

### Overview

### HP Elite x2 1012 G2



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

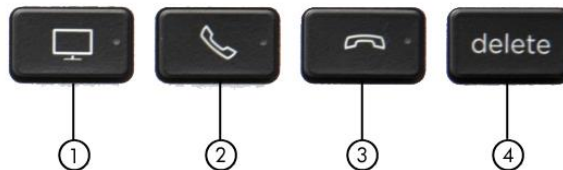
#### Collaboration Keys:

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 810g 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 (mutually exclusive with WiGig)
- 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® 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>

#### PROCESSOR\*

##### 7th Generation Intel® Core™ i3, i5 and i7 Processors:

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

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

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

Intel® Core™ i7-7600U with Intel® HD Graphics 620  
(2.8 GHz, up to 3.9 GHz with Intel® Turbo Boost Technology\*\*, 4 MB cache, 2 cores), vPro™ 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® 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/FFS/VA
<b>PPI</b>	268 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)

\* 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





### Technical Specifications

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

### 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. WiGig is also available with the optional LAN/Bluetooth/WiGig combo module for seamless, no wires docking\*\*\* (factory configurable only)

#### Wireless WAN (WWAN)\*

**HP It4132 LTE/HSPA+ 4G Mobile Broadband Module**  
**HP It4120 Qualcomm® Snapdragon™ X5 LTE 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)  
Intel® Tri Band Wireless-AC 18265 802.11a/b/g/n/ac (2x2) and Bluetooth® 4.2 + WiGig Combo\*\*\*

#### 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.

\*\*\*The WiGig-compatible notebook or tablet must be positioned within 1.2 m (4 ft) and without obstruction in the line of sight of the wireless dock. HP Advanced Wireless Docking is compatible with the HP Elite x2 1012 G2 with an optional installed Intel Tri Band Wireless AC with WiGig Combo card available at the time of purchase. WiGig docking requires the additional purchase of the HP Advanced Wireless Docking Station. IR camera is not available when WiGig is selected.

### Technical Specifications

\*\*\*\*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 (mutually exclusive with WiGig)

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

### Technical Specifications

<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+

### 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)
---------------	-----------------

\*Sold as an optional feature

#### Keyboard Features (common to both Collaboration and 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
- 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)

### Technical Specifications

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

Dedicated Skype for  
Business keys:

Present  
Call answer/initiate  
Call end  
Delete

### Keyboard Features (Advanced Keyboard only)

#### Function Keys

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

### Technical Specifications

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

#### **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>  
Discover HP Touchpoint Manager<sup>11</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>12</sup>
- HP Workwise<sup>13</sup>

### Technical Specifications

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 (select 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)).
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. 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 [www.hp.com/touchpoint](http://www.hp.com/touchpoint) for availability information
12. Opt in and internet connection required for updates.
13. HP Workwise smartphone app is available as a free download on the App Store and Google Play. See requirements at [www.hp.com/go/workwise](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

### Technical Specifications

#### 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 \*

\* 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)

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



### Technical Specifications

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)

#### 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>	535 MB/s	
		<b>Maximum Sequential Write</b>	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		

### Technical Specifications

<b>256GB 2280 M2 SATA-3 Self Encrypted OPAL2 TLC</b>	<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>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>256GB 2280 PCIe NVMe Value</b>	<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>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>360GB 2280 PCIe-3x4 NVMe TLC</b>	<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>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]	

### Technical Specifications

	<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>512GB 2280 PCIe NVMe Value</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>	
		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)		

### Technical Specifications

<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

#### HP Fingerprint Reader

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

### 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)

### Technical Specifications

<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 (Band 1), 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)

### Technical Specifications

\* 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 lt4225 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 lt4226 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
<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 ± 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

### Technical Specifications

<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)
<b><u>HP hs3210 WW HSPA+ w/o GPS</u></b>	
<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
<b>Dimensions</b> (Length x Width x Thickness)	42 x 30 x 2.3 mm

