

### Overview

#### HP Elite x2 1013 G3



#### Left

- |                                  |   |
|----------------------------------|---|
| 1. Web cam LED                   | 7. Volume up/volume down  |
| 2. Web cam                       | 8. Nano SIM Card Slot (Available on configurations with WWAN only) <sup>1</sup> |
| 3. Optional IR cam               | 9. Security lock slot (Lock sold separately.)                                   |
| 4. Optional IR cam LED           | 10. Pen holder  |
| 5. Audio-out/Audio-in combo jack | 11. Glass clickpad  |
| 6. Speakers                      |   |

1. All units have a SIM card slot and icon but units that do not support WWAN are shipped with a non-removable SIM slot plug.

### Overview

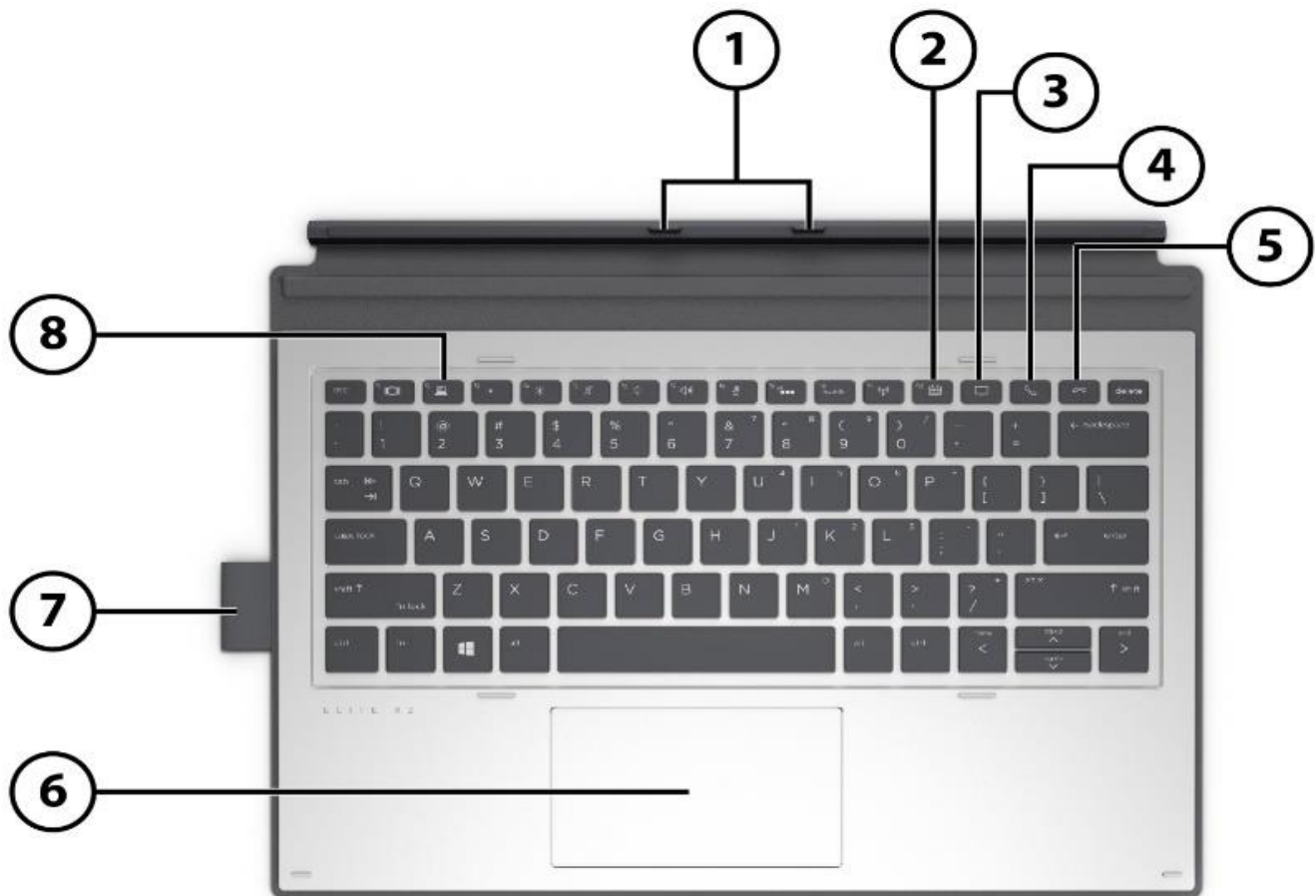


- 1. Charging LED
- 2. USB-C charging port
- 3. USB Type-C™ with Thunderbolt™
- 4. USB Type-C™ with Thunderbolt™

#### Rear

- 5. Rear-facing camera
- 6. Power button
- 7. Optional Fingerprint sensor
- 8. Kickstand

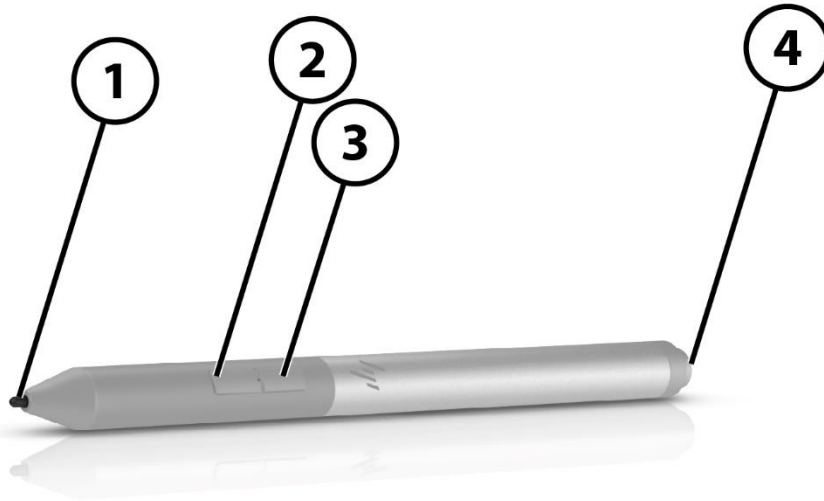
### Overview



#### Keyboard

- |    |                           |    |                  |
|----|---------------------------|----|------------------|
| 1. | Keyboard guide pins       | 5. | Call end         |
| 2. | Outlook calendar initiate | 6. | Pen holder       |
| 3. | Present                   | 7. | Glass clickpad   |
| 4. | Call answer/initiate      | 8. | Sure View on/off |

