

### Overview

### HP Pro x2 612 G2



### Right View

- |                            |                              |
|----------------------------|------------------------------|
| 1. Front-facing camera LED | 6. Security cable slot       |
| 2. Webcam                  | 7. Micro SD memory card slot |
| 3. Touchpad                | 8. Volume controls           |
| 4. Pen Lanyard Slots       | 9. Power button              |
| 5. Kickstand               | 10. Smart card reader        |

### Overview



#### Left side view

1. Front-facing camera LED
2. Webcam
3. Audio-out/Audio-in combo jack
4. USB-A 3.0
5. Micro SIM Card Slot (only available on configurations with WWAN enabled)
6. Indicator LEDs: Battery Light
  - White: battery charge is greater than 90%
  - Amber: battery charge is from 0 to 90%
  - Off: battery is not charging
7. USB Type-C™ 3.1
8. Guide pins
9. Pogo pins

### Overview



#### Top and Side

- |                      |                                |
|----------------------|--------------------------------|
| 1. Smart card reader | 5. Security cable slot         |
| 2. Speakers (2)      | 6. Micro SD memory card slot   |
| 3. Power button      | 7. Optional NFC                |
| 4. Volume controls   | 8. Optional fingerprint reader |

### Overview



#### Dedicated Skype for Business keys

1. Present
2. Call answer / initiate
3. Call end

### Overview

### At A Glance

- The fanless design and up to 11 hours of battery life<sup>1</sup> lets you work, surf, and connect with colleagues
- Windows 10 versions
- 7<sup>th</sup> Generation Intel® Core™ (Y-series) processors, some with vPro™ <sup>2</sup> support\*\* or Intel® Pentium® processors
- Intel® HD Graphics 615
- 12" diagonal FHD BrightView WUXGA+ UWVA ultra-slim LED-backlit touch screen (1920 x1280) with direct bonded, Corning® Gorilla® Glass 4
- Up to 8 GB of memory and up to 512 GB storage
- Weight starting at 1.87 lbs for tablet
- Height starting at 9.1mm for tablet
- Designed to pass MIL-STD-810g testing<sup>3</sup>
- With integrated stereo speakers, front and rear facing web camera and integrated microphone
- Security features include TPM 2.0/1.2, integrated smart card reader, optional fingerprint reader, and optional NFC
- Wireless connectivity with WLAN and optional WWAN
- 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
- New collaboration keyboard with dedicated collaboration keys, multitouch gestures enabled for clickpad and backlit keyboard

1. 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.

2. vPro™ support not available on all configurations.

3. MIL STD 810G testing is not intended to demonstrate fitness for U.S. Department of Defense contract requirements or for military use. Test results are not a guarantee of future performance under these test conditions. Damage under the MIL STD test conditions or any accidental damage requires an optional HP Accidental Damage Protection Care Pack.

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

### Features

#### PRODUCT NAME

HP Pro x2 612 G2

#### OPERATING SYSTEM

**Preinstalled** 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>  
Windows 10 IoT 64 Enterprise LTSB for Retail<sup>1</sup>

**Web Supported** Windows 10 Enterprise 64<sup>1</sup>

**Note: Your product does not support Windows 8 or Windows 7.**

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

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.

#### PROCESSOR

Intel® Pentium® 4410Y with Intel Graphics 615  
(1.5 GHz, 2 MB cache, 2 cores)

Intel® Core™ M3-7Y30 with Intel Graphics 615  
(1 GHz, up to 2.6 GHz, 4 MB cache, 2 cores)

Intel® Core™ i5-7Y54 with Intel Graphics 615  
(1.2 GHz, up to 3.3 GHz, 4 MB cache, 2 cores)

Intel® Core™ i5-7Y57 with Intel Graphics 615, vPro™ Support  
(1.2 GHz, up to 3.2 GHz, 4 MB cache, 2 cores)

Intel® Core™ i7-7Y75 with Intel Graphics 615, vPro™ Support  
(1.3 GHz, up to 3.6 GHz, 4 MB cache, 2 cores)

##### Processors Family

7th Generation Intel® Pentium® processor (4410Y model)  
7th Generation Intel® Core™ M3 processor (7Y30 model)  
7th Generation Intel® Core™ i5 processor (i5-7Y54, i5-7Y57 models)  
7th Generation Intel® Core™ i7 processor (i7-7Y75 model)

### Features

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Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.