### WLAN MODULES





### Technical Specifications

#### **Intel® Tri Band Wireless-N 18265 802.11 ac 2x2 WiFi + BT 4.2 +WiGig combo adaptor (vPro™)**

<b>Form Factor</b>	Combo Module, M.2 2230-S3-A																																										
<b>Dimensions</b>	22.00±0.15mm by 30.00±0.15mm by 2.38mm max.																																										
<b>Weight</b>	4 grams																																										
<b>Operating Voltage</b>	3.3 Volts																																										
<b>Wireless LAN Standards</b>	IEEE 802.11ad																																										
<b>Interoperability</b>	Wi-Fi certified MAC and Physical Layer  WiFi Alliance/WiGig Alliance Protocol Adaption Layers (PALs) (Not yet ratified)  Wireless Display Extension (WDE) Wireless Serial Extension (WSE)																																										
<b>Frequency Band</b>	Note: IP protocol is not supported 802.11ad 57 – 66 GHz Note: There are 4 bands (1, 2, 3, 4) but only 2 (bands 2 and 3) are supported in most of the countries on the planet. HP will support only bands 2 and 3, 59-64 GHz  Note: Not all countries allow unlicensed operation at these frequencies																																										
<b>Antenna Structure (Remote Front End Module, R-FEM)</b>	Active, extended coverage multiple antenna array of 24 elements Almost full spherical RF coverage by having <ul style="list-style-type: none"> <li>• Front 6 elements- horizontal + 7 elements- vertical</li> <li>• North 3 Patch</li> <li>• West 2 Dipole + 2 Patch</li> <li>• East 4 Dipole</li> </ul> Device side supports one R-FEM3 Dock side supports one or two R-FEMs																																										
<b>Data Rates (RAW)</b>	<table border="0"> <thead> <tr> <th>MCS</th> <th>Rate, Mbit/s</th> <th>Modulation</th> </tr> </thead> <tbody> <tr><td>0</td><td>27.5</td><td><math>\pi/2</math>-BPSK</td></tr> <tr><td>1</td><td>385.0</td><td><math>\pi/2</math>-BPSK</td></tr> <tr><td>2</td><td>770.0</td><td><math>\pi/2</math>-BPSK</td></tr> <tr><td>3</td><td>962.5</td><td><math>\pi/2</math>-BPSK</td></tr> <tr><td>4</td><td>1155.0</td><td><math>\pi/2</math>-BPSK</td></tr> <tr><td>5</td><td>1251.25</td><td><math>\pi/2</math>-BPSK</td></tr> <tr><td>6</td><td>1540.0</td><td><math>\pi/2</math>-QPSK</td></tr> <tr><td>7</td><td>1925.0</td><td><math>\pi/2</math>-QPSK</td></tr> <tr><td>8</td><td>2310.0</td><td><math>\pi/2</math>-QPSK</td></tr> <tr><td>9</td><td>2502.5</td><td><math>\pi/2</math>-QPSK</td></tr> <tr><td>10</td><td>3080.0</td><td><math>\pi/2</math>-16QAM</td></tr> <tr><td>11</td><td>3850.0</td><td><math>\pi/2</math>-16QAM</td></tr> <tr><td>12</td><td>4620.0</td><td><math>\pi/2</math>-16QAM</td></tr> </tbody> </table>	MCS	Rate, Mbit/s	Modulation	0	27.5	$\pi/2$ -BPSK	1	385.0	$\pi/2$ -BPSK	2	770.0	$\pi/2$ -BPSK	3	962.5	$\pi/2$ -BPSK	4	1155.0	$\pi/2$ -BPSK	5	1251.25	$\pi/2$ -BPSK	6	1540.0	$\pi/2$ -QPSK	7	1925.0	$\pi/2$ -QPSK	8	2310.0	$\pi/2$ -QPSK	9	2502.5	$\pi/2$ -QPSK	10	3080.0	$\pi/2$ -16QAM	11	3850.0	$\pi/2$ -16QAM	12	4620.0	$\pi/2$ -16QAM
MCS	Rate, Mbit/s	Modulation																																									
0	27.5	$\pi/2$ -BPSK																																									
1	385.0	$\pi/2$ -BPSK																																									
2	770.0	$\pi/2$ -BPSK																																									
3	962.5	$\pi/2$ -BPSK																																									
4	1155.0	$\pi/2$ -BPSK																																									
5	1251.25	$\pi/2$ -BPSK																																									
6	1540.0	$\pi/2$ -QPSK																																									
7	1925.0	$\pi/2$ -QPSK																																									
8	2310.0	$\pi/2$ -QPSK																																									
9	2502.5	$\pi/2$ -QPSK																																									
10	3080.0	$\pi/2$ -16QAM																																									
11	3850.0	$\pi/2$ -16QAM																																									
12	4620.0	$\pi/2$ -16QAM																																									

