

Overview

HP Elite x2 1012 G2



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

*only available on configurations with WWAN enabled

Overview



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

Overview



- 1. Camera
- 2. Camera Flash

- 3. Fingerprint Sensor (optional)

Overview



HP Elite x2 1012 G2 Collaboration Keyboard

1. ClickPad

2. Pen Holder

3. Guide Pins

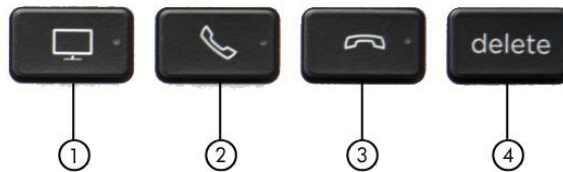
Collaboration Keys:

4. Present

5. Call answer/initiate

6. Call end

Collaboration Keys Detail



1. Present

2. Call answer/initiate

3. Call end

4. Delete



HP Elite x2 1012 G1 Advanced Keyboard

1. ClickPad/NFC Area

2. Smart card Slot

3. Guide Pins

Technical Specifications

At A Glance

- Designed for excellent mobility, this stylish and thin 2-in-1 design is built to the standards of Elite durability
- The quiet design and up to 10 hours and 15 minutes of battery life¹ lets you work, surf, and connect with colleagues
- Windows 10 versions
- 7th Generation Intel® Core™ (U-series) processors, some with vPro™ support²
- 12.3" diagonal ultra-slim LED-backlit better than QHD (2736 x 1824) Multi-Touch Display
- Solid State Drives up to 512GB including FIPS 140.2 (CIS only); OPAL 2 drives support up to 256GB PCIe NVMe drives support up to 1024GB
- Weight starting at 803g for Tablet
- Height starting at 8.05mm for Tablet
- Passed MIL-STD 810G testing:
 - MIL-STD is not intended to demonstrate fitness for U.S. Department of Defense contract requirements or for military use. MIL-STD test results are not a guarantee of future performance under these test conditions. Damage from drops requires separately purchase Accidental Damage Protection HP Care Pack.
- Audio by Bang & Olufsen
- Optional IR camera
- Dual microphone array with HP Advanced Noise Reduction Software
- Front and Back facing camera and webcam
- Supports a broad range of wireless broadband and Wi-Fi options for connectivity on the go
- Optimized security using industry standard technologies such as TPM2.0, optional integrated fingerprint reader and an optional smart card reader in the optional Advanced keyboard
- Passed EN 60601-1-2:2007 and IEC 60601-1-2:2014 tests
- ENERGY STAR® certified. EPEAT® Gold registered where applicable/supported. Registration may vary by country. See www.epeat.net 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.

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 for additional details.

² vPro™ support not available on all configurations.

Technical Specifications

PRODUCT NAME

HP Elite x2 1012 G2

OPERATING SYSTEM

Preinstalled	Windows 10 Pro 64 ¹ Windows 10 Pro 64 (National Academic License) ² Windows 10 Home 64 ¹ Windows 10 Home Single Language 64 ¹
Web-only Support	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

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

External

24-bit + 8 bit alpha channel (standard)

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

* HD content required to view HD images.

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

STORAGE AND DRIVES

Internal Storage* - supports M.2 SSD SS 2280

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

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

Expansion Storage

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

Technical Specifications

MEMORY

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

Standard

4 GB Total System Memory
8 GB Total System Memory

Maximum

Up to 16 GB

NETWORKING/COMMUNICATIONS

Wireless

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

Wireless WAN (WWAN)*

HP It4132 LTE/HSPA+ 4G Mobile Broadband Module

HP It4120 Qualcomm® Snapdragon™ X5 LTE Mobile Broadband Module

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

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

Wireless LAN (WLAN)**

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

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

Standalone GPS***

HP Graff GNSS Module

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

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

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

Technical Specifications

AUDIO/MULTIMEDIA

Audio

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

Camera – Front

Integrated 5 MP (1080p)

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

Camera – Back

Integrated 8 MP with flash (1080p)

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

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

* Internet access required.

ACTIVE PEN

HP Active Pen with Bluetooth® App Launch

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

Technical Specifications

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

OPTIONAL KEYBOARDS

Optional HP Elite x2 1012 G2 Collaboration Keyboard*

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

Optional HP Elite x2 1012 G1 Advanced Keyboard*

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

Weight	.992 lb (450 g)
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*Sold as an optional feature

Keyboard Features (Advanced Keyboards)

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

ClickPad

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

Keyboard Features (Collaboration Keyboard only)

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

Technical Specifications

Dedicated Skype for
Business keys:

Present
Call answer/initiate
Call end
Delete

Keyboard Features (Advanced Keyboard only)

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 Gen3¹
HP Sure Start Gen3²
HP DriveLock | HP Automatic DriveLock
BIOS Update via Network
Master Boot Record Security
Power On Authentication
Secure Erase³
Absolute Persistence Module⁴
Pre-boot Authentication

Communication / Connectivity

HP Mobile Connect Pro⁵
Native Miracast Support⁶
HP LAN-WLAN Protection
HP MAC Address Manager (select models only)
HP SureConnect
HP Velocity

HP Value Add Software

HP ePrint Driver + JetAdvantage⁷
HP Hotkey Support - CMIT
HP Jumpstart
HP Support Assistant
HP Noise Cancellation Software

Technical Specifications

Microsoft Products

Buy Office
Bing Search
Skype⁸

Manageability

HP Driver Packs⁹
HP SoftPaq Download Manager (SDM)
HP System Software Manager (SSM)⁹
HP BIOS Config Utility (BCU)⁹
HP Client Catalog⁹
HP MIK for Microsoft SCCM⁹
LANDESK Management¹⁰

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 Defender¹¹
- HP Workwise¹²

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

Security Hardware

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

HP Fingerprint Reader (selectd models)

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

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

1. BIOSphere Gen3 requires Intel® or AMD® 7th generation processors.
2. Available on HP Elite products equipped with Intel® 7th generation processors as well as the HP Pro x2 612 G2.
3. For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88.
4. Absolute agent is shipped turned off, and will be activated when customers activate a purchased subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. The Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit: <http://www.absolute.com/company/legal/agreements/computrace-agreement>. Data Delete is an optional service provided by Absolute Software. If utilized, the Recovery Guarantee is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens from Absolute Software.
5. HP Mobile Connect Pro is only available on preconfigured devices with WWAN. For geographic availability refer to www.hp.com/go/mobileconnect
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).

Technical Specifications

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

POWER

Power Supply

HP 45 W USB Type-C™ AC adapter

HP 65 W USB Type-C™ AC adapter

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

Tablet – Battery

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

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

Battery Life**

Windows 10 battery time:

Up to 10 hours and 15 minutes *

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

**Windows 10 MM14 battery life will vary depending on various factors including product model, configuration, loaded applications, features, use, wireless functionality, and power management settings. The maximum capacity of the battery will naturally decrease with time and usage. See www.bapco.com for additional details.

WEIGHTS & DIMENSIONS

Weight*

Tablet only

Starting at 1.77 lbs (803 g)

Tablet with Travel Keyboard

2.55 lbs (1156 g)

Tablet with Advanced Keyboard

2.94 lbs (1333 g)

Dimensions - (w x d x h)*

Tablet

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

Tablet with Travel Keyboard

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

Tablet with Advanced Keyboard

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

Technical Specifications

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

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

PORTS/SLOTS

Tablet

Ports

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

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

Slots

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

Advanced Keyboard

Ports

Slots

- 1 Smart card reader

SENSORS

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

SERVICE AND SUPPORT

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

Service levels and response times for HP Care Packs may vary depending on your geographic location. Service starts on date of hardware purchase. Restrictions and limitations apply. For details, visit www.hp.com/go/cpc.

Technical Specifications

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)	Nominal Operating Voltage	15 V
	Nominal Operating Amperage	4.33A
	Average Operating Power	7.21 W (non-charging)
	Max Operating Power	65 W
Temperature	Operating	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)
	Non-operating	-4° to 140° F (-20° to 60° C)
Relative Humidity	Operating	10% to 90%, non-condensing
	Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
Shock	Operating	40 G, 2 ms, half-sine
	Non-operating	240 G, 2 ms, half-sine
Random Vibration	Operating	1.043 grms
	Non-operating	3.50 grms
Altitude (unpressurized)	Operating	-50 to 10,000 ft (-15.24 to 3,048 m)
	Non-operating	-50 to 40,000 ft (-15.24 to 12,192 m)

Technical Specifications

ENVIRONMENTAL & INDUSTRY

Environmental Data HP Elite x2 1012 G2

Environmental Data	Eco-Label Certifications & declarations	<p>This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:</p> <ul style="list-style-type: none"> IT ECO declaration US ENERGY STAR® US Federal Energy Management Program (FEMP) EPEAT[®] Gold registered in the United States. See http://www.epeat.net for registration status in your country. Search keyword <i>generator</i> on HP's 3rd party option store for solar energy accessory at http://www.hp.com/go/options. TCO or TCO Certified Edge 		
	System Configuration	The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a "Typically Configured Notebook".		
	Energy Consumption (in accordance with US ENERGY STAR® test method)	115VAC, 60Hz	230VAC, 50Hz	100VAC, 50Hz
	Normal Operation (Sort idle)	6.36 W	6.49 W	6.35 W
	Normal Operation (Long idle)	2.83 W	2.46 W	2.58 W
	Sleep	0.49 W	0.52 W	0.48 W
	Off	0.40 W	0.43 W	0.40 W
		<p>Note: Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.</p>		
	Heat Dissipation*	115VAC, 60Hz	230VAC, 50Hz	100VAC, 50Hz
	Normal Operation (Short idle)	21 BTU/hr	22 BTU/hr	21 BTU/hr
	Normal Operation (Long idle)	10 BTU/hr	8 BTU/hr	9 BTU/hr
	Sleep	2 BTU/hr	2 BTU/hr	2 BTU/hr
	Off	1 BTU/hr	1 BTU/hr	1 BTU/hr
		*NOTE: Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.		
	Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)	Sound Power (L_{WAd}, bels)		Sound Pressure (L_{pAm}, decibels)
	Typically Configured – Idle	2.6		15

Technical Specifications

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

Technical Specifications

		<ul style="list-style-type: none"> • Asbestos • Certain Azo Colorants • Certain Brominated Flame Retardants – may not be used as flame retardants in plastics • Cadmium • Chlorinated Hydrocarbons • Chlorinated Paraffins • Formaldehyde • Halogenated Diphenyl Methanes • Lead carbonates and sulfates • Lead and Lead compounds • Mercuric Oxide Batteries • Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user. • Ozone Depleting Substances • Polybrominated Biphenyls (PBBs) • Polybrominated Biphenyl Ethers (PBBEs) • Polybrominated Biphenyl Oxides (PBBOs) • Polychlorinated Biphenyl (PCB) • Polychlorinated Terphenyls (PCT) • Polyvinyl Chloride (PVC) – except for wires and cables, has been voluntarily removed from most applications. • Radioactive Substances • Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)
	<p>Packaging Usage</p>	<p>HP follows these guidelines to decrease the environmental impact of product packaging:</p> <ul style="list-style-type: none"> • Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials. • Eliminate the use of ozone-depleting substances (ODS) in packaging materials. • Design packaging materials for ease of disassembly. • Maximize the use of post-consumer recycled content materials in packaging materials. • Use readily recyclable packaging materials such as paper and corrugated materials. • Reduce size and weight of packages to improve transportation fuel efficiency. • Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.
	<p>End-of-life Management and Recycling</p>	<p>Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/go/reuse-recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.</p> <p>The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: http://www.hp.com/go/recyclers. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.</p>

Technical Specifications

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

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

Technical Specifications

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

Technical Specifications

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

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

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

SECURITY

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

Technical Specifications

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

WWAN Modules

HP lt4132 LTE/HSPA+ 4G Mobile Broadband Module

Technology/Operating bands	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
Wireless protocol standards	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
GPS	Standalone, A-GPS (MS-B and LTO)
GPS bands	1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz
Maximum data rates	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)
Maximum output power	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
Maximum power consumption	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)
Form Factor	M.2, 3042-S3 Key B
Weight	6 g
Dimensions (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*

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

Wireless protocol standards	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
Maximum data rates	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)
Maximum output power	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
Maximum power consumption	HSPA+: 1,100 mA (peak); 800 mA (average) E-GPRS: 2,800 mA (peak); 700 mA (average)
Form Factor	M.2, 2242-S3 Key B
Weight	6 g
Dimensions (Length x Width x Thickness)	1.65 x 8.66 x 0.09 in (42 x 22 x 2.38 mm)

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

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

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

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

HP It4226 LTE/HSPA+ Gobi 4G Module*

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

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

HP hs3210 WW HSPA+ w/o GPS

Technology/Operating bands	LTE: 2100 (Band 1), 800 (Band 19, Japan 800 upper), 1450 (Band 21) HSPA+: 2100 (Band 1), 800 (Band 6), 800 (Band 19) MHz
Wireless protocol standards	3GPP Release 8 LTE Specification WCDMA R99, 3GPP Release 5, 6 and 7 UMTS Specification
GPS	Standalone, A-GPS
GPS bands	1575.42 MHz \pm 1.023 MHz, GLONASS 1596-1607MHz
Maximum data rates	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)
Maximum output power	LTE: 23 dBm HSPA+: 23.5 dBm
Maximum power consumption	LTE: 1,200 mA (peak); 900 mA (average) HSPA+: 1,100 mA (peak); 800 mA (average)
Form Factor	M.2, 3042-S3 Key B
Weight	6 g
Dimensions (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

Technology	Standalone GPS, GLONASS
Operating bands	GPS L1 1575.42 MHz \pm 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

Technical Specifications

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

WLAN MODULES

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

Wireless LAN Standards	<ul style="list-style-type: none"> IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac
Interoperability Frequency Band	<ul style="list-style-type: none"> Wi-Fi certified 802.11b/g/n <ul style="list-style-type: none"> • 2.402 – 2.482 GHz 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. 802.11a/n <ul style="list-style-type: none"> • 4.9 – 4.95 GHz (Japan) • 5.15 – 5.25 GHz • 5.25 – 5.35 GHz • 5.47 – 5.725 GHz • 5.825 – 5.850 GHz Note: Indonesia no support this band)
Data Rates	<ul style="list-style-type: none"> • 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) • 802.11ac : MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz)
Modulation	<ul style="list-style-type: none"> Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM
Security¹	<ul style="list-style-type: none"> • IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware • 802.1x authentication • WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification • IEEE 802.11i • Cisco Certified Extensions, all versions through CCX4 and CCX Lite

Technical Specifications

	<ul style="list-style-type: none"> • WAPI
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
Roaming	IEEE 802.11 compliant roaming between access points
Output Power²	<ul style="list-style-type: none"> • 802.11b : +16dBm minimum • 802.11g : +14dBm minimum • 802.11a : +14dBm minimum • 802.11n HT20(2.4GHz) : +14dBm minimum • 802.11n HT40(2.4GHz) : +12dBm minimum • 802.11n HT20(5GHz) : +14dBm minimum • 802.11n HT40(5GHz) : +12dBm minimum
Power Consumption	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
Power Management	ACPI and PCI Express compliant power management
Receiver Sensitivity³	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
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications
Form Factor	PCI-Express M.2 MiniCard
Dimensions	Type 2230 : 2.3 x 22.0 x 30.0 mm Or Type 1630 : 2.3 x 16.0 x 30.0 mm
Weight	Type 2230 : 2.8g Or Type 1630 : 2g
Operating Voltage	3.3v +/- 9%
Temperature	Operating 14° to 158° F (-10° to 70° C) Non-operating -40° to 176° F (-40° to 80° C)
Humidity	Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing)
Altitude	Operating 0 to 10,000 ft (3,048 m) Non-operating 0 to 50,000 ft (15,240 m)

Technical Specifications

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

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

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

Bluetooth Specification 4.0/4.1/4.2 Compliant

Frequency Band 2402 to 2480 MHz

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

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

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

Receiver Sensitivity
Legacy

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

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

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

Electrical Interface USB 2.0 compliant

Bluetooth Software Supported Microsoft Windows Bluetooth Software

Link Topology

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

Bluetooth Software Supported
Security

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

Power Management
Certifications

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

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

Bluetooth Profiles Supported

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

Certifications Serial Port Profile (SPP)¹
Bluetooth Profiles Supported Service Discovery Application Profile (SDAP)
Dial-Up Networking (DUN)^{1,2}
Generic Object Exchange Profile (GOEP)^{1,2}

Technical Specifications

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

V4.1: ESR5/6/7 compliant

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

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

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

Wireless LAN Standards	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac
Interoperability Frequency Band	Wi-Fi certified 802.11b/g/n <ul style="list-style-type: none"> 2.402 – 2.482 GHz <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"> 4.9 – 4.95 GHz (Japan) 5.15 – 5.25 GHz 5.25 – 5.35 GHz 5.47 – 5.725 GHz 5.825 – 5.850 GHz <p>Note: Indonesia no support this band)</p>
Data Rates	<ul style="list-style-type: none"> 802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) 802.11ac : MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz)
Modulation	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM

Technical Specifications

Security¹	<ul style="list-style-type: none"> • IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware • 802.1x authentication • WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification • IEEE 802.11i • Cisco Certified Extensions, all versions through CCX4 and CCX Lite • WAPI
Network Architecture Models Roaming	<p>Ad-hoc (Peer to Peer) Infrastructure (Access Point Required) IEEE 802.11 compliant roaming between access points</p>
Output Power²	<ul style="list-style-type: none"> • 802.11b : +16dBm minimum • 802.11g : +14dBm minimum • 802.11a : +14dBm minimum • 802.11n HT20(2.4GHz) : +14dBm minimum • 802.11n HT40(2.4GHz) : +12dBm minimum • 802.11n HT20(5GHz) : +14dBm minimum • 802.11n HT40(5GHz) : +12dBm minimum
Power Consumption	<p>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</p>
Power Management	<p>ACPI and PCI Express compliant power management</p>
Receiver Sensitivity³	<p>802.11 compliant power saving mode</p> <ul style="list-style-type: none"> 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
Antenna type	<p>High efficiency antenna with spatial diversity, mounted in the display enclosure</p> <p>Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications</p>
Form Factor Dimensions	<p>PCI-Express M.2 MiniCard</p> <p>Type 2230 : 2.3 x 22.0 x 30.0 mm</p>

Technical Specifications

Weight	Or	
	Type 1630	: 2.3 x 16.0 x 30.0 mm
Operating Voltage	Type 2230	: 2.8g
	Or	
Temperature	Type 1630	: 2g
		3.3v +/- 9%
Humidity	Operating	14° to 158° F (-10° to 70° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Altitude	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
LED Activity	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
		LED Amber – Radio OFF; LED White – Radio ON

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

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

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	<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>$\pi/4$-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											
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													

Technical Specifications

<p>Security</p> <p>Certifications</p> <p>Bluetooth Profiles Supported</p> <p>Power Management</p> <p>Certifications</p>	<p>Self-configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff</p> <p>All necessary regulatory approvals for supported countries, including: FCC (47 CFR) Part 15C, Section 15.247 & 15.249</p>
<p>Certifications</p> <p>Bluetooth Profiles Supported</p>	<p>ETS 300 328, ETS 300 826</p> <p>Low Voltage Directive IEC950</p> <p>UL, CSA, and CE Mark</p> <p>Serial Port Profile (SPP)¹</p> <p>Service Discovery Application Profile (SDAP)</p> <p>Dial-Up Networking (DUN)^{1,2}</p> <p>Generic Object Exchange Profile (GOEP)^{1,2}</p> <p>Object Push Profile (OPP)^{1,2}</p> <p>Hard Copy Cable Replacement (HCRP)^{1,2}</p> <p>Personal Area Networking Profile (PAN)^{1,2}</p> <p>Human Interface Device Profile (HID)^{1,2}</p> <p>Hands Free Profile (HFP)</p> <p>Advanced Audio Distribution Profile (A2DP)</p> <p>Audio Video Remote Control Profile (AVRCP)</p>
<p>Bluetooth V4.1/V4.2 support feature</p>	<p>V4.1: ESR5/6/7 compliant</p> <p>V4.2: ESR8 compliant, LE Secure Connection – Basic</p>

* 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

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

Technical Specifications

20V/45W

DC output

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

Hold-up time

5ms at 115 Vac input

Output current limit

<5.0A

Connector

USB Type-C

Environmental Design

Operating temperature

32oFto 95oF (0oto 35oC)

Non-operating (storage) temperature

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

Altitude

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

Humidity

20% to 95%

Storage Humidity

10% to 95%

EMI and Safety Certifications

*CE Mark - full compliance with LVD and EMC directives

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

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

B, CCC, NOM-1 NYCE.

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

HP 65 W USB Type-C™ AC adapter

Dimensions

74x74x28.5mm

Weight

unit: 245g +/- 10g

Input

Input Efficiency

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

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

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

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

89% min at 115 Vac/ 230Vac @

15V/4.33A

89% min at 115 Vac/ 230Vac @

20V/3.25A

Input frequency range

47 ~ 63 Hz

Input AC current

1.7 A at 90 VAC and maximum load

Output

Output power

65W

DC output

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

Hold-up time

5ms at 115 Vac input

Output current limit

<8.0A

Technical Specifications

Connector	USB Type C
Environmental Design	<p>Operating temperature 32oFto 95oF (0oto 35oC)</p> <p>Non-operating (storage) temperature -4oFto 185oF (-20oto 85oC)</p> <p>Altitude 0 to 16,400 ft (0 to 5000m)</p> <p>Humidity 5% to 95%</p> <p>Storage Humidity 5% to 95%</p>
EMI and Safety Certifications	<p>*CE Mark - full compliance with LVD and EMC directives</p> <p>* Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE.</p> <p>* MTBF - over 100,000 hours at 25°C ambient condition.</p>

HP 4-cell Polymer Battery (47 WHr)

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	<p>Operating (Charging) 32° to 113° F (0° to 45° C)</p> <p>Operating (Discharging) 14° to 140° F (-10° to 60° C)</p> <p>Non-operating -4° to 140° F (-20° to 60° C)</p>
Battery recharge time	System in OFF or Standby Mode <3 hours
Fuel Gauge LED	No
Optional travel battery available	No

COUNTRY OF ORIGIN

China

Technical Specifications

CLEANING

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

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

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

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

Surface side of the keyboards:

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

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

Category	Description	Part number
Cases	HP Elite Top Load Colombian Leather Case	T9H72AA
	HP Elite Top Load Herringbone Nylon Case	T9H73AA
	HP Elite x2 1012 G2 Protective Case	1HM07AA
Docking	HP Elite 90W Thunderbolt 3 Dock	1DT93AA
	HP Elite USB-C Desk Dock G2	Z9R42AA
	HP USB-C Travel HUB	Z9G82AA
Input Devices	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
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

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Summary of Changes

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