## Overview



1. Tip
2. Erase

- Pen**
3. Select
  4. Application Launch Button (Default OneNote)

### Overview

#### AT A GLANCE

- Designed for PC performance with tablet mobility, this thin and sleek detachable is built to the standards of Elite durability
- Up to 10 hours and 30 minutes of battery life lets you work, surf and connect with colleagues<sup>1</sup>
- Windows 10 versions
- 8th Generation Intel® Core™ (U-series) processors, some with vPro™ support<sup>2</sup>
- 13.0" diagonal ultra-slim IPS LED-backlit (3000k x 2000k) Multi-Touch Display
- Solid State Drives up to 512 GB including FIPS 140.2 (CIS only); OPAL 2 drives support up to 512 GB PCIe; NVMe drives support up to 1024 GB
- Weight starting at 810 g (1.78 lb) for Tablet
- Height starting at 7.9 mm (.31 inches) for Tablet
- Passed MIL-STD 810g testing<sup>3</sup>
- Optional Sure View privacy screen
- Audio by Bang & Olufsen
- Optional IR camera
- Three microphone array featuring a rear-facing microphone with HP Advanced Noise Reduction Software
- Front and back-facing 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 and an optional integrated fingerprint sensor
- Protect your device and data using the latest HP security technology solutions: HP Sure Start Gen4<sup>4</sup>, HP BIOSphere Gen4<sup>5</sup> and HP Client Security Suite Gen4<sup>6</sup>
- Standard commercial 1 year limited warranty with extended service available with optional HP Care Packs
- Passed EN 60601-1-2:2007 and IEC 60601-1-2:2014 tests

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 <http://www.bapco.com> for additional details.

2. vPro™ support not available on all configurations

3. 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.

4. HP Sure Start Gen4 is available on HP EliteBook products equipped with Intel® 8th generation processors.

5. HP BIOSphere Gen4 requires Intel® or AMD 8<sup>th</sup> Gen processors. Features may vary depending on the platform and configurations.

6. HP Client Security Suite Gen 4 requires Windows and Intel® or AMD 8th generation processors.

## Technical Specifications

### PRODUCT NAME

HP Elite x2 1013 G3

### OPERATING SYSTEM

<b>Preinstalled</b>	Windows 10 Pro 64 <sup>1</sup> Windows 10 Pro 64 (National Academic only) <sup>1,2</sup> Windows 10 Home 64 <sup>1</sup> Windows 10 Home Single Language 64 <sup>1</sup> FreeDOS 2.0
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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. Note: 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.

### PROCESSORS

Intel® Core™ i3-8130U with Intel® UHD Graphics 620 (2.2 GHz base frequency, up to 3.4 GHz with Intel® Turbo Boost Technology, 4 MB cache, 2 cores)<sup>3,4,5,6</sup>  
Intel® Core™ i5-8250U with Intel® UHD Graphics 620 (1.6 GHz base frequency, up to 3.4 GHz with Intel® Turbo Boost Technology, 6 MB cache, 4 cores)<sup>3,4,5,6</sup>  
Intel® Core™ i5-8350U vPro™ processor with Intel® UHD Graphics 620 (1.7 GHz base frequency, up to 3.6 GHz with Intel® Turbo Boost Technology, 6 MB cache, 4 cores)<sup>3,4,5,6,7</sup>  
Intel® Core™ i7-8550U processor with Intel® UHD graphics 620 (1.8 GHz base frequency, up to 4 GHz with Intel® Turbo Boost Technology, 8 MB cache, 4 cores)<sup>3,4,5,6,7</sup>  
Intel® Core™ i7-8650U vPro™ processor with Intel® UHD graphics 620 (1.9 GHz base frequency, up to 4.2 GHz with Intel® Turbo Boost Technology, 8 MB cache, 4 cores)<sup>3,4,5,6,7</sup>

#### Processor Family

8th Generation Intel® Core™ i7 processor (i7-8650U and i7-8550U models)<sup>5</sup>  
8th Generation Intel® Core™ i5 processor (i5-8350U and i5-8250U models)<sup>5</sup>  
8th Generation Intel® Core™ i3 processor (i3-8130U model)<sup>5</sup>

3. Multicore is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering branding and/or naming is not a measurement of higher performance.

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

5. 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>.

6. Intel Turbo Boost performance varies depending on hardware, software and overall system configuration. See <http://www.intel.com/technology/turboboost> for more information.

7. Some functionality of vPro, such as Intel Active management technology and Intel Virtualization technology, requires additional 3rd party software in order to run. Availability of future "virtual appliances" applications for Intel vPro technology is dependant on 3rd party software providers. Compatibility of this generation of Intel vPro technology-based hardware with with future "virtual appliances" is yet to be determined.

## Technical Specifications

### CHIPSET

Integrated with processor

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### GRAPHICS

#### Integrated

Intel® UHD Graphics 620<sup>8</sup>

8. HD content required to view HD images.

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### DISPLAY

#### Touch

33.02 cm (13") diagonal 3kx2k IPS LED-backlit touch screen with Corning® Gorilla® Glass 4, Low Power Ultra Slim bent, 450 cd/m<sup>2</sup>, RGB (3000 x 2000)<sup>8,9,10</sup>

HP Sure View integrated privacy screen 33.02 cm (13") diagonal WUXGA+ IPS eDP LED-backlit touch screen with Corning® Gorilla® Glass 4, CWLED UWVA 700 cd/m<sup>2</sup>, RGB (1920 x 1280)<sup>8,9,10,11</sup>

8. HD content required to view HD images.

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

10. Sold separately or as an optional feature.

11. HP Sure View integrated privacy screen is an optional feature that must be configured at purchase.

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## Technical Specifications

### STORAGE AND DRIVES

**Primary Storage**

128 GB SATA-3 SS TLC<sup>12</sup>

256 GB PCIe® Gen3x4 NVMe™ SS TLC<sup>12</sup>

256 GB PCIe® NVMe™ Value<sup>12</sup>

256 GB PCIe® TLC Opal 2<sup>12</sup>

512 GB PCIe® Gen3x4 NVMe™ SS TLC<sup>12</sup>

512 GB PCIe® Opal 2 TLC<sup>12</sup>

512 GB SATA SS TLC Federal Information Processing Standard (FIPS 140.2 available via CIS only)<sup>12</sup>

1 TB PCIe® Gen3x4 NVMe™ SS TLC<sup>12</sup>

12. For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) is reserved for system recovery software.

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### MEMORY

**Maximum Memory**

16 GB LPDDR3-2133 SDRAM<sup>13</sup>

**Memory**

16 GB LPDDR3-2133 SDRAM Total System Memory (32Gb 256Mx32x4, Qty 4)<sup>13</sup>

8 GB LPDDR3-2133 SDRAM Total System Memory (16Gb 256Mx16x4, Qty 4)<sup>13</sup>

4 GB LPDDR3-2133 SDRAM Total System Memory (8Gb 128Mx32x2, Qty 4)<sup>13</sup>

**Memory Slots**

Memory soldered down

Supports Dual Channel Memory

Supports up to 16 GB

13. Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility. If you mix memory speeds, the system will perform at the lower memory speed.

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## Technical Specifications

### NETWORKING/COMMUNICATIONS

#### WLAN

Intel® Dual Band Wireless-AC 8265 802.11a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 4.2 Combo, vPro™ 14,15  
Intel® Dual Band Wireless-AC 8265 802.11a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 4.2 Combo, non-vPro™ 14,15

#### WWAN

Integrated WWAN options with dual antennas:  
HP lt4132 LTE/HSPA+ with GPS Mobile Broadband Module 16  
HP lt4220 LTE/HSPA+ with GPS Mobile Broadband Module 16  
WWAN cards are compatible with a programmable removable eSIM

#### Miracast

Native Miracast Support 17

#### Standalone GPS

HP Graff GNSS Module 18

#### HP Connection Optimizer

Support HP Connection Optimizer with WiFi Load balancing

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

15. Dynamic Regulatory Solution will auto-change AC WLAN to abgn by passive scan when entering Indonesia.

16. WWAN module is optional, must be configured at the factory and requires separately purchased service contract. Check with service provider for coverage and availability in your area. Connection speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products, in all regions.

17. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming.

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

### AUDIO/MULTIMEDIA

#### Audio

Bang & Olufsen  
Dual speakers (front-facing, 72db)  
3 multi array microphone  
HP Noise Cancellation  
Headphone line-out and microphone-in (combo)  
72 dB Audio Level

#### Camera

Integrated 5MP (1080p) - Front<sup>8</sup>  
Integrated 8MP with flash (1080p) - Back<sup>8</sup>

#### IR Camera

Integrated VGA IR camera w/ IR LED emitters that meets Microsoft Hello face recognition certification for secure authentication<sup>19,20</sup>

8. HD content required to view HD images.

19. Sold separately or as an optional feature. Microsoft Hello requires Windows 10.

20. Internet access required.

## Technical Specifications

### KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

#### Keyboard

Collaboration travel keyboard

#### Pointing Device

Touchpad with multi-touch gestures enabled.

#### Function Keys

ESC Key

F1 - Display Switching

F2 - Sure View on/off

F3 - Brightness Down

F4 - Brightness Up

F5 - Mute

F6 - Volume Down

F7 - Volume Up

F8 - Mic Mute

F9 - Backlight Toggle

F10 - Num Lock

F11 - Wireless On/Off

F12 - Calendar

Delete key

#### Collaboration Keys

Call End

Share / Present

Call Answer

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## Technical Specifications

### SOFTWARE AND SECURITY

#### Preinstalled Software

##### BIOS

HP BIOSphere Gen4<sup>21</sup>  
HP Drive Lock & Automatic Drive Lock  
BIOS Update via Network  
Master Boot Record Security  
Power On Authentication  
Secure Erase<sup>22</sup>  
Absolute Persistence Module<sup>23</sup>  
Pre-boot Authentication  
HP Wireless Wakeup

##### Software

HP Native Miracast Support<sup>17</sup>  
HP LAN-Wireless Protection  
HP ePrint Driver + JetAdvantage<sup>24</sup>  
HP Hotkey Support – CMIT  
HP Recovery Manager  
HP Jumpstart  
HP Support Assistant<sup>25</sup>  
HP Noise Cancellation Software  
HP PhoneWise<sup>32</sup>  
Buy Office (Sold separately)

#### Manageability Features

HP Driver Packs<sup>26</sup>  
HP System Software Manager (SSM)  
HP BIOS Config Utility (BCU)  
HP Client Catalog  
HP Manageability Integration Kit Gen2<sup>27</sup>  
Ivanti Management Suite<sup>28</sup>

#### Client Security Software

HP Client Security Suite Gen4<sup>29</sup> including:  
HP Client Security Manager<sup>30</sup> (including Credential Manager, Password Manager, Spare Key)  
Synaptics Fingerprint Sensor<sup>34</sup>  
HP Device Access Manager  
HP Power On Authentication  
Microsoft Defender<sup>31</sup>

#### Security Management

## Technical Specifications

Secure Erase<sup>22</sup>

TPM 2.0 Embedded Security Chip shipped with Windows 10 (Common Criteria EAL4+ Certified)

SATA 0,1 port disablement (viaBIOS)

RAID configurations<sup>35</sup>

Serial, USB enable / disable (viaBIOS)

Power-on password (viaBIOS)

Setup password (viaBIOS)

Support for chassis padlocks and cable lock devices

Integrated hood sensor

HP Sure Click<sup>38</sup>

HP Sure Start Gen4<sup>33</sup>

HP Sure Run<sup>36</sup>

HP Sure Recover<sup>37</sup>

HP Sure View Gen 2

17. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming.

21. HP BIOSphere Gen4 requires Intel® or AMD 8th Gen processors. Features may vary depending on the platform and configurations.

22. Secure Erase for the methods outlined in the National Institute of Standards and Technology Special Publication 800-88 "Clear" sanitation method.

23. 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.

24. HP ePrint Driver 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

<http://www.hp.com/go/eprintcenter>). Print times and connection speeds may vary.

25. HP Support Assistant requires Windows and Internet access.

26. HP Driver Packs not preinstalled, however available for download at <http://www.hp.com/go/clientmanagement>.

27. HP Manageability Integration Kit can be downloaded from

<http://www8.hp.com/us/en/ads/clientmanagement/overview.html>.

28. Ivanti Management Suite subscription required.

29. HP Client Security Suite Gen 4 requires Windows and Intel® or AMD 8th generation processors.

30. HP Sure Recover is available on HP Elite PCs with 8th generation Intel® or AMD processors and requires an open, wired network connection. Not available on platforms with multiple internal storage drives, Intel® Optane™. You must back up important files, data, photos, videos, etc. before use to avoid loss of data.

31. Microsoft Defender Opt in and internet connection required for updates.

32. HP PhoneWise Client may not be available with HP Workwise. For supported platforms and HP PhoneWise system requirements see <http://www.hp.com/go/HPPhoneWise>.

33. HP Sure Start Gen4 is available on HP EliteBook products equipped with Intel® 8th generation processors.

34. HP Fingerprint Sensor sold separately or as an optional feature.

35. RAID configuration is optional and does require a second hard drive.

36. HP Sure Run is available on HP Elite products equipped with 8th generation Intel® or AMD® processors.

37. HP Sure Recover is available on HP Elite PCs with 8th generation Intel® or AMD processors and requires an open, wired network connection. You must back up important files, data, photos, videos, etc. before using HP Sure Recover to avoid loss of data.

38. HP Sure Click is available on select HP platforms and supports Microsoft® Internet Explorer, Google Chrome, and Chromium™. Supported attachments include Microsoft Office (Word, Excel, PowerPoint) and PDF files in read only mode.

### Technical Specifications

Check <http://h20195.www2.hp.com/v2/GetDocument.aspx?docname=4AA7-0922ENW> for all compatible platforms as they become available.

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## POWER

### Power Supply

Length: DC = 1.8m<sup>40,42</sup>

### Primary Battery

HP Long Life 4-cell, 50 Wh Polymer (3250mAh/cell)<sup>41</sup>

### Power Cord

Duckhead

Duckhead Power Cord Length: AC = 1 m

### Battery Life

Up to 10 hours and 30 minutes<sup>43</sup>

### Battery Charge Time

50% in 30 minutes<sup>44</sup>

40. Availability may vary by country.

41. Battery is internal and not replaceable by customer. Serviceable by warranty.

42. Supports HP Fast Charging.

43. 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.

44. 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.

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## Technical Specifications

### WEIGHTS & DIMENSIONS

#### Weight

Tablet weight (imperial)	1.78 lb <sup>45</sup>
Tablet weight (metric)	810 g <sup>45</sup>
Keyboard weight (imperial)	0.81 lb
Keyboard weight (metric)	368 g
Weight of tablet and keyboard (imperial)	2.59 lb <sup>45</sup>
Weight of tablet and keyboard (metric)	1178 g <sup>45</sup>

#### Dimensions (W x D x H)

Dimensions tablet (imperial)	11.81 x 0.31 x 9.11 in
Dimensions tablet (metric)	30 x 0.79 x 23.15 cm
Dimensions tablet and keyboard (imperial)	11.81 x 0.52 x 9.11 in
Dimensions tablet and keyboard (metric)	30 x 1.33 x 23.15 cm

45. Weight will vary by configuration.

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### PORTS/SLOTS

#### Ports

- 2 USB 3.1 Type-C™ with Thunderbolt™ support
- 1 USB 3.1 Type-C™ power port (Power delivery, DisplayPort™)
- 1 Headphone/microphone combo

#### Expansion Slots

- 1 nano SIM
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### SERVICE AND SUPPORT

HP Services offers a 1-year limited warranty and 90 day software limited warranty options depending on country. Batteries have a default one year limited warranty except for Long Life batteries which will have same 1-year or 3-year limited warranty as the platform. On-site service and extended coverage is also available. HP Care Pack Services 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>.<sup>46</sup>

46. HP Care Packs are sold separately. Service levels and response times for HP Care Packs may vary depending on your geographic location. Service starts on date of hardware purchase. Restrictions and limitations apply. For details, visit <http://www.hp.com/go/cpc>. HP services are governed by the applicable HP terms and conditions of service provided or indicated to Customer at the time of purchase. Customer may have additional statutory rights according to applicable local laws, and such rights are not in any way affected by the HP terms and conditions of service or the HP Limited Warranty provided with your HP Product.

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### Technical Specifications

#### ENVIRONMENTAL & INDUSTRY

##### HP Elite x2 1013 G3 Tablet PC

<b>Eco-Label Certifications &amp; declarations</b>	<p>This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:</p> <ul style="list-style-type: none"> <li>• IT ECO declaration</li> <li>• US ENERGY STAR®</li> <li>• EPEAT® Gold registered in the United States. See <a href="http://www.epeat.net">http://www.epeat.net</a> for registration status in your country. Search keyword generator on HP's 3rd party option store for solar generator accessories at <a href="http://www.hp.com/go/options">http://www.hp.com/go/options</a>.</li> </ul>		
<b>System Configuration</b>	<p>The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a Typically Configured Notebook.</p>		
<b>Energy Consumption (in accordance with US ENERGY STAR® test method)</b>	<b>115VAC, 60Hz</b>	<b>230VAC, 50Hz</b>	<b>100VAC, 60Hz</b>
Normal Operation (Short idle)	5.77 W	6.00 W	5.76 W
Normal Operation (Long idle)	2.05 W	2.06 W	2.02 W
Sleep	0.54 W	0.59 W	0.53 W
Off	0.26 W	0.30 W	0.26 W
	<p><b>NOTE:</b> Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.</p>		
<b>Heat Dissipation*</b>	<b>115VAC, 60Hz</b>	<b>230VAC, 50Hz</b>	<b>100VAC, 60Hz</b>
Normal Operation (Short idle)	20 BTU/hr	21 BTU/hr	20 BTU/hr
Normal Operation (Long idle)	7 BTU/hr	7 BTU/hr	7 BTU/hr
Sleep	2 BTU/hr	2 BTU/hr	2 BTU/hr
Off	1 BTU/hr	1 BTU/hr	1 BTU/hr
	<p><b>NOTE:</b> Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.</p>		

### Technical Specifications

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
Fixed Disk – Random writes	3.3	21
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> <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 size: CR2032 (coin cell) Battery type: Lithium</p>	
Additional Information	<ul style="list-style-type: none"> <li>• This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.</li> <li>• This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.</li> <li>• This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).</li> <li>• This product is in compliance with the IEEE 1680 (EPEAT) standard at the &lt;gold&gt; level in the U.S. See <a href="http://www.epeat.net">http://www.epeat.net</a> for registration status by country. Search keyword generator on HP's 3rd party option store for solar generator accessories at <a href="http://www.hp.com/go/options">http://www.hp.com/go/options</a></li> <li>• Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.</li> <li>• This product contains 0% post-consumer recycled plastic (by wt.)</li> <li>• This product is 95.1% recycle-able when properly disposed of at end of life.</li> </ul>	
Packaging Materials	<b>External:</b> PAPER/Corrugated	340 g
	<b>Internal:</b> PLASTIC/Polyethylene Expanded - EPE	56 g
	PLASTIC/Polyethylene high density - HDPE	7 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 <a href="http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf">http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf</a>):</p> <ul style="list-style-type: none"> <li>• Asbestos</li> <li>• Certain Azo Colorants</li> <li>• Certain Brominated Flame Retardants – may not be used as flame retardants in plastics</li> <li>• Cadmium</li> <li>• Chlorinated Hydrocarbons</li> <li>• Chlorinated Paraffins</li> <li>• Formaldehyde</li> <li>• Halogenated Diphenyl Methanes</li> <li>• Lead carbonates and sulfates</li> <li>• Lead and Lead compounds</li> <li>• Mercuric Oxide Batteries</li> <li>• Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.</li> <li>• Ozone Depleting Substances</li> <li>• Polybrominated Biphenyls (PBBs)</li> </ul>	



### Technical Specifications

	<ul style="list-style-type: none"> <li>• Polybrominated Biphenyl Ethers (PBBEs)</li> <li>• Polybrominated Biphenyl Oxides (PBBOs)</li> <li>• Polychlorinated Biphenyl (PCB)</li> <li>• Polychlorinated Terphenyls (PCT)</li> <li>• Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.</li> <li>• Radioactive Substances</li> <li>• Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)</li> </ul>
<p><b>Packaging Usage</b></p>	<p>This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at <a href="http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf">http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf</a>):</p> <ul style="list-style-type: none"> <li>• Asbestos</li> <li>• Certain Azo Colorants</li> <li>• Certain Brominated Flame Retardants – may not be used as flame retardants in plastics</li> <li>• Cadmium</li> <li>• Chlorinated Hydrocarbons</li> <li>• Chlorinated Paraffins</li> <li>• Formaldehyde</li> <li>• Halogenated Diphenyl Methanes</li> <li>• Lead carbonates and sulfates</li> <li>• Lead and Lead compounds</li> <li>• Mercuric Oxide Batteries</li> <li>• Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.</li> <li>• Ozone Depleting Substances</li> <li>• Polybrominated Biphenyls (PBBs)</li> <li>• Polybrominated Biphenyl Ethers (PBBEs)</li> <li>• Polybrominated Biphenyl Oxides (PBBOs)</li> <li>• Polychlorinated Biphenyl (PCB)</li> <li>• Polychlorinated Terphenyls (PCT)</li> <li>• Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.</li> <li>• Radioactive Substances</li> <li>• Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)</li> </ul>
<p><b>End-of-life Management and Recycling</b></p>	<p>HP Inc. offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: <a href="http://www.hp.com/go/reuse-recycle">http://www.hp.com/go/reuse-recycle</a> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.</p> <p>The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: <a href="http://www.hp.com/go/recyclers">http://www.hp.com/go/recyclers</a>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.</p> <p>Global Citizenship Report</p> <p><a href="http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html">http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html</a></p> <p>Eco-label certifications</p>

### Technical Specifications

	<a href="http://www8.hp.com/us/en/hp-information/environment/ecolabels.html">http://www8.hp.com/us/en/hp-information/environment/ecolabels.html</a> ISO 14001 certificates: <a href="http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf">http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/PC_GBU_Product_Design_ISO_14K_Certificate.pdf</a> and <a href="http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf">http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf</a>
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### DISPLAYS

**13" diagonal 3kx2k IPS LED-backlit touch screen with Corning® Gorilla® Glass 4 Low Power Ultra Slim bent 450nit 72% CG (3000x2000)**

<b>Outline Dimensions (W x H)</b>	279.3 * 193.0 mm (max.)
<b>Active Area</b>	274.5 * 183 mm (max.)
<b>Weight</b>	160g (max.)
<b>Diagonal Size</b>	13.0"
<b>Thickness</b>	1.8(panel side)/3.9(PCBA side) mm(max.)
<b>Interface</b>	eDP
<b>Surface Treatment</b>	Glare
<b>Touch Enabled</b>	No
<b>Contrast Ratio</b>	1800 (typ.)
<b>Refresh Rate</b>	60Hz
<b>Brightness</b>	450 nit typical (Panel Only)
<b>Pixel Resolution</b>	3000x2000
<b>Format</b>	RGB stripe
<b>Backlight</b>	LED
<b>Color Gamut Coverage</b>	72%
<b>Color Depth</b>	6 bits
<b>Viewing Angle</b>	85/85/85/85

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

### Technical Specifications

<b>33.02 cm (13") diagonal WUXGA+ IPS LED-backlit touch screen with Corning® Gorilla® Glass 4 and privacy screen, CWLED UWVA (1920x1280)</b>	<b>Outline Dimensions (W x H x D)</b>	279.3 x 193.2 mm (max.)
	<b>Active Area</b>	272.449 x 181.632 mm (max.)
	<b>Weight</b>	220g (max.)
	<b>Diagonal Size</b>	13.0"
	<b>Thickness</b>	1.8 mm / 3.9 mm(max.)
	<b>Interface</b>	eDP 1.4a
	<b>Touch Enabled</b>	No
	<b>Contrast Ratio</b>	Sharing mode, 600:1 (typ.) Privacy mode, 150:1 (typ.)
	<b>Refresh Rate</b>	120Hz
	<b>Brightness</b>	Sharing mode, 700 nits (typ.) Privacy mode, 320 nits (typ.)
	<b>Pixel Resolution</b>	1920x1280
	<b>Format</b>	RGB strip
	<b>Backlight</b>	LED
	<b>Color Gamut Coverage</b>	Sharing mode, 72% Privacy mode, 60%
	<b>Color Depth</b>	6 bits + Hi FRC
<b>Viewing Angle</b>	Sharing mode, CR >10, L/R/U/D, 85/85/85/85 (typ.) Privacy mode CR>2, L/R/U/D, 50/50/85/85 (typ.)	

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

## Technical Specifications

## STORAGE

<b>SSD 128 GB 2280 M2 SATA-3 TLC</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	128 GB
	<b>NAND Type</b>	TLC
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Weight</b>	0.02 lb (10 g)
	<b>Interface</b>	ATA-8, SATA 3.0
	<b>Maximum Sequential Read</b>	Up To 520 MB/s
	<b>Maximum Sequential Write</b>	Up To 450 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>	DIPM; TRIM; DEVSLP

**NOTE:** For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

<b>SSD 256 GB 2280 M2 PCIe-3x4 SS NVMe TLC</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	256 GB
	<b>NAND Type</b>	TLC
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Weight</b>	0.02 lb (10 g)
	<b>Interface</b>	PCIe NVMe Gen3X4
	<b>Maximum Sequential Read</b>	Up To 2600 MB/s
	<b>Maximum Sequential Write</b>	Up To 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>	TRIM; L1.2

**NOTE:** For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

### Technical Specifications

<b>SSD 256 GB 2280 M2 SATA-3 Self Encrypted OPAL2 Three Layer Cell</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	256 GB
	<b>NAND Type</b>	TLC
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Weight</b>	0.02 lb (10 g)
	<b>Interface</b>	ATA-8, SATA 3.0
	<b>Maximum Sequential Read</b>	Up To 530 MB/s
	<b>Maximum Sequential Write</b>	Up To 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

**NOTE:** For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

<b>SSD 256 GB 2280 PCIe NVMe Value</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	360 GB
	<b>NAND Type</b>	MLC
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Weight</b>	0.02 lb (10 g)
	<b>Interface</b>	PCIe NVMe Gen3X4
	<b>Maximum Sequential Read</b>	Up To 1700 MB/s
	<b>Maximum Sequential Write</b>	Up To 600 MB/s
	<b>Logical Blocks</b>	703,282,608
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]
	<b>Features</b>	TRIM; L1.2

**NOTE:** For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

### Technical Specifications

<b>SSD 360 GB 2280 PCIe-3x4 NVMe Three Layer Cell</b>	<b>Form Factor</b>	0.02 lb (10 g)
	<b>Capacity</b>	360 GB
	<b>NAND Type</b>	TLC
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Weight</b>	0.02 lb (10 g)
	<b>Interface</b>	PCIe NVMe Gen3X4
	<b>Maximum Sequential Read</b>	Up To 1700 MB/s
	<b>Maximum Sequential Write</b>	Up To 600 MB/s
	<b>Logical Blocks</b>	703,282,608
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]
	<b>Features</b>	TRIM; L1.2

**NOTE:** For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

<b>SSD 512 GB 2280 M2 PCIe-3x4 SS NVMe TLC</b>	<b>Form Factor</b>	0.02 lb (10 g)
	<b>Capacity</b>	512 GB
	<b>NAND Type</b>	TLC
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Weight</b>	0.02 lb (10 g)
	<b>Interface</b>	PCIe NVMe Gen3X4
	<b>Maximum Sequential Read</b>	Up To 2600 MB/s
	<b>Maximum Sequential Write</b>	Up To 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>	TRIM; L1.2

**NOTE:** For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

### Technical Specifications

<b>SSD 512 GB 2280 M2 SATA-3 Three Layer Cell Federal Information Processing Standard</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	512 GB
	<b>NAND Type</b>	TLC
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Weight</b>	0.02 lb (10 g)
	<b>Interface</b>	ACS-3, SATA 3.2
	<b>Maximum Sequential Read</b>	Up To 530 MB/s
	<b>Maximum Sequential Write</b>	Up To 400 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>	TCG Opal 2.0; FIPS, DIPM; TRIM; DEVSLP

**NOTE:** For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

<b>SSD 512 GB 2280 PCIe-3x4 NVMe Self Encrypted OPAL2 Three Layer Cell</b>	<b>Form Factor</b>	0.02 lb (10 g)
	<b>Capacity</b>	512 GB
	<b>NAND Type</b>	TLC
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Weight</b>	0.02 lb (10 g)
	<b>Interface</b>	PCIe NVMe Gen3X4
	<b>Maximum Sequential Read</b>	Up To 2900 MB/s
	<b>Maximum Sequential Write</b>	Up To 1400 MB/s
	<b>Logical Blocks</b>	1,000,215,215
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]
	<b>Features</b>	TCG Opal2, TRIM; L1.2

**NOTE:** For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.

### Technical Specifications

<b>SSD 1 TB 2280 PCIe-3x4 NVMe Three Layer Cell single-sided</b>	<b>Form Factor</b>	0.02 lb (10 g)
	<b>Capacity</b>	1 TB
	<b>NAND Type</b>	TLC
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Weight</b>	0.02 lb (10 g)
	<b>Interface</b>	PCIe NVMe Gen3X4
	<b>Maximum Sequential Read</b>	2900
	<b>Maximum Sequential Write</b>	2000
	<b>Logical Blocks</b>	2000409263
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]
	<b>Features</b>	TRIM; L1.2

**NOTE:** For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36 GB (for Windows 10) of system disk is reserved for the system recovery software.



### Technical Specifications

#### NETWORKING/COMMUNICATIONS

<b>Intel 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo</b>	<b>Wireless LAN Standards</b>	<ul style="list-style-type: none"> <li>IEEE 802.11a</li> <li>IEEE 802.11b</li> <li>IEEE 802.11g</li> <li>IEEE 802.11n</li> <li>IEEE 802.11ac</li> </ul>
	<b>Interoperability</b>	<ul style="list-style-type: none"> <li>Wi-Fi certified</li> </ul>
	<b>Frequency Band</b>	<ul style="list-style-type: none"> <li>802.11b/g/n                             <ul style="list-style-type: none"> <li>• 2.402 – 2.482 GHz</li> </ul> </li> <li>802.11a/n                             <ul style="list-style-type: none"> <li>• 4.9 – 4.95 GHz (Japan)</li> <li>• 5.15 – 5.25 GHz</li> <li>• 5.25 – 5.35 GHz</li> <li>• 5.47 – 5.725 GHz</li> <li>• 5.825 – 5.850 GHz</li> </ul> </li> </ul>
	<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>	<ul style="list-style-type: none"> <li>Direct Sequence Spread Spectrum</li> <li>BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM</li> </ul>
	<b>Security</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>	<ul style="list-style-type: none"> <li>Ad-hoc (Peer to Peer)</li> <li>Infrastructure (Access Point Required)</li> </ul>
	<b>Roaming</b>	<ul style="list-style-type: none"> <li>IEEE 802.11 compliant roaming between access points</li> <li>• 802.11b : +14dBm minimum</li> <li>• 802.11g : +12dBm minimum</li> <li>• 802.11a : +12dBm minimum</li> </ul>
	<b>Output Power</b>	<ul style="list-style-type: none"> <li>• 802.11n HT20(2.4GHz) : +12dBm minimum</li> <li>• 802.11n HT40(2.4GHz) : +12dBm minimum</li> <li>• 802.11n HT20(5GHz) : +10dBm minimum</li> <li>• 802.11n HT40(5GHz) : +10dBm minimum</li> <li>• 802.11ac VHT80(5GHz) : +10dBm minimum</li> </ul>
	<b>Power Consumption</b>	<ul style="list-style-type: none"> <li>• Transmit mode 2.0 W</li> <li>• Receive mode 1.6 W</li> <li>• Idle mode (PSP) 180 mW (WLAN Associated)</li> <li>• Idle mode 50 mW (WLAN unassociated)</li> </ul>

### Technical Specifications

	<ul style="list-style-type: none"> <li>• Connected Standby 10mW</li> <li>• Radio disabled 8 mW</li> </ul>
<b>Power Management</b>	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
	802.11b, 1Mbps : -93.5dBm maximum 802.11b, 11Mbps : -84dBm maximum 802.11a/g, 6Mbps : -86dBm maximum
<b>Receiver Sensitivity</b>	802.11a/g, 54Mbps : -72dBm maximum 802.11n, MCS07 : -67dBm maximum 802.11n, MCS15 : -64dBm maximum 802.11ac, MCS0 : -84dBm maximum 802.11ac, MCS9 : -59dBm 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
<b>Weight</b>	Type 2230 : 2.8g
<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
<b>Subtitle</b>	HP Integrated Module with Bluetooth 4.0/4.1/4.2 Wireless Technology
<b>Bluetooth Specification</b>	4.0/4.1/4.2 Compliant
<b>Frequency Band</b>	2402 to 2480 MHz
<b>Number of Available Channels</b>	Legacy : 0~79 (1 MHz/CH) BLE : 0~39 (2 MHz/CH)
<b>Data Rates and Throughput</b>	Legacy : 3 Mbps data rate; throughput up to 2.17 Mbps BLE : 1 Mbps data rate; throughput up to 0.2 Mbps Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)
<b>Transmit Power</b>	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 4 dBm for BR and EDR.
<b>Power Consumption</b>	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW
<b>Electrical Interface</b>	USB 2.0 compliant

### Technical Specifications

<b>Bluetooth Software Supported</b>	Microsoft Windows Bluetooth Software
<b>Link Topology</b>	
<b>Power Management</b>	Microsoft Windows ACPI, and USB Bus Support
<b>Certifications</b>	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
<b>Power Management Certifications</b>	ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark BT4.1-ESR 5/6/7 Compliance LE Link Layer Ping LE Dual Mode LE Link Layer LE Low Duty Cycle Directed Advertising LE L2CAP Connection Oriented Channels Train Nudging & Interlaced Scan BT4.2 ESR08 Compliance LE Secure Connection- Basic/Full LE Privacy 1.2 –Link Layer Privacy LE Privacy 1.2 –Extended Scanner Filter Policies LE Data Packet Length Extension FAX Profile (FAX) Basic Imaging Profile (BIP)2 Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP)
<b>Bluetooth Profiles Supported</b>	

### Technical Specifications

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

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

**NOTE:** Wireless access point and Internet service is required. Availability of public wireless access point is 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

### Technical Specifications

**Qualcomm®  
Snapdragon™ X12 LTE-  
Advanced**

<b>Technology/Operating bands</b>	FDD LTE: 2100 (Band 1), 1900 (Band 2), 1800 (Band 3), 1700/2100 (Band 4), 850 (Band 5), 2600 (Band 7), 900 (Band 8), 700 (Band 12 lower), 700 (Band 13 upper), 700 (Band 17 lower), 850 (Band 18 lower), 850 (Band 19 upper), 800 (Band 20), 1400 (Band 21), 850 (Band 26), 700 (Band 28), 700 (Band 29 RX only), 2300 (Band 30), 1700/2100 (Band 66). TDD LTE: 2600 (Band 38), 1900 (Band 39), 2400 (Band 40), 2500 (Band 41). HSPA+: 2100 (Band 1), 1900 (Band 2), 1700/2100 (Band 4), 850 (Band 5), 900 (Band 8) MHz
<b>Wireless protocol standards</b>	3GPP Release 11 LTE Specification CAT.9, DL 60MHz BW throughput up to 450Mbps; UL 20MHz throughput up to 50Mbps WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification
<b>GPS</b>	Standalone, A-GPS (MS-A, MS-B and XTRA)
<b>GPS bands</b>	1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz, Beidou 1561.098 MHz
<b>Maximum data rates</b>	LTE: 450 Mbps (Download), 50 Mbps (Upload) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21Mbps (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 (Length x Width x Thickness)</b>	42 x 30 x 2.3 mm

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

<b>HP Graff GNSS Module</b>	<b>Technology</b>	Standalone GPS, GLONASS
	<b>Dimensions (L x W x H)</b>	42 x 30 x 2.3 mm
	<b>System interface</b>	USB 2.0
	<b>GPS bands</b>	GPS L1 1575.42 MHz ± 1.023 MHz, GLONASS 1596-1607MHz
	<b>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>	4.3g

### Technical Specifications

#### POWER

<b>AC Adapter 65 Watt nPFC Slim USB</b>	<b>Dimensions</b>	88.0x53.5x21.0mm	
	<b>Weight</b>	220g +/- 10g	
<b>Output</b>	<b>Input</b>	100 to 240 VAC	
	<b>Input Efficiency</b>	Average Efficiency of 25%, 50%, 75%, 100% load condition with 115Vac/230Vac Spec: 5V : 81.5% 9V : 86.7% 12V : 88.0% 15V : 89.0% 20V : 89.0%	
	<b>Input frequency range</b>	48 ~ 63 Hz	
	<b>Input AC current</b>	Max. 1.7 A at 90 VAC	
	<b>DC output</b>	5V/15W 9V/27W 10V/50W 12V/60W 15V/65W 20V/65W	
	<b>Connector</b>	<b>Hold-up time</b>	5V / 9V / 10V / 12V / 15V / 20V
		<b>Output current limit</b>	5ms at 115 Vac input
			<8.0A
	<b>Environmental Design</b>	<b>Operating temperature</b>	32°F to 95°F (0°to 35°C)
		<b>Non-operating (storage) temperature</b>	-4°F to 185°F (-20°to 85°C)
<b>Altitude</b>		0 to 16,400 ft (0 to 5000m)	
<b>Humidity</b>		20% to 95%	
<b>Storage Humidity</b>		10% to 95%	
<b>EMI and Safety Certifications</b>		*CE Mark - full compliance with LVD and EMC directives	
		* Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE.	
		* MTBF - over 200,000 hours at 25°C ambient condition.	

### Technical Specifications

<b>Battery ME 4 Cell WHr 50</b>	<b>Dimensions</b>	4.0 x 96.62 x231.8 mm (0.157 x3.804 x9.126 inch)
<b>Long Life -PL Fast Charge</b>	<b>Weight</b>	0.188kg (0.415 lb)
	<b>Cells/Type</b>	4cell Lithium-Ion Polymer cell / 385784
	<b>Energy</b>	ED750 platform
	<b>Voltage</b>	8.8V/7.7V
	<b>Watt-hour capacity</b>	47.5Wh(min.)/50Wh(typ.)
	<b>Operating (charging)</b>	32° to 113° F (0° to 45° C)
	<b>Operating (Discharging)</b>	14° to 122° F (-10° to 60° C)
	<b>Operating (Discharging)</b>	14° to 122° F (-10° to 60° C)
	<b>Fuel Gauge LED</b>	NA
	<b>Optional Travel Battery Available</b>	No

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

Type	Description	Part #
<b>Cases</b>	HP Business Slim Top Load	2SC66AA
	HP Elite Top Load Colombian Leather Case	T9H72AA
	HP Elite Top Load Herringbone Nylon Case	T9H73AA
	HP Slim Ultrabook Messenger (up to 15.6" x .88"/22/5mm)	F3W14AA
	HP Slim Ultrabook Top Load (up to 15.6" x .88"/22/5mm)	F3W15AA
	HP Slim Ultrabook Backpack (up to 15.6" x .88"/22/5mm)	F3W16AA
<b>Docking</b>	HP Thunderbolt Dock 120W G2	2UK37AA#xxx
	HP TB Dock G2 w/ Combo Cable	3TR87AA#xxx
	HP TB Dock 120W G2 w/ Audio	3YE87AA#xxx
	HP Thunderbolt Dock Audio Module	3AQ21AA
	HP TB Dock 120W G2 cable	3XB94AA
	HP TB Dock G2 combo cable	3XB96AA
	HP USB-C Universal Dock	1MK33AA#xxx
	HP USB-C Universal Dock NF	3DV65AA#xxx
	HP USB-C Dock G4	3FF69AA#xxx
	HP USB-C Mini Dock	1PM64AA#xxx
<b>Input/Output</b>	HP Elite x2 1013 G3 Collaboration Keyboard	TBD
	HP Essential USB Mouse	2TX37AA#xxx
	HP Slim Bluetooth Mouse	F3J92AA#xxx
	HP Elite presenter mouse	2CE30AA#xxx
	HP Stereo 3.5mm Headset	T1A66AA
	HP Active Pen G2	TBD
	HP USB-C to VGA Adapter	N9K76AA
	HP USB-C to HDMI 2.0 Adapter	X7W54AA
	HP USB-C to DisplayPort Adapter	N9K78AA
	HP USB-C to USB 3.0	N2Z63AA
	HP USB-C to RJ45 Adapter	V8Y76AA
	HP USB-C to 4.5mm + 3.0mm Combo DC Jack	N2Z65AA
	<b>Power</b>	HP 45W USB-C Auto Adapter
HP 45W USB-C AC Adapter		1HE07AA#xxx
HP USB-C Notebook Power Bank		1TZ86AA
HP 65W USB-C AC Adapter		1HE08AA#xxx
<b>Security</b>	HP Nano Keyed Cable Lock	1AJ39AA
	HP Nano Master Keyed Cable Lock	1AJ40AA
	HP Nano Keyed Dual Head Cable Lock	1AJ41AA
<b>Displays</b>	HP EliteDisplay S340c 34-inch Curved Monitor	V4G46AA
	HP S270n 27-inch 4K Monitor	2PD37AA



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

HP EliteDisplay E273m Collaboration Monitor

1FH51AA

HP EliteDisplay E243 Monitor

1FH47AA

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## Summary of Changes

Date of change:	Version History:		Description of change:
June 28, 2018	V1 to V2	Added	Environmental tab
July 13, 2018	V2 to V3	Updated	Processors
August 21, 2018	V3 to V4	Updated	At a glance, callouts section Software Workwise and Velocity, Power supply, Cases, WWAN sections
September 6, 2018	V4 to V5	Updated	At a glance, WWAN sections
September 26, 2018	V5 to V6	Removed	Dock HP USB-C Travel Hub

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