### Technical Specifications

<b>Network Architecture Models</b>	Ad-hoc (Peer to Peer)	
<b>Wireless Display Extension (WDE)</b>	WGA WDE support	AV PAL (WDE) as defined by WiGig alliance
	AVC/MPEG support - encoder	WDE supports generation of MPEG-PS / MPEG-PES packets as described in the WDE standard WDE supports AVC (H264) encoder, intra only, 4:4:4 Chroma subsampling. Different visually lossless and lossy scenarios are supported by configuration
	AVC/MPEG support – decoder	H.264 CAVLC 4:4:4 I-only sub sampling is supported
	Type of Interface	Client device side <ul style="list-style-type: none"> <li>• DP (Display port) v1.2a – HBR (1, 2, 4 lanes)</li> </ul> Dock device side <ul style="list-style-type: none"> <li>• DP v1.2 – HBR (1, 2, 4 lanes)</li> <li>• HDMI v1.4a (through external Hub or cable adapter)</li> <li>• DP++ compatible</li> </ul> <p><b>Note:</b> DP v1.2 is backward compatible with DP v1.1a</p>
	DP Resolution and Frame Rate Support	DP will support the following resolutions 640x480, 1280x720, 1920x1080, 1920x1200, 2560x1440, 2560x1600 and frame rates – 24, 25, 30, 50 and 60 Hz All resolutions are in progressive mode (no interlaced supported) Specifically, the following resolutions and frame rats will be supported <ul style="list-style-type: none"> <li>• 640x480p60</li> <li>• 1280x720p60</li> <li>• 1920x1080p60</li> <li>• 1920x1200p60</li> <li>• 2560x1440p60</li> <li>• 2560x1600p60</li> </ul> <p><b>Note:</b> resolution and refresh rate may change in situations where there is a bad link or strict limits on TDP</p>
	HDMI Resolution and Frame Rate Support	HDMI supports the following resolution and frame rates – <ul style="list-style-type: none"> <li>• 640x480p60</li> <li>• 1280x720p60</li> <li>• 1920x1080p60</li> </ul>

### Technical Specifications

	<ul style="list-style-type: none"> <li>• 1920x1200p60</li> <li>• 2560x1440p60</li> <li>• 2560x1600p60</li> </ul>
	<p><b>Note:</b> resolution and refresh rate may change in situations where there is a bad link or strict limits on TDP</p>
Color space support	YCbCr and RGB
DP & HDMI Color Depth Support	The following color depths are supported 8 bits per color
Dual display mode	The Output interface (Display Port Multi-Stream Transport, DP MST) has the ability to support dual display mode – splitting the video stream is based on external HW (with monitors that can support it, a daisy chain approach can be used to support dual display mode)
Multiple Display Stream Support (MST)	<p>The following dual display mode via MST is supported</p> <ul style="list-style-type: none"> <li>• 2 x (1280x720)</li> <li>• 2 x (1920x1080)</li> <li>• 2 x (1920x1200)</li> </ul> <p>1920x1080 plus 1920x1200</p>
Audio Pass-Through Support	<p>Support for all relevant Audio formats in Pass-Through mode as defined in the WDE specification. LPCM (uncompressed and uncompounded), 2-8 channels, 32KHz – 192KHz, up to 24 bits per sample (dependent on the number of channels)</p>
Independent Digital Audio Out Interface (Sink)	<p>Support for an independent digital Audio Out sink interface, operational upon insertion of an audio peripheral, and not dependent on monitor state (On/Off/Powered-Off)</p> <ul style="list-style-type: none"> <li>• 4 x I2S Interfaces</li> <li>• Multiplexed with</li> <li>• S/PDIF Interface</li> </ul>
Selection of Independent Audio Out Interface	<p>Selection of output interface (I<sup>2</sup>S or SPDIF) and on-board audio device capabilities is configurable on a system basis through module Flash Configuration.</p>
AUX/DDC Channel Interface	<p>AUX (DP) / DDC (HDMI) channel is supported.</p> <p><b>Note:</b> FAUX – fast AUX (~7000Mb) is not required.</p>

### Technical Specifications

	Chosen resolution, frame rate, color space, audio capabilities	WDE will inform the host graphics of the best resolution , frame rate, color space and audio capabilities based on <ul style="list-style-type: none"> <li>• Native/Supported monitor resolutions</li> <li>• Module Core Capabilities</li> <li>• Power consumption considerations</li> <li>• Link status(physical layer rate and other services)</li> </ul>										
	Hot Plug	Plug and Play through hot plug detection is not supported										
<b>Wireless Serial Extension (WSE) for support of USB data flow over wireless link</b>	WGA WSE support	USB PAL (WSE) version 1.2 (June 2013)										
	WSE Supported USB Ports USB Hub	Single USB 2.0/3.0 Root Port Supports direct connection to an external USB Hub device. Any USB devices on the Dock device should be connected to the external USB Hub.										
	Port Powering	Module does not support USB device powering. Any Dock device must be self-powered or powered from an external USB Hub in the Dock Device. The module is capable of managing the powering requirements of USB devices connected to the Dock USB Hub external to the module.										
	WSE Supported Devices	USB devices listed in ‘Supported USB Peripherals over USB’ below are supported, separately and simultaneously. It supports control, interrupt, bulk and isochronous flows based on the supported device capabilities.										
	Number of USB devices supported on Dock device	At least 12 USB devices										
	Number of USB Hub Tiers supported	Maximum number of Hub Tiers connected to the external Hub in the Dock device is 3. A 4 <sup>th</sup> Tier will only support non Hub devices.										
	Supported USB peripherals over WSE	<table border="0"> <thead> <tr> <th><b>Device Class</b></th> <th><b>Comment</b></th> </tr> </thead> <tbody> <tr> <td>HID</td> <td>Supported</td> </tr> <tr> <td>Printer</td> <td>Supported</td> </tr> <tr> <td>Communication Device Class (CDC)</td> <td>Supported</td> </tr> <tr> <td>Mass Storage Class (MSC)</td> <td>Supported</td> </tr> </tbody> </table>	<b>Device Class</b>	<b>Comment</b>	HID	Supported	Printer	Supported	Communication Device Class (CDC)	Supported	Mass Storage Class (MSC)	Supported
<b>Device Class</b>	<b>Comment</b>											
HID	Supported											
Printer	Supported											
Communication Device Class (CDC)	Supported											
Mass Storage Class (MSC)	Supported											

