 nits (maximum)
<b>Pixel Resolution</b>	Format 2736 x 1824 (better than QHD) Configuration RGB Stripe
<b>Interface</b>	eDP 1.3
<b>LCD Mode</b>	IPS
<b>PPI</b>	268 ppi
<b>Viewing Angle</b>	UWVA 85/85/85/85 (Left/Right/Down/Up)
<b>Color Gamut</b>	72%

#### External

24-bit + 8 bit alpha channel (standard)

Up to 30-bit per pixel color depth (Wide Color Gamut)

\* HD content required to view HD images.

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

### STORAGE AND DRIVES

#### Internal Storage\* - supports M.2 SSD SS 2280

- 128 GB SATA-3 SS VALUE SSD
- 256GB 2280 M2 PCIe-3x4 SS NVMe TLC
- 256GB 2280 M2 SATA-3 Self Encrypted OPAL2 TLC
- 256GB 2280 PCIe NVMe Value
- 360GB 2280 PCIe-3x4 NVMe TLC
- 512GB 2280 M2 PCIe-3x4 SS NVMe TLC
- 512GB 2280 PCIe NVMe Value
- 512GB 2280 M2 SATA-3 Three Layer Cell Federal Information Processing Standard (FIPS 140.2 available via CIS only)
- 1024 GB 2280 PCIe-3x4 NVMe TLC

\* For SSD's, GB=1 billion bytes. TB=1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 10) of system disk is reserved for system recovery software.

#### Expansion Storage

Micro SD Media Reader Slot - Supports microSD, microSDHC, microSDXC, supporting expansion up to 2TB

### Technical Specifications

#### MEMORY

LPDDR3-1866 (Transfer rates up to 1866 MT/s)  
Supports Dual Channel Memory  
Soldered Down

##### Standard

4 GB Total System Memory  
8 GB Total System Memory

##### Maximum

Up to 16 GB

#### NETWORKING/COMMUNICATIONS

##### Wireless

Support for a broad range of secure, integrated wireless LAN/Bluetooth and wireless WAN options featuring support for the latest industry standards. Broadband Wireless (WWAN) requires a Windows operating system and is available in select countries as a factory-only configurable feature only. Standalone GPS is also available (factory configurable only) and is supported via combo card.

##### Wireless WAN (WWAN)\*

**HP It4132 LTE/HSPA+ 4G Mobile Broadband Module**

**HP It4120 Qualcomm® Snapdragon™ X5 LTE Mobile Broadband Module**

**HP It4225 LTE/EV-DO Gobi™ 4G Mobile Broadband Module**

**HP It4226 LTE/HSPA+ Gobi™ 4G Mobile Broadband Module HP hs3210 HSPA+ Mobile Broadband Module**

##### Wireless LAN (WLAN)\*\*

Intel® Dual Band Wireless-AC 8265 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo (vPro)

Intel® Dual Band Wireless-AC 8265 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo (non-vPro)

##### Standalone GPS\*\*\*

HP Graff GNSS Module

\* WWAN is an optional feature and requires factory configuration. WWAN connection requires wireless data service contract, network support, and is not available in all areas. Contact service provider to determine the coverage area and availability. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products or in all countries.

\*\*Wireless access point and Internet service is required and is not included. Availability of public wireless access points limited.

\*\*\*Standalone GPS is an optional feature and requires factory configuration. GPS and WWAN are mutually exclusive.



### Technical Specifications

#### AUDIO/MULTIMEDIA

##### Audio

Audio by Bang & Olufsen  
Dual speakers (front facing)  
Dual microphone array with echo cancellation, noise suppression  
Headphone line-out and microphone-in (combo)  
HP Advanced Noise Reduction Software

##### Camera – Front

Integrated 5 MP (1080p)

- 1080p format for video
- 5 MP for still capture
- Supports videoconferencing\* and still image capture
- High quality fixed focus lens
- Video capture at various resolutions up to 1920x1080 resolution (1080p) and up to 30 fps
- M-JPEG compression supports higher frame rates for video capture and videoconferencing\*
- Improved low light sensitivity
- Improved dynamic range

##### Camera – Back

Integrated 8 MP with flash (1080p)

- 1080p format for video
- 8 MP for still capture
- Supports videoconferencing\* and still image capture
- High quality auto focus lens
- Video capture at various resolutions up to 1920x1080 resolution (1080p) and up to 30fps
- M-JPEG compression supports higher frame rates for video capture and videoconferencing\*
- Improved low light sensitivity
- Improved dynamic range

**IR Camera** Integrated VGA IR camera w/ IR LED emitters that meets Microsoft Hello face recognition certification for secure authentication.

\* Internet access required.

#### ACTIVE PEN

##### HP Active Pen with Bluetooth® App Launch

<b>Pen Technology</b>	Wacom AES
<b>Digitizer</b>	N/A, shared with touch
<b>Dimensions</b>	147.4 x 9.5 mm
<b>Weight</b>	17.5 g
<b>Power</b>	AAAA battery and 319 coin cell x2
<b>System Requirements</b>	Windows 10
<b>Tip Diameter</b>	1 mm
<b>Pen Tips</b>	Three extra elastomer pen tips for replacement
<b>Pressure Sensitivity (Y/N)</b>	Yes (2048 levels)
<b>Buttons (Y/N)</b>	Yes, 3
<b>Resolution</b>	2540 ppi
<b>Report rate</b>	133hz
<b>Hover Capability (Y/N)</b>	Yes

### Technical Specifications

<b>Hover Height (mm)</b>	10mm+
<b>Palm Rejection (Y/N)</b>	Yes
<b>Tilt Angle (Y/N)</b>	>60 degrees from vertical
<b>Battery Life Based on Continuous Usage</b>	7.5 month+

### OPTIONAL KEYBOARDS

#### Optional HP Elite x2 1012 G2 Collaboration Keyboard\*

<b>Kit contents</b>	HP Elite x2 1012 G2 Collaboration Keyboard and documentation
<b>Weight</b>	.78 lb (353 g)

#### Optional HP Elite x2 1012 G1 Advanced Keyboard\*

<b>Kit contents</b>	HP Elite x2 1012 G1 Advanced Keyboard and documentation
<b>Key Features</b>	Smart card reader FIPS-201 compliant. Security - Near Field Communications (NFC) Module

<b>Weight</b>	.992 lb (450 g)
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\*Sold as an optional feature

#### Keyboard Features (Advanced Keyboards)

- Backlit
- HP DuraKeys
- 1.3mm key travel
- 18.4mm pitch
- ClickPad™ (91 x 51 mm) with image sensor, multi-touch gestures enabled, on/off function and LED indicator
- 165° max opening angle
- Docking connector to tablet
- Full size 81/82-key island-style backlit keyboard with full row of function keys and LED indicators

#### ClickPad

Glass with chemical etched surface  
Supports 2-way scroll  
Taps enabled as default  
Gestures enabled by default - 2 Finger Scrolling, 2 Finger Zoom (Pinch)

#### Keyboard Features (Collaboration Keyboard only)

F1 – Display Switching  
F2 - Blank  
F3 – Brightness Down  
F4 - Brightness Up  
F5 - Speaker Mute  
F6 - Volume Down  
F7 - Volume Up  
F8 - Mic Mute  
F9 - Backlight Toggle  
F10 – Number Lock  
F11 – Wireless On/Off  
F12 – Calendar

### Technical Specifications

Dedicated Skype for  
Business keys:

Present  
Call answer/initiate  
Call end  
Delete

### Keyboard Features (Advanced Keyboard only)

<b>Function Keys</b>	F1 - Blank
	F2 - Blank
	F3 - Sleep
	F4 - Display Switching
	F5 - Speaker Mute
	F6 - Volume Down
	F7 - Volume Up
	F8 - Mic Mute
	F9 - Brightness Down
	F10 - Brightness Up
	F11 - Backlight Toggle
	F12 - Wireless On/Off

## SOFTWARE AND SECURITY

### Preinstalled Software with Windows Operating System

#### HP BIOS

HP BIOSphere Gen3<sup>1</sup>  
HP Sure Start Gen3<sup>2</sup>  
HP DriveLock | HP Automatic DriveLock  
BIOS Update via Network  
Master Boot Record Security  
Power On Authentication  
Secure Erase<sup>3</sup>  
Absolute Persistence Module<sup>4</sup>  
Pre-boot Authentication

#### Communication / Connectivity

HP Mobile Connect Pro<sup>5</sup>  
Native Miracast Support<sup>6</sup>  
HP LAN-WLAN Protection  
HP MAC Address Manager (select models only)  
HP SureConnect  
HP Velocity

#### HP Value Add Software

HP ePrint Driver + JetAdvantage<sup>7</sup>  
HP Hotkey Support - CMIT  
HP Jumpstart  
HP Support Assistant  
HP Noise Cancellation Software

### Technical Specifications

#### Microsoft Products

Buy Office  
Bing Search  
Skype<sup>8</sup>

#### Manageability

HP Driver Packs<sup>9</sup>  
HP SoftPaq Download Manager (SDM)  
HP System Software Manager (SSM)<sup>9</sup>  
HP BIOS Config Utility (BCU)<sup>9</sup>  
HP Client Catalog<sup>9</sup>  
HP MIK for Microsoft SCCM<sup>9</sup>  
LANDESK Management<sup>10</sup>

For more information on HP Client Management Solutions refer to: <http://www.hp.com/go/clientmanagement>.

#### Client Security Software

HP Client Security

- HP Security Manager (including Credential Manager and Password Manager)
- HP Drive Lock
- HP Fingerprint Sensor
- HP Password Manager
- Absolute Persistence Module
- Power On Authentication
- Microsoft Defender<sup>11</sup>
- HP Workwise<sup>12</sup>

For more information on HP Client Security Software Suite, refer to <http://www.hp.com/go/clientsecurity>.

#### Security Hardware

TPM 2.0 Embedded Security Chip (Common Criteria EAL4+ Certified)

HP Fingerprint Reader (selectd models)

Integrated VGA IR camera with IR LED emitters that meets Microsoft Hello face recognition certification for secure authentication (select models)

For more information on HP Client Security Software Suite, refer to <http://www.hp.com/go/clientsecurity>.

1. BIOSphere Gen3 requires Intel® or AMD® 7th generation processors.
2. Available on HP Elite products equipped with Intel® 7th generation processors as well as the HP Pro x2 612 G2.
3. For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88.
4. Absolute agent is shipped turned off, and will be activated when customers activate a purchased subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. The Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit: <http://www.absolute.com/company/legal/agreements/computrace-agreement>. Data Delete is an optional service provided by Absolute Software. If utilized, the Recovery Guarantee is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens from Absolute Software.
5. HP Mobile Connect Pro is only available on preconfigured devices with WWAN. For geographic availability refer to [www.hp.com/go/mobileconnect](http://www.hp.com/go/mobileconnect)
6. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming media players that also support Miracast. You can use Miracast to share what you're doing on your PC and present a slide show. For more information: <http://windows.microsoft.com/en-us/windows-8/project-wireless-screen-miracast>
7. 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/eprintcenter](http://www.hp.com/go/eprintcenter)).

### Technical Specifications

8. Skype is not offered in China.
9. Not preinstalled, however available for download at <http://www.hp.com/go/clientmanagement>
10. Subscription required.
11. Opt in and internet connection required for updates.
12. HP Workwise smartphone app is available as a free download on the App Store and Google Play. See requirements at <http://www.hp.com/go/workwise>

### POWER

#### Power Supply

HP 45 W USB Type-C™ AC adapter

HP 65 W USB Type-C™ AC adapter

- USB Type-C™ DC integrated cord (1.8m)
- AC Power cord (1m)
- AC Adapter Weight: 245g +/- 10g

#### Tablet – Battery

4-cell Long Life Polymer 47Whr (3055mAh/cell)

- Voltage – 7.7 V
- Supports HP Fast Battery Charging\*

#### Battery Life\*\*

Windows 10 battery time:

Up to 10 hours and 15 minutes \*

\* Units enabled with 65w adapters or higher can support fast charging of the battery from 0-50% in 30 minutes while the system is off.

\*\*Windows 10 MM14 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](http://www.bapco.com) for additional details.

### WEIGHTS & DIMENSIONS

#### Weight\*

##### Tablet only

Starting at 1.77 lbs (803 g)

##### Tablet with Travel Keyboard

2.55 lbs (1156 g)

##### Tablet with Advanced Keyboard

2.94 lbs (1333 g)

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

##### Tablet

11.8 x 8.4 x 0.3 in (300 x 213.85 x 8.05 mm)

##### Tablet with Travel Keyboard

11.8 x 8.63 x 0.53 in (300 x 219.3 x 13.55 mm)

##### Tablet with Advanced Keyboard

11.8 x 8.6 x 0.6 in (300 x 219.3 x 16.65 mm)

### Technical Specifications

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

\*Values are preliminary and may be updated before product launch.

### PORTS/SLOTS

#### Tablet

##### Ports

- 1 USB Type-C™, supporting USB 3.1 (supports Thunderbolt™ 3)
- 1 USB Type-A, supporting USB 3.0
- 1 Headphone /microphone combo

**NOTE:** For optimal performance, the HP x2 1012 G2 should charge from a USB Power Delivery, v2 compatible adapter or power source that offers 12V @ 3A.

##### Slots

- 1 Micro SIM drawer (optional)
- 1 Micro SD Media Reader Drawer -supports microSD, microSDHC, microSDXC
- 1 Lock slot

#### Advanced Keyboard

##### Ports

##### Slots

- 1 Smart card reader

### SENSORS

- Accelerometer
- Magnetometer
- Gyro
- ALS (Ambient Light Sensor)
- Proximity (SAR for WWAN)
- Hall Sensor

### SERVICE AND SUPPORT

HP Services offers 3-year, 1-year and 90 day limited warranty options depending on country. Batteries have a default one year limited warranty except for Long Life batteries which will have same 1-year or 3-year limited warranty as the platform. On-site service and extended coverage is also available. HP Care Pack Services are optional extended service contracts that go beyond the standard limited warranties. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at: <http://www.hp.com/go/cpc>.

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. For details, visit [www.hp.com/go/cpc](http://www.hp.com/go/cpc).

### Technical Specifications

#### SYSTEM UNIT

<b>Stand-Alone Power Requirements (AC Power)</b>	<b>Nominal Operating Voltage</b>	15 V
	<b>Nominal Operating Amperage</b>	4.33A
	<b>Average Operating Power</b>	7.21 W (non-charging)
	<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>	240 G, 2 ms, half-sine
<b>Random Vibration</b>	<b>Operating</b>	1.043 grms
	<b>Non-operating</b>	3.50 grms
<b>Altitude (unpressurized)</b>	<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)

### Technical Specifications

### ENVIRONMENTAL & INDUSTRY

#### Environmental Data HP Elite x2 1012 G2

<b>Environmental Data</b>	<b>Eco-Label Certifications &amp; declarations</b>	<p>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:</p> <ul style="list-style-type: none"> <li>IT ECO declaration</li> <li>US ENERGY STAR®</li> <li>US Federal Energy Management Program (FEMP)</li> <li>EPEAT<sup>®</sup> Gold registered in the United States. See <a href="http://www.epeat.net">http://www.epeat.net</a> for registration status in your country. Search keyword <i>generator</i> on HP's 3rd party option store for solar energy accessory at <a href="http://www.hp.com/go/options">http://www.hp.com/go/options</a>.</li> <li>TCO or TCO Certified Edge</li> </ul>		
	<b>System Configuration</b>	<p>The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a "Typically Configured Notebook".</p>		
	<b>Energy Consumption (in accordance with US ENERGY STAR® test method)</b>	<b>115VAC, 60Hz</b>	<b>230VAC, 50Hz</b>	<b>100VAC, 50Hz</b>
	Normal Operation (Sort idle)	6.36 W	6.49 W	6.35 W
	Normal Operation (Long idle)	2.83 W	2.46 W	2.58 W
	Sleep	0.49 W	0.52 W	0.48 W
	Off	0.40 W	0.43 W	0.40 W
		<p>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.</p>		
	<b>Heat Dissipation*</b>	<b>115VAC, 60Hz</b>	<b>230VAC, 50Hz</b>	<b>100VAC, 50Hz</b>
	Normal Operation (Short idle)	21 BTU/hr	22 BTU/hr	21 BTU/hr
	Normal Operation (Long idle)	10 BTU/hr	8 BTU/hr	9 BTU/hr
	Sleep	2 BTU/hr	2 BTU/hr	2 BTU/hr
	Off	1 BTU/hr	1 BTU/hr	1 BTU/hr
		<p>*NOTE: Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.</p>		
	<b>Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)</b>	<b>Sound Power (L<sub>WAd</sub>, bels)</b>		<b>Sound Pressure (L<sub>pAm</sub>, decibels)</b>
	Typically Configured – Idle	2.6		15



### Technical Specifications

	Fixed Disk – Random writes	2.8	18												
	<b>Longevity and Upgrading</b>	<p>This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the product may include:</p> <ul style="list-style-type: none"> <li>• 3 USB ports</li> <li>• 1 PC card slot (type I/II)</li> <li>• 1 ExpressCard/54 slot</li> <li>• 1 IEEE 1394 Port</li> <li>• 2 SODIMM memory slots</li> <li>• Optional expansion base docking station</li> <li>• 1 multi-bay II storage port</li> <li>• Interchangeable HDD??</li> </ul> <p>Spare parts are available throughout the warranty period and or for up to “5” years after the end of production.</p>													
	<b>Batteries</b>	<p>This battery(s) in this product comply with EU Directive 2006/66/EC</p> <p>Batteries used in the product do not contain: Mercury greater the 1ppm by weight Cadmium greater than 20ppm by weight</p> <p>Battery description: CR2032 (coin cell) Battery type: Lithium Battery description: 6-cell high capacity Lithium-Ion battery (optional 8 cell available) Battery type:</p>													
	<b>Additional Information</b>	<ul style="list-style-type: none"> <li>• This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.</li> <li>• This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.</li> <li>• This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).</li> <li>• This product is in compliance with the IEEE 1680 (EPEAT) standard at the &lt;add level: Gold&gt; level, see <a href="http://www.epeat.net">www.epeat.net</a></li> <li>• Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.</li> <li>• This product contains 0.0% post-consumer recycled plastic (by wt.)</li> <li>• This product is 95.5% recycle-able when properly disposed of at end of life.</li> </ul>													
	<b>Packaging Materials</b>	<table border="1"> <tr> <td><b>External:</b></td> <td>PAPER/Corrugated</td> <td>330 g</td> </tr> <tr> <td><b>Internal:</b></td> <td>PLASTIC/EPE (Expanded Polyethylene)</td> <td>19 g</td> </tr> <tr> <td></td> <td>PLASTIC/Polyethylene low density LDPE</td> <td>13 g</td> </tr> <tr> <td></td> <td>PLASTIC/Polyester - PET</td> <td>5 g</td> </tr> </table> <p>The plastic packaging material contains at least 50% recycled content. The corrugated paper packaging materials contains at least 70% recycled content.</p>	<b>External:</b>	PAPER/Corrugated	330 g	<b>Internal:</b>	PLASTIC/EPE (Expanded Polyethylene)	19 g		PLASTIC/Polyethylene low density LDPE	13 g		PLASTIC/Polyester - PET	5 g	
<b>External:</b>	PAPER/Corrugated	330 g													
<b>Internal:</b>	PLASTIC/EPE (Expanded Polyethylene)	19 g													
	PLASTIC/Polyethylene low density LDPE	13 g													
	PLASTIC/Polyester - PET	5 g													
	<b>Material Usage</b>	<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 <a href="http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf">http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf</a>):</p>													

### Technical Specifications

		<ul style="list-style-type: none"> <li>• Asbestos</li> <li>• Certain Azo Colorants</li> <li>• Certain Brominated Flame Retardants – may not be used as flame retardants in plastics</li> <li>• Cadmium</li> <li>• Chlorinated Hydrocarbons</li> <li>• Chlorinated Paraffins</li> <li>• Formaldehyde</li> <li>• Halogenated Diphenyl Methanes</li> <li>• Lead carbonates and sulfates</li> <li>• Lead and Lead compounds</li> <li>• Mercuric Oxide Batteries</li> <li>• Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.</li> <li>• Ozone Depleting Substances</li> <li>• Polybrominated Biphenyls (PBBs)</li> <li>• Polybrominated Biphenyl Ethers (PBBEs)</li> <li>• Polybrominated Biphenyl Oxides (PBBOs)</li> <li>• Polychlorinated Biphenyl (PCB)</li> <li>• Polychlorinated Terphenyls (PCT)</li> <li>• Polyvinyl Chloride (PVC) – except for wires and cables, has been voluntarily removed from most applications.</li> <li>• Radioactive Substances</li> <li>• Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)</li> </ul>
	<p><b>Packaging Usage</b></p>	<p>HP follows these guidelines to decrease the environmental impact of product packaging:</p> <ul style="list-style-type: none"> <li>• Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.</li> <li>• Eliminate the use of ozone-depleting substances (ODS) in packaging materials.</li> <li>• Design packaging materials for ease of disassembly.</li> <li>• Maximize the use of post-consumer recycled content materials in packaging materials.</li> <li>• Use readily recyclable packaging materials such as paper and corrugated materials.</li> <li>• Reduce size and weight of packages to improve transportation fuel efficiency.</li> <li>• Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.</li> </ul>
	<p><b>End-of-life Management and Recycling</b></p>	<p>Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: <a href="http://www.hp.com/go/reuse-recycle">http://www.hp.com/go/reuse-recycle</a> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.</p> <p>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: <a href="http://www.hp.com/go/recyclers">http://www.hp.com/go/recyclers</a>. 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.</p>

### Technical Specifications

	<b>HP, Inc. Corporate Environmental Information</b>	<p>For more information about HP's commitment to the environment:</p> <p>Global Citizenship Report  <a href="http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html">http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html</a></p> <p>Eco-label certifications  <a href="http://www8.hp.com/us/en/hp-information/environment/ecolabels.html">http://www8.hp.com/us/en/hp-information/environment/ecolabels.html</a></p> <p>ISO 14001 certificates:  <a href="http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c04755842">http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c04755842</a>                      and  <a href="http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf">http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf</a></p>
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### STORAGE AND DRIVES

<b>128 GB SATA-3 SS VALUE SSD</b>	<b>Drive Weight</b>	0.02 lb (10 g)		
	<b>Capacity</b>	128 GB		
	<b>Height</b>	0.09 in (2.3 mm)		
	<b>Width</b>	0.87 in (22 mm)		
	<b>Interface</b>	ATA-8, SATA 3.0		
	<b>Performance</b>	<b>Maximum Sequential Read</b>	<b>Maximum Sequential Write</b>	
		535 MB/s	515 MB/s	
	<b>Logical Blocks</b>	250,069,680		
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]		
	<b>Features</b>	ATA Security; DIPM; TRIM; DEVSLP		
<b>256GB 2280 M2 PCIe-3x4 SS NVMe TLC</b>	<b>Drive Weight</b>	0.02 lb (10 g)		
	<b>Capacity</b>	256 GB		
	<b>Height</b>	0.09 in (2.3 mm)		
	<b>Width</b>	0.87 in (22 mm)		
	<b>Interface</b>	PCIe NVMe Gen3X4		
	<b>Performance</b>	<b>Maximum Sequential Read</b>	<b>Maximum Sequential Write</b>	
		2600 MB/s	900 MB/s	
	<b>Logical Blocks</b>	500,118,192		
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]		
	<b>Features</b>	ATA Security (Option) TRIM; L1.2		
<b>256GB 2280 M2 SATA-3 Self Encrypted OPAL2 TLC</b>	<b>Drive Weight</b>	0.02 lb (10 g)		
	<b>Capacity</b>	256 GB		
	<b>Height</b>	0.09 in (2.3 mm)		
	<b>Width</b>	0.87 in (22 mm)		

### Technical Specifications

	<b>Interface</b>	ATA-8, SATA 3.0	
	<b>Performance</b>	<b>Maximum Sequential Read</b>	<b>Maximum Sequential Write</b>
		530 MB/s	515 MB/s
	<b>Logical Blocks</b>	500,118,192	
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]	
	<b>Features</b>	ATA Security; TCG Opal 2.0 DIPM; TRIM; DEVSLP	
<b>256GB 2280 PCIe NVMe Value</b>	<b>Drive Weight</b>	0.02 lb (10 g)	
	<b>Capacity</b>	256 GB	
	<b>Height</b>	0.09 in (2.3 mm)	
	<b>Width</b>	0.87 in (22 mm)	
	<b>Interface</b>	PCIe NVMe Gen3X4	
	<b>Performance</b>	<b>Maximum Sequential Read</b>	<b>Maximum Sequential Write</b>
		1700 MB/s	600 MB/s
	<b>Logical Blocks</b>	500,118,192	
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]	
	<b>Features</b>	ATA Security; TCG Opal 2.0 ; FIPS; TRIM; L1.2	
<b>360GB 2280 PCIe-3x4 NVMe TLC</b>	<b>Drive Weight</b>	0.02 lb (10 g)	
	<b>Capacity</b>	360GB	
	<b>Height</b>	0.09 in (2.3 mm)	
	<b>Width</b>	0.87 in (22 mm)	
	<b>Interface</b>	PCIe NVMe Gen3X4	
	<b>Performance</b>	<b>Maximum Sequential Read</b>	<b>Maximum Sequential Write</b>
		1700 MB/s	600 MB/s
	<b>Logical Blocks</b>	703,282,608	
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]	
	<b>Features</b>	ATA Security (Option); TRIM; L1.2	
<b>512GB 2280 M2 PCIe-3x4 SS NVMe TLC</b>	<b>Drive Weight</b>	0.02 lb (10 g)	
	<b>Capacity</b>	512 GB	
	<b>Height</b>	0.09 in (2.3 mm)	
	<b>Width</b>	0.87 in (22 mm)	
	<b>Interface</b>	PCIe NVMe Gen3X4	
	<b>Performance</b>	<b>Maximum Sequential Read</b>	<b>Maximum Sequential Write</b>
		2600 MB/s	1400 MB/s
	<b>Logical Blocks</b>	1,000,215,216	
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]	
	<b>Features</b>	ATA Security; TRIM; L1.2	
	<b>Drive Weight</b>	0.02 lb (10 g)	

### Technical Specifications

<b>512GB 2280 PCIe NVMe Value</b>	<b>Capacity</b>	512 GB	
	<b>Height</b>	0.09 in (2.3 mm)	
	<b>Width</b>	0.87 in (22 mm)	
	<b>Interface</b>	PCIe NVMe Gen3X4	
	<b>Performance</b>	<b>Maximum Sequential Read</b>	<b>Maximum Sequential Write</b>
		1700 MB/s	600 MB/s
	<b>Logical Blocks</b>	1,000,215,216	
<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]		
<b>Features</b>	ATA Security; TCG Opal 2.0 ; FIPS; TRIM; L1.2		

<b>512GB 2280 M2 SATA-3 Three Layer Cell Federal Information Processing Standard</b>	<b>Drive Weight</b>	0.02 lb (10 g)	
	<b>Capacity</b>	512 GB	
	<b>Height</b>	0.09 in (2.3 mm)	
	<b>Width</b>	0.87 in (22 mm)	
	<b>Interface</b>	PCIe NVMe Gen3X4	
	<b>Performance</b>	<b>Maximum Sequential Read</b>	<b>Maximum Sequential Write</b>
		530 MB/s	500 MB/s
<b>Logical Blocks</b>	1,000,215,216		
<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]		
<b>Features</b>	ATA Security; TCG Opal 2.0 ; FIPS; TRIM; L1.2		

<b>1024 GB 2280 PCIe-3x4 NVMe TLC</b>	<b>Drive Weight</b>	0.02 lb (10 g)	
	<b>Capacity</b>	512 GB	
	<b>Height</b>	0.14 in (3.65 mm)	
	<b>Width</b>	0.87 in (22 mm)	
	<b>Interface</b>	PCIe NVMe Gen3X4	
	<b>Performance</b>	<b>Maximum Sequential Read</b>	<b>Maximum Sequential Write</b>
		1500 MB/s	980 MB/s
<b>Logical Blocks</b>	2,000,409,264		
<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]		
<b>Features</b>	ATA Security (Option); TRIM; L1.2		

### SECURITY

<b>HP Fingerprint Reader</b>  (Optional – available on the Tablet)	<b>Mobile Voltage Operation</b>	3.0V-3.6V
	<b>Operating Temperature</b>	14° – 167°F (-10° – 75°C)
	<b>Current Consumption</b>	36 mA peak
	<b>Image</b>	
	<b>Low Latency Wait for Finger</b>	950 uA
	<b>Capture Rate</b>	30 cm/sec
	<b>ESD Resistance</b>	IEC 61000-4-2 4B (±15KV)

### Technical Specifications

<b>Detection Matrix</b>	200*1 (plus another secondary line) 508 dpi 10 mm sensor area
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## NETWORKING/COMMUNICATIONS

### WWAN Modules

#### **HP lt4132 LTE/HSPA+ 4G Mobile Broadband Module**

<b>Technology/Operating bands</b>	LTE: 2100 (Band 1), 1900 (Band 2), 1800 (Band 3) MHz, 850 (Band 5), 2600 (Band 7), 900 (Band 8) MHz, 800 (Band 20), 700 (Band 28) MHz. HSPA+: 2100 (Band 1), 1900 (Band 2), 850 (Band 5), 900 (Band 8) MHz E-GPRS: 1900 (Band 2), 1800 (Band 3), 850 (Band 5), 900 (Band 8) MHz
<b>Wireless protocol standards</b>	3GPP Release 10 LTE Specification CAT.4, 20MHz BW WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification E-GPRS: Class B, Multi-slot class 12, coding schemes CS1 - CS4 and MSC1 - MSC9
<b>GPS</b>	Standalone, A-GPS (MS-B and LTO)
<b>GPS bands</b>	1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz
<b>Maximum data rates</b>	LTE: 150 Mbps (Download), 50 Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21Mbps (Download), 5.76 Mbps (Upload) EDGE: 236.8 kbps (Download), 236.8 kbps (Upload) GPRS: 85.6 kbps(Download), 85.6 kbps (Upload)
<b>Maximum output power</b>	LTE: 23 dBm HSPA+: 23.5 dBm E-GPRS 1900/1800: 26 dBm E-GPRS 900/850: 27 dBm GPRS 1900/1800: 29.5 dBm GPRS 900/850: 32.5 dBm
<b>Maximum power consumption</b>	LTE: 1,200 mA (peak); 900 mA (average) HSPA+: 1,100 mA (peak); 800 mA (average) E-GPRS: 2,600 mA (peak); 500 mA (average)
<b>Form Factor</b>	M.2, 3042-S3 Key B
<b>Weight</b>	6 g
<b>Dimensions</b> (Length x Width x Thickness)	42 x 30 x 2.3 mm

\* Mobile Broadband is an optional feature and requires factory configuration. Connection requires wireless data service contract, network support, and is not available in all areas. Contact service provider to determine the coverage area and availability. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products or in all countries.

#### **HP hs3210 HSPA+ Mobile Broadband Module\***

<b>Technology/Operating bands</b>	HSPA+: 2100 (Band1), 1900 (Band 2), 850 (Band 5), 900 (Band 8) MHz E-GPRS: 1900 (Band 2), 1800 (Band 3), 850 MHz (Band 5), 900 (Band 8) MHz
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### Technical Specifications

<b>Wireless protocol standards</b>	WCDMA R99, 3GPP Release 5, 6 and 7 UMTS Specification E-GPRS: Class B, Multi-slot class 33, coding schemes CS1 - CS4 and MSC1 - MSC9
<b>Maximum data rates</b>	HSPA+: 21.6 Mbps (Download), 5.76 Mbps (Upload)  E-GPRS: 296 kbps (Download), 236.8 kbps (Upload) GPRS: 107 kbps (Download), 85.6 kbps (Upload)
<b>Maximum output power</b>	HSPA+: 24 dBm E-GPRS 1800/1900: 26 dBm E-GPRS 850/900: 27 dBm GPRS 1800/1900: 30 dBm GPRS 850/900: 33 dBm
<b>Maximum power consumption</b>	HSPA+: 1,100 mA (peak); 800 mA (average) E-GPRS: 2,800 mA (peak); 700 mA (average)
<b>Form Factor</b>	M.2, 2242-S3 Key B
<b>Weight</b>	6 g
<b>Dimensions</b> (Length x Width x Thickness)	1.65 x 8.66 x 0.09 in (42 x 22 x 2.38 mm)

\* Mobile Broadband is an optional feature and requires factory configuration. Connection requires wireless data service contract, network support, and is not available in all areas. Contact service provider to determine the coverage area and availability. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products or in all countries.

#### **HP It4225 LTE/EV-DO Gobi™ 4G Mobile Broadband Module\***

<b>Technology/Operating bands</b>	LTE: 1400 (Band 11), 800 (Band 18, Japan 800 lower) EV-DO: 800 (BC0), 2100 (BC6) MHz
<b>Wireless protocol standards</b>	3GPP Release 8 LTE Specification EVDO Release 0 and Release A
<b>GPS</b>	Standalone
<b>GPS bands</b>	1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz
<b>Maximum data rates</b>	LTE: 100 Mbps (Download), 50 Mbps (Upload) CDMA 1x: 153.6 kbps (Download), 153.6 kbps (Upload) EVDO Rev.A: 3.1 Mbps (Download), 1.8 Mbps (Upload)
<b>Maximum output power</b>	LTE: 23 dBm CDMA/EVDO: 24dBm
<b>Maximum power consumption</b>	LTE: 1,200 mA (peak); 900 mA (average) EVDO: 900mA (peak); 720mA (average)
<b>Form Factor</b>	M.2, 3042-S3 Key B
<b>Weight</b>	6 g
<b>Dimensions</b> (Length x Width x Thickness)	1.65 x 1.18 x 0.09 in (42 x 30 x 2.3 mm)

\* Mobile Broadband is an optional feature and requires factory configuration. Connection requires wireless data service contract, network support, and is not available in all areas. Contact service provider to determine the coverage area and availability. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products or in all countries.

#### **HP It4226 LTE/HSPA+ Gobi 4G Module\***

<b>Technology/Operating bands</b>	LTE: 2100 (Band 1), 800 (Band 19, Japan 800 upper), 1450 (Band 21) HSPA+: 2100 (Band 1), 800 (Band 6), 800 (Band 19) MHz
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### Technical Specifications

<b>Wireless protocol standards</b>	3GPP Release 8 LTE Specification WCDMA R99, 3GPP Release 5, 6 and 7 UMTS Specification
<b>GPS</b>	Standalone
<b>GPS bands</b>	1575.42 MHz $\pm$ 1.023 MHz, GLONASS 1596-1607MHz
<b>Maximum data rates</b>	LTE: 100 Mbps (Download), 50 Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21.6 Mbps (Download), 5.76 Mbps (Upload)
<b>Maximum output power</b>	LTE: 23 dBm HSPA+: 23.5 dBm
<b>Maximum power consumption</b>	LTE: 1,200 mA (peak); 900 mA (average) HSPA+: 1,100 mA (peak); 800 mA (average)
<b>Form Factor</b>	M.2, 3042-S3 Key B
<b>Weight</b>	6 g
<b>Dimensions</b> (Length x Width x Thickness)	1.65 x 1.18 x 0.09 in (42 x 30 x 2.3 mm)

#### **HP hs3210 WW HSPA+ w/o GPS**

<b>Technology/Operating bands</b>	LTE: 2100 (Band 1), 800 (Band 19, Japan 800 upper), 1450 (Band 21) HSPA+: 2100 (Band 1), 800 (Band 6), 800 (Band 19) MHz
<b>Wireless protocol standards</b>	3GPP Release 8 LTE Specification WCDMA R99, 3GPP Release 5, 6 and 7 UMTS Specification
<b>GPS</b>	Standalone, A-GPS
<b>GPS bands</b>	1575.42 MHz $\pm$ 1.023 MHz, GLONASS 1596-1607MHz
<b>Maximum data rates</b>	LTE: 100 Mbps (Download), 50 Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21.6 Mbps (Download), 5.76 Mbps (Upload)
<b>Maximum output power</b>	LTE: 23 dBm HSPA+: 23.5 dBm
<b>Maximum power consumption</b>	LTE: 1,200 mA (peak); 900 mA (average) HSPA+: 1,100 mA (peak); 800 mA (average)
<b>Form Factor</b>	M.2, 3042-S3 Key B
<b>Weight</b>	6 g
<b>Dimensions</b> (Length x Width x Thickness)	1.65 x 1.18 x 0.09 in (42 x 30 x 2.3 mm)

\*Mobile Broadband is an optional feature and requires factory configuration. Connection requires wireless data service contract, network support, and is not available in all areas. Contact service provider to determine the coverage area and availability. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products or in all countries.

#### **HP GPS**

<b>Technology</b>	Standalone GPS, GLONASS
<b>Operating bands</b>	GPS L1 1575.42 MHz $\pm$ 1.023 MHz, GLONASS 1596-1607MHz
<b>Maximum power consumption</b>	Active mode (continuous): 67 mA (peak); 26 mA (average)
<b>Form Factor</b>	M.2, 3042-S3 Key B
<b>Weight</b>	4.3 g



### Technical Specifications

**Dimensions** 42 x 30 x 2.3 mm  
(Length x Width x Thickness)

### WLAN MODULES

#### **Intel® Dual band wireless-AC 8265 802.11AC 2x2 WiFi + BT 4.2 Combo Adaptor (non-vPro™)**

<b>Wireless LAN Standards</b>	<ul style="list-style-type: none"> <li>IEEE 802.11a</li> <li>IEEE 802.11b</li> <li>IEEE 802.11g</li> <li>IEEE 802.11n</li> <li>IEEE 802.11ac</li> </ul>
<b>Interoperability Frequency Band</b>	<ul style="list-style-type: none"> <li>Wi-Fi certified</li> <li>802.11b/g/n                             <ul style="list-style-type: none"> <li>• 2.402 – 2.482 GHz</li> </ul> </li> </ul> <p style="margin-left: 40px;">Note: The FCC has declared as of January 1, 2015 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.</p> <ul style="list-style-type: none"> <li>802.11a/n                             <ul style="list-style-type: none"> <li>• 4.9 – 4.95 GHz (Japan)</li> <li>• 5.15 – 5.25 GHz</li> <li>• 5.25 – 5.35 GHz</li> <li>• 5.47 – 5.725 GHz</li> <li>• 5.825 – 5.850 GHz</li> </ul> </li> </ul> <p style="margin-left: 40px;">Note: Indonesia no support this band)</p>
<b>Data Rates</b>	<ul style="list-style-type: none"> <li>• 802.11b: 1, 2, 5.5, 11 Mbps</li> <li>• 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps</li> <li>• 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps</li> <li>• 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)</li> <li>• 802.11ac : MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz)</li> </ul>
<b>Modulation</b>	<p>Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM</p>
<b>Security<sup>1</sup></b>	<ul style="list-style-type: none"> <li>• IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only</li> <li>• AES-CCMP: 128 bit in hardware</li> <li>• 802.1x authentication</li> <li>• WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.</li> <li>• WPA2 certification</li> <li>• IEEE 802.11i</li> <li>• Cisco Certified Extensions, all versions through CCX4 and CCX Lite</li> </ul>

### Technical Specifications

	<ul style="list-style-type: none"> <li>• WAPI</li> </ul>
<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>	<ul style="list-style-type: none"> <li>• 802.11b : +16dBm minimum</li> <li>• 802.11g : +14dBm minimum</li> <li>• 802.11a : +14dBm minimum</li> <li>• 802.11n HT20(2.4GHz) : +14dBm minimum</li> <li>• 802.11n HT40(2.4GHz) : +12dBm minimum</li> <li>• 802.11n HT20(5GHz) : +14dBm minimum</li> <li>• 802.11n HT40(5GHz) : +12dBm minimum</li> </ul>
<b>Power Consumption</b>	Transmit: 2.0 W (max) Receive: 1.6 W (max) Idle mode (PSP): 180 mW (WLAN Associated) Idle mode: 50 mW (WLAN unassociated) Connect Standby: 10 mW (WLAN+BT) Radio disabled: 5 mW
<b>Power Management</b>	ACPI and PCI Express compliant power management
<b>Receiver Sensitivity<sup>3</sup></b>	802.11 compliant power saving mode 802.11b, 1Mbps : -94dBm maximum 802.11b, 11Mbps : -86dBm maximum 802.11g, 6Mbps : -88dBm maximum 802.11g, 54Mbps : -74dBm maximum 802.11a, 6Mbps : -88dBm maximum 802.11a, 54Mbps : -74dBm maximum 802.11n, MCS07 : -69dBm maximum 802.11n, MCS15 : -66dBm maximum 802.11ac, 1SS, MCS-0 : -86dBm maximum 802.11ac, 1SS, MCS-9 : -61dBm maximum 802.11ac, 2SS, MCS-0 : -83dBm maximum 802.11ac, 2SS, MCS-9 : -58dBm maximum
<b>Antenna type</b>	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
<b>Form Factor</b>	PCI-Express M.2 MiniCard
<b>Dimensions</b>	Type 2230 : 2.3 x 22.0 x 30.0 mm Or Type 1630 : 2.3 x 16.0 x 30.0 mm
<b>Weight</b>	Type 2230 : 2.8g Or Type 1630 : 2g
<b>Operating Voltage</b>	3.3v +/- 9%
<b>Temperature</b>	Operating 14° to 158° F (-10° to 70° C) Non-operating -40° to 176° F (-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)

### Technical Specifications

**LED Activity** LED Amber – Radio OFF; LED White – Radio ON

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

#### HP Integrated Module with Bluetooth 4.0/4.1/4.2 Wireless Technology

**Bluetooth Specification** 4.0/4.1/4.2 Compliant

**Frequency Band** 2402 to 2480 MHz

**Number of Available Channels** Legacy : 0~79 (1 MHz/CH)  
BLE : 0~39 (2 MHz/CH)

**Data Rates and Throughput** Legacy : 3 Mbps data rate; throughput up to 2.17 Mbps  
BLE : 1 Mbps data rate; throughput up to 0.2 Mbps  
Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels  
Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)

**Transmit Power** The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR.

**Receiver Sensitivity**  
**Legacy**

Modulation	0.01% BER	0.001% BER
GFSK	-80 dBm	-70 dBm
$\pi/4$ -DQPSK	-80 dBm	-70 dBm
8DPSK	-80 dBm	-70 dBm

**Power Consumption** Peak (Tx) 330 mW  
Peak (Rx) 230 mW  
Selective Suspend 17 mW

**Range** Legacy Up to 33 ft (10 m)  
BLE Up to 99 ft (30 m)

**Electrical Interface** USB 2.0 compliant

**Bluetooth Software Supported** Microsoft Windows Bluetooth Software

**Link Topology**

**Electrical Interface** Point to Point, Multipoint Pico Nets up to 7 slaves

**Bluetooth Software Supported**  
**Security**

Full support of Bluetooth Security Provisions  
Microsoft Windows ACPI, and USB Bus Support

**Power Management**  
**Certifications**

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

**Security** All necessary regulatory approvals for supported countries, including:  
**Certifications** FCC (47 CFR) Part 15C, Section 15.247 & 15.249

**Bluetooth Profiles Supported**

**Power Management** ETS 300 328, ETS 300 826  
**Certifications** Low Voltage Directive IEC950  
UL, CSA, and CE Mark

**Certifications** Serial Port Profile (SPP)<sup>1</sup>  
**Bluetooth Profiles Supported** Service Discovery Application Profile (SDAP)  
Dial-Up Networking (DUN)<sup>1,2</sup>  
Generic Object Exchange Profile (GOEP)<sup>1,2</sup>

### Technical Specifications

<b>Bluetooth V4.1/V4.2 support feature</b>	Object Push Profile (OPP) <sup>1,2</sup>
	Hard Copy Cable Replacement (HCRP) <sup>1,2</sup>
	Personal Area Networking Profile (PAN) <sup>1,2</sup>
	Human Interface Device Profile (HID) <sup>1,2</sup>
	Hands Free Profile (HFP)
	Advanced Audio Distribution Profile (A2DP)
	Audio Video Remote Control Profile (AVRCP)

V4.1: ESR5/6/7 compliant

V4.2: ESR8 compliant, LE Secure Connection – Basic.

\* Wireless access point and Internet service required. Availability of public wireless access points limited. The specifications for the 802.11ac WLAN are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ac WLAN devices.

### **Intel® Dual band wireless-AC 8265 802.11AC 2x2 WiFi + BT 4.2 Combo Adaptor (VPro)**

<b>Wireless LAN Standards</b>	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac
<b>Interoperability</b>	Wi-Fi certified
<b>Frequency Band</b>	802.11b/g/n <ul style="list-style-type: none"> <li>2.402 – 2.482 GHz</li> </ul> <p>Note: The FCC has declared as of January 1, 2015 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.</p> 802.11a/n <ul style="list-style-type: none"> <li>4.9 – 4.95 GHz (Japan)</li> <li>5.15 – 5.25 GHz</li> <li>5.25 – 5.35 GHz</li> <li>5.47 – 5.725 GHz</li> <li>5.825 – 5.850 GHz</li> </ul> <p>Note: Indonesia no support this band)</p>
<b>Data Rates</b>	<ul style="list-style-type: none"> <li>802.11b: 1, 2, 5.5, 11 Mbps</li> <li>802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps</li> <li>802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps</li> <li>802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)</li> <li>802.11ac : MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz)</li> </ul>
<b>Modulation</b>	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM

### Technical Specifications

<b>Security<sup>1</sup></b>	<ul style="list-style-type: none"> <li>• IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only</li> <li>• AES-CCMP: 128 bit in hardware</li> <li>• 802.1x authentication</li> <li>• WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.</li> <li>• WPA2 certification</li> <li>• IEEE 802.11i</li> <li>• Cisco Certified Extensions, all versions through CCX4 and CCX Lite</li> <li>• WAPI</li> </ul>
<b>Network Architecture</b>	Ad-hoc (Peer to Peer)
<b>Models</b>	Infrastructure (Access Point Required)
<b>Roaming</b>	IEEE 802.11 compliant roaming between access points
<b>Output Power<sup>2</sup></b>	<ul style="list-style-type: none"> <li>• 802.11b : +16dBm minimum</li> <li>• 802.11g : +14dBm minimum</li> <li>• 802.11a : +14dBm minimum</li> <li>• 802.11n HT20(2.4GHz) : +14dBm minimum</li> <li>• 802.11n HT40(2.4GHz) : +12dBm minimum</li> <li>• 802.11n HT20(5GHz) : +14dBm minimum</li> <li>• 802.11n HT40(5GHz) : +12dBm minimum</li> </ul>
<b>Power Consumption</b>	Transmit: 2.0 W (max) Receive: 1.6 W (max) Idle mode (PSP): 180 mW (WLAN Associated) Idle mode: 50 mW (WLAN unassociated) Connect Standby: 10 mW (WLAN+BT) Radio disabled: 5 mW
<b>Power Management</b>	ACPI and PCI Express compliant power management
<b>Receiver Sensitivity<sup>3</sup></b>	802.11 compliant power saving mode 802.11b, 1Mbps : -94dBm maximum 802.11b, 11Mbps : -86dBm maximum 802.11g, 6Mbps : -88dBm maximum 802.11g, 54Mbps : -74dBm maximum 802.11a, 6Mbps : -88dBm maximum 802.11a, 54Mbps : -74dBm maximum 802.11n, MCS07 : -69dBm maximum 802.11n, MCS15 : -66dBm maximum 802.11ac, 1SS, MCS-0 : -86dBm maximum 802.11ac, 1SS, MCS-9 : -61dBm maximum 802.11ac, 2SS, MCS-0 : -83dBm maximum 802.11ac, 2SS, MCS-9 : -58dBm maximum
<b>Antenna type</b>	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
<b>Form Factor</b>	PCI-Express M.2 MiniCard
<b>Dimensions</b>	Type 2230 : 2.3 x 22.0 x 30.0 mm

### Technical Specifications

<b>Weight</b>	Or	
	Type 1630	: 2.3 x 16.0 x 30.0 mm
<b>Operating Voltage</b>	Type 2230	: 2.8g
	Or	
<b>Temperature</b>	Type 1630	: 2g
		3.3v +/- 9%
<b>Humidity</b>	Operating	14° to 158° F (-10° to 70° 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)
		LED Amber – Radio OFF; LED White – Radio ON

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

#### HP Integrated Module with Bluetooth 4.0/4.1/4.2 Wireless Technology

<b>Bluetooth Specification</b>	4.0/4.1/4.2 Compliant												
<b>Frequency Band</b>	2402 to 2480 MHz												
<b>Number of Available Channels</b>	Legacy : 0~79 (1 MHz/CH) BLE : 0~39 (2 MHz/CH)												
<b>Data Rates and Throughput</b>	Legacy : 3 Mbps data rate; throughput up to 2.17 Mbps BLE : 1 Mbps data rate; throughput up to 0.2 Mbps Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)												
<b>Transmit Power</b>	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR.												
<b>Receiver Sensitivity</b>													
<b>Legacy</b>	<table border="1"> <thead> <tr> <th>Modulation</th> <th>0.01% BER</th> <th>0.001% BER</th> </tr> </thead> <tbody> <tr> <td>GFSK</td> <td>-80 dBm</td> <td>-70 dBm</td> </tr> <tr> <td><math>\pi/4</math>-DQPSK</td> <td>-80 dBm</td> <td>-70 dBm</td> </tr> <tr> <td>8DPSK</td> <td>-80 dBm</td> <td>-70 dBm</td> </tr> </tbody> </table>	Modulation	0.01% BER	0.001% BER	GFSK	-80 dBm	-70 dBm	$\pi/4$ -DQPSK	-80 dBm	-70 dBm	8DPSK	-80 dBm	-70 dBm
Modulation	0.01% BER	0.001% BER											
GFSK	-80 dBm	-70 dBm											
$\pi/4$ -DQPSK	-80 dBm	-70 dBm											
8DPSK	-80 dBm	-70 dBm											
<b>Power Consumption</b>	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW												
<b>Range</b>	Legacy Up to 33 ft (10 m) BLE Up to 99 ft (30 m)												
<b>Electrical Interface</b>	USB 2.0 compliant												
<b>Bluetooth Software Supported</b>	Microsoft Windows Bluetooth Software												
<b>Link Topology</b>													
<b>Electrical Interface</b>	Point to Point, Multipoint Pico Nets up to 7 slaves												
<b>Bluetooth Software Supported</b>													
<b>Security</b>	Full support of Bluetooth Security Provisions												
<b>Power Management</b>	Microsoft Windows ACPI, and USB Bus Support												
<b>Certifications</b>													

### Technical Specifications

<b>Security</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: FCC (47 CFR) Part 15C, Section 15.247 & 15.249
<b>Bluetooth Profiles Supported</b>	ETS 300 328, ETS 300 826
<b>Power Management</b>	Low Voltage Directive IEC950
<b>Certifications</b>	UL, CSA, and CE Mark
	Serial Port Profile (SPP) <sup>1</sup>
	Service Discovery Application Profile (SDAP)
	Dial-Up Networking (DUN) <sup>1,2</sup>
<b>Certifications</b>	Generic Object Exchange Profile (GOEP) <sup>1,2</sup>
<b>Bluetooth Profiles Supported</b>	Object Push Profile (OPP) <sup>1,2</sup>
	Hard Copy Cable Replacement (HCRP) <sup>1,2</sup>
	Personal Area Networking Profile (PAN) <sup>1,2</sup>
	Human Interface Device Profile (HID) <sup>1,2</sup>
	Hands Free Profile (HFP)
	Advanced Audio Distribution Profile (A2DP)
	Audio Video Remote Control Profile (AVRCP)
<b>Bluetooth V4.1/V4.2 support feature</b>	V4.1: ESR5/6/7 compliant
	V4.2: ESR8 compliant, LE Secure Connection – Basic

\* Wireless access point and Internet service required. Availability of public wireless access points limited. The specifications for the 802.11ac WLAN are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ac WLAN devices.

## POWER

<b>HP 45 W USB Type-C™ AC adapter</b>	<b>Dimensions</b>	62.0x62.0x28.5mm
	<b>Weight</b>	unit: 220g +/- 10g
	<b>Input</b>	
		<b>Input Efficiency</b>
		Average Efficiency of 25%, 50%, 75%, 100% load condition with 115Vac/230Vac Spec:
		5V : 81.5%
		9V : 86.7%
		10V : 87.5%
		12V : 87.8%
		15V : 87.8%
		20V : 87.8%
		<b>Input frequency range</b>
		47 ~ 63 Hz
		<b>Input AC current</b>
		Max. 1.4 A at 90 Vac
	<b>Output</b>	<b>Output power</b>
		5V/15W
		9V/27W
		10V/37.5W
		12V/45W
		15V/45W

### Technical Specifications

20V/45W

**DC output**

5V/9V/10V/12V/15V/20V

**Hold-up time**

5ms at 115 Vac input

**Output current limit**

<5.0A

**Connector**

USB Type-C

**Environmental Design**

**Operating temperature**

32oFto 95oF (0oto 35oC)

**Non-operating (storage) temperature**

-4oFto 185oF (-20oto 85oC)

**Altitude**

0 to 16,400 ft (0 to 5000m)

**Humidity**

20% to 95%

**Storage Humidity**

10% to 95%

**EMI and Safety Certifications**

\*CE Mark - full compliance with LVD and EMC directives

\* Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency

approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class

B, CCC, NOM-1 NYCE.

\* MTBF - over 200,000 hours at 25°C ambient condition.

**HP 65 W USB Type-C™ AC adapter**

**Dimensions**

74x74x28.5mm

**Weight**

unit: 245g +/- 10g

**Input**

**Input Efficiency**

81.5% min at 115 Vac/ 230Vac @ 5V/3A

86.7% min at 115 Vac/ 230Vac @ 9V/3A

88% min at 115 Vac/ 230Vac @ 10V/5A

88% min at 115 Vac/ 230Vac @ 12V/5A

89% min at 115 Vac/ 230Vac @

15V/4.33A

89% min at 115 Vac/ 230Vac @

20V/3.25A

**Input frequency range**

47 ~ 63 Hz

**Input AC current**

1.7 A at 90 VAC and maximum load

**Output**

**Output power**

65W

**DC output**

5V/9V/10V/12V/15V/20V

**Hold-up time**

5ms at 115 Vac input

**Output current limit**

<8.0A



### Technical Specifications

<b>Connector</b>	USB Type C
<b>Environmental Design</b>	<p><b>Operating temperature</b> 32oFto 95oF (0oto 35oC)</p> <p><b>Non-operating (storage) temperature</b> -4oFto 185oF (-20oto 85oC)</p> <p><b>Altitude</b> 0 to 16,400 ft (0 to 5000m)</p> <p><b>Humidity</b> 5% to 95%</p> <p><b>Storage Humidity</b> 5% to 95%</p>
<b>EMI and Safety Certifications</b>	<p>*CE Mark - full compliance with LVD and EMC directives</p> <p>* 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.</p> <p>* MTBF - over 100,000 hours at 25°C ambient condition.</p>

### HP 4-cell Polymer Battery (47 WHr)

<b>Dimensions (H x W x L)</b>	4.46 x 265.6 x 81.15 mm 0.18 x 10.45 x 3.2 inch
<b>Weight</b>	0.195 kg/0.88 lb
<b>Cells/Type</b>	Li-ion/Polymer cell
<b>Energy</b>	Voltage : 7.7V Amp-hour capacity: 6.11Ah Watt-hour capacity: 47 WHr
<b>Watt-hour capacity</b>	
<b>Temperature</b>	<p><b>Operating (Charging)</b> 32° to 113° F ( 0° to 45° C)</p> <p><b>Operating (Discharging)</b> 14° to 140° F ( -10° to 60° C)</p> <p><b>Non-operating</b> -4° to 140° F ( -20° to 60° C)</p>
<b>Battery recharge time</b>	System in OFF or Standby Mode <3 hours
<b>Fuel Gauge LED</b>	No
<b>Optional travel battery available</b>	No

### COUNTRY OF ORIGIN

China

### Technical Specifications

#### **CLEANING**

The following cleaning solutions, if used as instructed in the user guide, will not harm the surface of the HP Elite x2 1012 G2 Collaboration Keyboard:

- Alcohol-free glass-cleaning fluid
- Solution of mild soap and water
- Dry microfiber cleaning cloth or a chamois (static-free cloth without oil)
- Static-free cloth wipes

Please refer to the user guide that came with your product for detailed instructions about how to clean your HP Elite x2 1012 G2 using these solutions.

The following cleaning solutions, if used as instructed in the user guide, will not harm the surface of HP Elite x2 1012 Travel Keyboard and the HP Elite x2 1012 Advanced Keyboard:

Surface side of the keyboards:

- Alcohol-free glass-cleaning fluid
- Solution of mild soap and water
- Dry microfiber cleaning cloth or a chamois (static-free cloth without oil)
- Static-free cloth wipes

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

Category	Description	Part number
<b>Cases</b>	HP Elite Top Load Colombian Leather Case	T9H72AA
	HP Elite Top Load Herringbone Nylon Case	T9H73AA
	HP Elite x2 1012 G2 Protective Case	1HM07AA
<b>Docking</b>	HP Elite 90W Thunderbolt 3 Dock	1DT93AA
	HP USB-C Dock G4	3FF69AA
	HP USB-C Universal Dock	1MK33AA
	HP USB-C Universal Dock Non Flash	3DV65AA
	HP Thunderbolt Dock 120W G2	2UK37AA
	HP Thunderbolt Dock w/Combo Cable	3TR87AA
	HP Thunderbolt Dock 120W w/ Audio	3YE87AA
	HP Thunderbolt Audio Module	3AQ21AA
	HP USB-C Mini Dock	1PM64AA
	HP USB-C Travel Hub	Z9G82AA
<b>Input Devices</b>	HP Elite x2 1012 G2 Collaboration Keyboard	1FV39A
	HP Active Pen with Bluetooth App Launch Button	T4Z24AA
	HP USB Type-C to VGA Adapter	N9K76AA
	HP USB Type-C to HDMI Adapter	N9K77AA
	HP USB Type-C to DisplayPort Adapter	N9K78AA
	HP USB Type-C to Gigabit Ethernet Adapter	V8Y76AA
<b>Power</b>	HP 45W USB-C Auto Adapter	Z3Q87AA
<b>Security</b>	HP Nano Keyed Cable Lock	1AJ39AA
	HP Nano Master Keyed Cable Lock	1AJ40AA
	HP Nano Dual Head Keyed Cable Lock	1AJ41AA

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### Summary of Changes

Date of change:	Version History:	Description of change:
	V1 to v2	
May 16, 2017	V2 to V3	Weight changed, one mention of battery life was 10 hrs instead of 10 hr 15 min and some of the cleaning solutions needed to be deleted.
May 18, 2017	V3 to V4	Removed Wigig references. Keyboard features updated
Septmeber 7, 2017	V4 to V5	Changed "IPS/FSS/VA" to "IPS" on LCD Mode on display section of tech specs
September 19, 2017	V5 to V6	Touchpoint manager removed
February 23, 2018	V6 to V7	Display & Options sections updated
April 30, 2018	V7 to V8	Environmental tab
May 9, 2018	V8 to V9	Environmental tab Edit
July 10, 2018	V9 to V10	Docking