1. Multicore 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.

### CHIPSET

Chipset is integrated with processor

### GRAPHICS

#### Integrated

Intel® HD Graphics 615<sup>1</sup>

#### Discrete

Intel® UMA Graphics (GT2)

With shared video memory

1. HD content required to view HD images.

### DISPLAY

#### Internal

30.48 cm (12") diagonal FHD BrightView WUXGA+ UWVA ultra-slim LED-backlit (1920 x 1280) touch screen chemically-strengthened Corning® Gorilla® Glass 4 top cover directly bonded to display

1. HD content required to view HD images.

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

<b>Refresh Rate</b>	60 Hz
<b>Brightness</b>	340 nits (typical)
<b>Pixel Resolution</b>	Format 1920 x 1280 (WUXGA+)
	Configuration RGB Stripe
<b>Interface</b>	eDP 1.3
<b>LCD Mode</b>	IPS/FFS/VA
<b>PPI</b>	192 ppi
<b>Viewing Angle</b>	UWVA 85/85/85/85 (Left/Right/Down/Up)

#### External

24-bit + 8 bit alpha channel (standard)

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

### Features

#### STORAGE

Supports M.2 Solid State Drive 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

1. For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 10) is reserved for system recovery software.

#### MEMORY

LPDDR3 1866 (Transfer rates up to 1866 MT/s)  
Supports Dual Channel Memory  
Memory Soldered Down  
Non-accessible  
Not upgradeable

##### Configurations

4 GB  
8 GB

##### Memory Maximum

Up to 8 GB

#### NETWORKING/COMMUNICATIONS

##### Broadband Wireless (WWAN)<sup>1,2,3</sup>

HP hs3210 HSPA+ Mobile Broadband Module  
HP lt4120 Qualcomm® Snapdragon™ X5 LTE Mobile Broadband Module

##### Wireless LAN (WLAN)

Intel® Dual Band Wireless-AC 8260 802.11 a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 combo (vPro)  
Intel® Dual Band Wireless-AC 8260 802.11 a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 combo (non-vPro)

##### Optional GPS

HP Graff GNSS Module <sup>2</sup>

##### Near Field Communications (NFC)

HP Module with NXP NFC Controller NPC100<sup>2</sup>

Support for Miracast (Windows 10) <sup>4</sup>

1. Wireless access point and Internet service required and sold separately. 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.



### Features

2. Sold separately or as an optional feature.
3. Mobile Broadband requires separately purchased service contract and factory configuration. Check with service provider for coverage and availability in your area. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products, and in all regions.
4. 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>

### AUDIO/MULTIMEDIA

#### Audio on Tablet

Integrated stereo speakers (DTS)  
Integrated dual-microphone array

#### 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

#### Sensors on Tablet

Accelerometer Magnetometer, Gyro (Combo chip)  
Proximity (SAR for WWAN)  
Ambient light sensor

\*Internet access required.

## Features

### 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
<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+

### KEYBOARD

#### Optional HP Pro x2 612 G2 Collaboration Keyboard<sup>1</sup>

**Kit Contents:** HP Pro x2 612 G2 Collaboration Keyboard and documentation

**Weight:** 2.65 lbs (1203g)

1. Sold separately or as an optional feature.

#### Keyboard Features

- Backlit
- HP DuraKeys
- 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
- Wipeable back cover
- 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

### Features

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

Dedicated Skype keys:

Present  
Call answer/initiate  
Call end  
Delete

## SOFTWARE AND SECURITY

### 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>6</sup>  
Native Miracast Support<sup>7</sup>  
HP LAN-WLAN Protection  
HP MAC Address Manager (select models only)  
HP Wireless Wakeup (Intel platforms only)  
HP SureConnect  
HP Velocity

### HP Value Add Software

HP ePrint Driver + JetAdvantage<sup>8</sup>  
HP Hotkey Support - CMIT  
HP Jumpstart

### Features

HP Support Assistant<sup>9</sup>  
HP Noise Cancellation Software

#### Microsoft Products

Buy Office  
Bing Search  
Skype<sup>10</sup>

#### Manageability

HP Driver Packs<sup>11</sup>  
HP SoftPaq Download Manager (SDM)  
HP System Software Manager (SSM)<sup>11</sup>  
HP BIOS Config Utility (BCU)<sup>11</sup>  
HP Client Catalog<sup>11</sup>  
HP MIK for Microsoft SCCM<sup>12</sup> -  
HP Image Assistant  
LANDESK Management<sup>13</sup>  
Discover HP Touchpoint Manager<sup>14</sup>

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

#### Client Security Software

HP Client Security Suite Gen3<sup>15</sup>

- 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>16</sup>

HP WorkWise<sup>17</sup>

#### Standard

For Windows 10, Trusted Platform Module (TPM) 2.0 (Infineon SLB9670). Common Criteria EAL4+ Certified.

HP Fingerprint Reader (On select models)

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

<sup>1</sup> Requires Intel® 7th generation processors.

<sup>2</sup> Available on HP Elite products equipped with Intel® 7th generation processors.

<sup>3</sup> For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88. Supported on Elite platforms with BIOS version F.03 or higher

### Features

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.

6 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)

7 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>

8 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)). Requires optional broadband module. Broadband use requires separately purchased service contract. Check with service provider for coverage and availability in your area. Separately purchased data plans or usage fees may apply. Print times and connection speeds may vary.

9 Requires Windows and Internet Access

10 Skype is not offered in China.

11 Not preinstalled, however available for download at <http://www.hp.com/go/clientmanagement>

12 HP Manageability Integration Kit can be downloaded from <http://www8.hp.com/us/en/ads/clientmanagement/overview.html>

13 Subscription required

14 HP Touchpoint Manager requires purchase of a subscription and supports Android™, iOS and Windows 7 or higher operating systems and PCs, notebooks, tablets and smartphones from various manufacturers. Not available in all countries see <http://www.hp.com/touchpoint> for availability information

15 Requires Windows and Intel® 7th generation processors.

16 Opt in and internet connection required for updates.

17 HP WorkWise smartphone app will soon be available as a free download on the App Store and Google Play.

### 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

#### Primary Battery

4-cell, long life 41 Wh Li-ion<sup>2</sup>

Supports battery fast charge (65W adapter only).

#### Power cord

Duckhead Power Cord (3.28 feet / 1.0 m)

### Features

#### Battery life<sup>1</sup>

Windows 10 battery time:

Up to 10 hours \*

\* Units enabled with 65w adapters or higher can support fast charging of the battery from 0-45% in 30 minutes while the system is off.

1. 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.
2. 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.

### WEIGHTS & DIMENSIONS

#### Weight<sup>1</sup>

##### Tablet only

Starting at 1.87 lbs (850 g)

##### Tablet with Collaboration Keyboard

2.65 lbs (1203 g)

1. Weight will vary by configuration.

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

##### Tablet

11.81 x 8.65 x 0.36 in (300 x 219.3 x 9.1 mm)

##### Tablet with Collaboration Keyboard

11.81 x 8.65 x 0.57 in (300 x 219.3 x 14.6 mm)

**NOTE:** Height varies depending upon where on the notebook the measurement is made.

### PORTS/SLOTS

#### Tablet

##### Ports

1 USB Type-C™ (docking, charging, and USB 3.1)

1 USB A 3.0

1 headphone/microphone combo

##### Slots

1 Micro SIM drawer (optional)

1 Micro SD Media Reader drawer - supports microSD, microSDHC, microSDXC

### SERVICE AND SUPPORT

HP Services offers 3-year and 1-year limited warranties and 90 day software 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 <sup>1</sup> are

### Features

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>.

1. HP Care Packs are sold separately. 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). HP services are governed by the applicable HP terms and conditions of service provided or indicated to Customer at the time of purchase. Customer may have additional statutory rights according to applicable local laws, and such rights are not in any way affected by the HP terms and conditions of service or the HP Limited Warranty provided with your HP Product.

## Features

### DISPLAY

**Note:** All specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower.

<b>12.0" diagonal LED-backlit BV UWVA eDP 1.3 Ultra-slim (1920 x 1280 – Full HD*) Chemically-strengthened Corning® Gorilla® Glass 4 top cover directly bonded to display</b>	<b>Outline Dimensions</b> (W x H x D)	267.7 x 184.4 (mm) max		
	<b>Active Area</b>	253.44 x 168.96 (mm)		
	<b>Weight</b>	200 g max		
	<b>Diagonal Size</b>	12.0 (inch)		
	<b>Surface Treatment</b>	Bright-View (BV)		
	<b>Touch enabled</b>	Yes		
	<b>Contrast Ratio</b>	800:1 (typical)		
	<b>Refresh Rate</b>	60 Hz		
	<b>Brightness</b>	340 nits		
	<b>Pixel Resolution</b>	<b>Format</b>	1920 x 1280 (WUXGA+)	
		<b>Configuration</b>	RGB	
		<b>Interface</b>	eDP 1.3 + PSR	
		<b>LCD Mode</b>	LED	
		<b>PPI</b>	192	
	<b>Viewing Angle</b>	UWVA 85/85/85/85		

### STORAGE

<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			



### Features

<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)	
	<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

### Features

<b>Logical Blocks</b>	703,282,608
<b>Operating Temperature Features</b>	32° to 158°F (0° to 70°C) [ambient temp] ATA Security (Option); TRIM; L1.2

#### 512GB 2280 M2 PCIe-3x4 SS NVMe TLC

<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 Features</b>	32° to 158°F (0° to 70°C) [ambient temp] ATA Security; TRIM; L1.2

#### 512GB 2280 PCIe NVMe Value

<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> 1700 MB/s      600 MB/s
<b>Logical Blocks</b>	1,000,215,216
<b>Operating Temperature Features</b>	32° to 158°F (0° to 70°C) [ambient temp] ATA Security; TCG Opal 2.0 ; FIPS; TRIM; L1.2

#### 512GB 2280 M2 SATA-3 Three Layer Cell Federal Information Processing Standard

<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 Features</b>	32° to 158°F (0° to 70°C) [ambient temp] ATA Security; TCG Opal 2.0 ; FIPS; TRIM; L1.2

### Features

## 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 Image</b>	36 mA peak
	<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)
	<b>Detection Matrix</b>	200*1 (plus another secondary line) 508 dpi 10 mm sensor area

## NETWORKING/COMMUNICATIONS

### 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
<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 requires separately purchased service contract and factory configuration. Check with service provider for coverage and availability in your area. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products, and in all regions.

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

### Features

<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 requires separately purchased service contract and factory configuration. Check with service provider for coverage and availability in your area. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products, and in all regions.

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

<b>Technology/Operating bands</b>	LTE: 2100 (Band 1), 1900 (Band 2), 1800 (Band 3), 1700/2100 (Band 4), 850 (Band 5), 2600 (Band 7), 900 (Band 8), 700 (Band 12 lower), 700 (Band 13 upper), 700 (Band 17 lower), 800 (Band 20), 700 (Band 28). HSPA+: 2100 (Band 1), 1900 (Band 2), 1700/2100 (Band 4), 850 (Band 5), 900 (Band 8) MHz EV-DO: 850 (BC0), 1900 (BC1) MHz (Only work with Verizon network) 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 1xEVDO Release 0, A and B.

### Features

	E-GPRS: Class B, Multi-slot class 12, coding schemes CS1 - CS4 and MSC1 - MSC9
<b>GPS</b>	Standalone, A-GPS (MS-A, MS-B and XTRA)
<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) CDMA 1xRTT: 153.6 kbps (Download), 153.6 kbps (Upload) EVDO Rel.A: 3.1 Mbps (Download), 1.8 Mbps (Upload) EVDO Rel.B: 14.7 Mbps (Download), 5.4Mbps (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 1xRTT/EVDO: 24dBm 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) 1xRTT/EVDO: 1,000 mA (peak); 700 mA (average) E-GPRS: 2,800 mA (peak); 500 mA (average)
<b>Form Factor</b>	M.2, 3042-S3 Key B
<b>Weight</b>	6.2 g
<b>Dimensions</b> (Length x Width x Thickness)	42 x 30 x 2.3 mm

\* Mobile Broadband requires separately purchased service contract and factory configuration.  
Check with service provider for coverage and availability in your area.  
Connection speeds will vary due to location, environment, network conditions, and other factors.  
4G LTE not available on all products, and in all regions.

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

<b>Wireless LAN Standards</b>	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac
<b>Interoperability Frequency Band</b>	Wi-Fi certified 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> </ul>

### Features

	<ul style="list-style-type: none"><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
<b>Security<sup>1</sup></b>	BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM <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 Models</b>	Ad-hoc (Peer to Peer)
<b>Roaming</b>	Infrastructure (Access Point Required)
<b>Output Power<sup>2</sup></b>	IEEE 802.11 compliant roaming between access points <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

## Features

<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)
<b>LED Activity</b>	LED Amber – Radio OFF; LED White – Radio ON
	<ol style="list-style-type: none"> <li>1. Check latest software/driver release for updates on supported security features.</li> <li>2. Maximum output power may vary by country according to local regulations.</li> <li>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).</li> </ol>
<b>HP Integrated Module with Bluetooth 4.0/4.1/4.2 Wireless Technology</b>	
<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

### Features

	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 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 Bluetooth Software Supported</b>	Point to Point, Multipoint Pico Nets up to 7 slaves												
<b>Security</b>	Full support of Bluetooth Security Provisions Microsoft Windows ACPI, and USB Bus Support												
<b>Power Management Certifications</b>	Self-configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff												
<b>Security</b>	All necessary regulatory approvals for supported countries, including:												
<b>Certifications</b>	FCC (47 CFR) Part 15C, Section 15.247 & 15.249												
<b>Bluetooth Profiles Supported</b>													
<b>Power Management Certifications</b>	ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 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> Generic Object Exchange Profile (GOEP) <sup>1,2</sup> 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)												
<b>Certifications Bluetooth Profiles Supported</b>													



### Features

**Bluetooth V4.1/V4.2 support feature** 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 Frequency Band</b>	Wi-Fi certified 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
<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> </ul>

### Features

	<ul style="list-style-type: none"> <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 Or Type 1630 : 2.3 x 16.0 x 30.0 mm
<b>Weight</b>	Type 2230 : 2.8g Or

### Features

	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)
<b>LED Activity</b>	LED Amber – Radio OFF; LED White – Radio ON
	<ol style="list-style-type: none"><li>4. Check latest software/driver release for updates on supported security features.</li><li>5. Maximum output power may vary by country according to local regulations.</li><li>6. 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).</li></ol>

### Features

#### 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 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 with a maximum transmit power of + 4 dBm for BR and EDR.

#### Receiver Sensitivity

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 Link Topology

Microsoft Windows Bluetooth Software

#### Electrical Interface Bluetooth Software Supported Security

Point to Point, Multipoint Pico Nets up to 7 slaves

#### Power Management Certifications

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

#### Security

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

#### Certifications

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

#### Bluetooth Profiles Supported

#### Power Management Certifications

ETS 300 328, ETS 300 826  
Low Voltage Directive IEC950  
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>  
Generic Object Exchange Profile (GOEP)<sup>1,2</sup>  
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)

#### Certifications

#### Bluetooth Profiles Supported

### Features

**Bluetooth V4.1/V4.2 support feature**

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 limit specifications for the 802.11ac WLAN are draft specifications and are not final. If the final specifications from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ac WLAN devices.

**HP Graff GNSS Module**

- Technology** Standalone GPS, GLONASS
- Operating bands** GPS L1 1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz
- Maximum power consumption** Active mode (continuous): 67 mA (peak); 26 mA (average)
- Form Factor** M.2, 3042-S3 Key B
- Weight** 4.3 g
- Dimensions** 42 x 30 x 2.3 mm  
(Length x Width x Thickness)

\* Mobile Broadband is an optional feature. 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.

**Near Field Communications (NFC)**

HP Module with NXP NFC Controller NPC100  
 Marketing name: NXP NPC100 Near Field Communication Module  
 Supports Windows 8, Proximity Events  
 Support Windows 7, PC/SC  
 NFC Forum Compliant

Near Field Communications Controller	
<b>Dimensions</b> (L x W x H)	Module 25 mm by 10 mm by 2.0 mm
<b>Chipset</b>	NPC100
<b>System interface</b>	I <sup>2</sup> C

### Features

<b>NFC RF standards</b>	ISO/IEC 14443 A ISO/IEC 14443 B ISO/IEC 15693 ISO/IEC 18092 ECMA-340 NFCIP-1 Target and Initiator ECMA-320 NFCIP-2	
<b>NFC Forum Support</b>	Tag Type 1, Type 2, Type3 and Type 4, NFCIP-1 and NFCIP-2	
Reader (PCD-VCD) Mode(1)	ISO/IEC 14443 A ISO/IEC 14443 B ISO/IEC 15693 MIFARE 1K MIFARE 4K MIFARE DESFire FeliCa Jewel and Topaz cards	
<b>Card Emulation (PICC-VICC) Mode<sup>(1)</sup></b>	ISO/IEC 14443 A ISO/IEC 14443 B and B' MIFARE FeliCa	
<b>Frequency</b>	13.56 MHz	
<b>NFC Modes Supported</b>	Reader/Writer, Peer-to-Peer	
<b>Raw RF Data Rates</b>	106, 212, 424, 848 kbps	
<b>Operating temperature</b>	0°C to 70°C	
<b>Storage temperature</b>	-20°C to 125°C	
<b>Humidity</b>	10-90% operating 5-95% non-operating	
<b>Supply Operating voltage</b>	2.97 to 5.5 Volts	
<b>I/O Voltage</b>	1.8V or 3.3V	
<b>Power Consumption (Booster enable, VBAT= 3.3V, VCC_BOOST = 5V)</b>	<b>Mode</b>	<b>Power Consumption, Typical<sup>(2)</sup></b>
	Polling	7.3 mA

### Features

	Detected Test Tag Type 1	Total 283.8 mA Net Module 236.8 mA
	Detected Test Tag Type 2	Total 288.8 mA Net Module 241.8 mA
	Detected Test Tag Type 3	Total 287.7 mA Net Module 240.7 mA
	Detected Test Tag Type 4	Total 282.3 mA Net Module 235.3 mA
<b>Antenna</b>	Antenna connector, 0.5mm pitch, 7 connector FPC. Antenna matching is external to module.	

(1) With application or UICC support

(2) Actual Power Consumption is dependent on NFC antenna and matching circuit and on the particular polling sequence and period configured.

## POWER

**HP 45 W USB Type-C™ AC adapter**

**Dimensions**  
**Weight**  
**Input**

62.0x62.0x28.5mm  
unit: 220g +/- 10g

### Input Efficiency

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%

### Input frequency range

47 ~ 63Hz

### Input AC current

Max. 1.4 A at 90 Vac

**Output**

### Output power

5V/15W  
9V/27W  
10V/37.5W  
12V/45W  
15V/45W  
20V/45W

### DC output

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

### Hold-up time

5ms at 115 Vac input

### Features

	<b>Output current limit</b>	<5.0A
<b>Connector</b>	USB Type-C	
<b>Environmental Design</b>	<b>Operating temperature</b>	32oF to 95oF (0oto 35oC)
	<b>Non-operating (storage) temperature</b>	-4oF to 185oF (-20oto 85oC)
	<b>Altitude</b>	0 to 16,400 ft (0 to 5000m)
	<b>Humidity</b>	20% to 95%
	<b>Storage Humidity</b>	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.	

<b>HP 65 W USB Type-C™ AC adapter</b>	<b>Dimensions</b>	74x74x28.5mm
	<b>Weight</b>	unit: 245g +/- 10g
	<b>Input</b>	
		<b>Input Efficiency</b>
		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
	<b>Input frequency range</b>	47 ~ 63 Hz
	<b>Input AC current</b>	1.7 A at 90 VAC and maximum load
<b>Output</b>	<b>Output power</b>	65W
	<b>DC output</b>	5V/9V/10V/12V/15V/20V
	<b>Hold-up time</b>	5ms at 115 Vac input
	<b>Output current limit</b>	<8.0A
<b>Connector</b>	USB Type C	
<b>Environmental Design</b>	<b>Operating temperature</b>	



## Features

32°F to 95°F (0°C to 35°C)

**Non-operating (storage) temperature**

-4°F to 185°F (-20°C to 85°C)

**Altitude**

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

**Humidity**

5% to 95%

**Storage Humidity**

5% 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 100,000 hours at 25°C ambient condition.

**4-cell, long life 41 Wh Li-ion**

**Dimensions (H x W x L)**

3.4mm\*91.1mm\*264.58mm

**Weight**

170g

**Cells/Type**

Li-Ion/polymer cell

**Energy**

**Voltage** 7.7V

**Amp-hour capacity** 2700mAh

**Watt-hour Capacity** 41.58Wh

**Temperature**

**Operating (Charging)** 0~45°C

**Operating (Discharging)** -10~60°C

**Battery Re-Charge Time**

**System in OFF mode or Standby** 3Hr

**Fuel Gauge LED**

N/A

**Optional Travel Battery Available**

N/A

## COUNTRY OF ORIGIN

China

## ENVIRONMENTAL

TBD

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

Category	Description	Part number
Cases	HP Elite Top Load Colombian Leather Case	T9H72AA
	HP Elite Top Load Herringbone Nylon Case	T9H73AA
	HP Elite x2 612 G2 Rugged Case	Z7T26AA
Docking	HP Elite USB-C™ Dock	Z9R42AA
	HP Elite USB-C™ Docking Station	X7W54AA
	HP USB-C™ Travel Hub	Z9G82AA
Input Devices	HP Pro x2 612 Collaboration Keyboard	1FV38AA
	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-C™ to RJ45 Adapter	V8Y76AA
Power	HP 45W USB-C™ Auto Adapter	Z3Q87AA
Security	HP Nano Keyed Cable Lock	1AJ39AA
	HP Nano Master Keyed Cable Lock	1AJ40AA
	HP Nano Dual Head Keyed Cable Lock	1AJ41AA

### Summary of Changes

<b>Date of change:</b>	<b>Version History:</b>		<b>Description of change:</b>
January 18, 2017	Version 1 to 2	Update	Options and Accessories section updated
January 23, 2017	Version 2 to 3	Update	Options and Accessories section updated (HP USB-C™ to RJ45 Adapter V8Y76AA)
January 24, 2017	Version 3 to 4	Update	PORTS/SLOTS Section updated (Thunderbolt™ support removed)
January 30, 2017	Version 4 to 5	Update	Multiple updates
February 6, 2017	Version 5	Update	MIL STD disclaimer updated. Battery life message updated. Footnotes of Software and Security section were updated (HP BIOS).

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