### Technical Specifications

Hub	Supported
Audio Class	Supported
USB Video Class (UVC)	Supported

\* 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 (non-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
<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> </ul>

### Technical Specifications

	<ul style="list-style-type: none"> <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

### Technical Specifications

	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	

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.

#### 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

### Technical Specifications

<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>	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</b>	ETS 300 328, ETS 300 826
<b>Certifications</b>	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>
<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.

### **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



### Technical Specifications

<b>Frequency Band</b>	<p>802.11b/g/n</p> <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> <p>802.11a/n</p> <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>	<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> <li>• WAPI</li> </ul>
<b>Network Architecture Models</b>	<p>Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)</p>
<b>Roaming</b>	<p>IEEE 802.11 compliant roaming between access points</p>
<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> </ul>

### Technical Specifications

	<ul style="list-style-type: none"> <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

##### Power Management

Microsoft Windows ACPI, and USB Bus Support

##### 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

### Technical Specifications

<b>Power Management</b>	ETS 300 328, ETS 300 826
<b>Certifications</b>	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)
<b>Certifications</b>	
<b>Bluetooth Profiles Supported</b>	
<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

### Technical Specifications

15V/45W  
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**  
32oF to 95oF (0 to 35oC)  
**Non-operating (storage) temperature**  
-4oF to 185oF (-20 to 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**

### Technical Specifications

65W

**DC output**

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

**Hold-up time**

5ms at 115 Vac input

**Output current limit**

<8.0A

**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**

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.

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

**Dimensions (H x W x L)** 4.46 x 265.6 x 81.15 mm  
0.18 x 10.45 x 3.2 inch

**Weight** 0.195 kg/0.88 lb  
**Cells/Type** Li-ion/Polymer cell

**Energy** Voltage : 7.7V  
Amp-hour capacity: 6.11Ah  
Watt-hour capacity: 47 WHr

**Watt-hour capacity**

**Temperature**

<b>Operating (Charging)</b>	32° to 113° F ( 0° to 45° C)
<b>Operating (Discharging)</b>	14° to 140° F ( -10° to 60° C)
<b>Non-operating</b>	-4° to 140° F ( -20° to 60° C)

**Battery recharge time** System in OFF or Standby Mode <3 hours

**Fuel Gauge LED** No

**Optional travel battery available** No

### Technical Specifications

## COUNTRY OF ORIGIN

China

## 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:

- Dimethyl benzyl ammonium chloride 0.3 percent maximum concentration (for example, disposable wipes, which come in a variety of brands)
- 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:

- Dimethyl benzyl ammonium chloride 0.3 percent maximum concentration (for example, disposable wipes, which come in a variety of brands)
- 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 Advanced Wireless Docking Station (requires WiGig)	F7M97AA
	HP Elite 90W Thunderbolt 3 Dock	1DT93AA
	HP Elite USB-C Desk Dock G2	Z9R42AA
	HP Elite USB-C Docking Station	X7W54AA
<b>Input Devices</b>	HP USB-C Travel HUB	Z9G82AA
	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



© Copyright 2017 HP Development Company, L.P. All rights reserved.

The information contained herein is subject to change without notice. The only warranties for HP products are set forth in the express limited warranty statements accompanying such products. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein. Microsoft and Windows are registered trademarks or trademarks of Microsoft Corporation in the U.S. and/or other countries. Intel, Core and vPro are trademarks of Intel Corporation in the U.S. and/or other countries. Bluetooth is a trademark of its proprietor, used by HP Inc. under license. USB Type-C™ and USB-C™ are trademarks of USB Implementers Forum. ENERGY STAR is a registered trademark owned by the U.S. Environmental Protection Agency.

### Summary of Changes

Date of change:	Version History:	Description of change: