

### Overview

#### HP EliteBook x360 830 G8 Notebook PC



#### Left

- |                                |  |
|--------------------------------|--|
| 1. Internal Microphones (2)    | 7. Glass Clickpad  |
| 2. Web cam LED                 | 8. Smartcard Reader (Optional)                               |
| 3. HD and IR Camera (Optional) | 9. Audio Combo Jack  |
| 4. Camera Shutter              | 10. Super Speed USB Type-A 5Gbps signaling rate (1 charging) |
| 5. IR Camera LEDs (Optional)   | 11. Super Speed USB Type-A 5Gbps signaling rate (1 charging) |
| 6. Ambient Light Sensor        | 12. Nano Security Lock Slot (Lock sold separately)           |

### Overview



#### Right

- |   |   |
|---|---|
| 1. Power Button Key   | 5. Thunderbolt™ 4 with USB4™ Type-C® 40Gbps signaling rate <sup>1</sup> |
| 2. Power Connector  | 6. SIM Card Slot (Optional)   |
| 3. HDMI 2.0b Port (Cable not included)                                  | 7. Touch fingerprint Sensor (Select models)                             |
| 4. Thunderbolt™ 4 with USB4™ Type-C® 40Gbps signaling rate <sup>1</sup> |   |

1. SuperSpeed USB 20Gbps is not available with Thunderbolt™ 4.

### Overview

### At a Glance

- Premium ultraslim design with precision-crafted machined CNC aluminum x360 design with four usage modes that is 0.71 inches (1.79 cm) thin with a starting weight of 2.98 lbs. (1.35 Kg)
- 11th Generation Intel® Core™ i5, i7 Processors
- Preinstalled with Windows 10 versions or FreeDOS 3.0
- Find your missing laptop even when it's turned off using the optional Tile™ feature and app
- Optional ultrabright, anti-glare touch displays with ambient light sensor
- Choice of displays:
  - 33.8 cm (13.3") diagonal FHD IPS LED-backlit BrightView touch with Corning® Gorilla® Glass 5, 250 nits, 45% NTSC
  - 33.8 cm (13.3") diagonal FHD IPS LED-backlit BrightView touch with Corning® Gorilla® Glass 5, 400 nits, 72% NTSC with Low Power
  - 33.8 cm (13.3") diagonal FHD IPS LED-backlit Anti-Glare glass touch with Corning® Gorilla® Glass 5, 400 nits, 72% NTSC with Low Power
  - 33.8 cm (13.3") diagonal FHD IPS LED-backlit BrightView touch with Corning® Gorilla® Glass 5, 1000 nits, 72% NTSC with HP Sure View Reflect Integrated Privacy Screen
  - 33.8 cm (13.3") diagonal FHD IPS LED-backlit Anti-Glare glass touch with Corning® Gorilla® Glass 5, 1000 nits, 72% NTSC with HP Sure View Reflect Integrated Privacy Screen
- Enterprise grade security with HP Sure Sense, HP Sure Start Gen7, HP Privacy Camera, HP Sure View Reflect , HP Sure Run Gen4, HP Sure Recover Gen4 with Embedded Reimaging , HP Sure Click, SmartCard Reader and Touch Fingerprint reader
- An optional HP Rechargeable Active Pen 3<sup>1</sup> with Magnetic Attach and 4096 Levels of pressure
- Connectivity with optional CAT20 5G/ WWAN, and Thunderbolt™ Docking (Dock sold separately)
- Choice of solid state drives up to 2 TB and DDR4 memory up to 32 GB
- Supports fast charging (50% in 30 minutes) with no impact on battery recharge cycles<sup>3</sup>
- Featuring redesigned quiet HP Keyboard with the HP Programmable key and backlit options
- Innovative world-facing third mic improves inbound ambient noise cancellation while 360-degree mic pick-up allows everyone to clearly hear and be heard
- Long battery life up to TBD hours and TBD minutes
- Undergoes MIL-STD 810H tests<sup>2</sup>
- Instant on/instant off with Modern Connected Standby
- Intel® Iris® X<sup>e</sup> Graphics

1. HP Rechargeable Active Pen 3 sold separately.

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

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



### Technical Specifications

#### PRODUCT NAME

HP EliteBook x360 830 G8 Notebook PC

#### OPERATING SYSTEMS

##### Preinstalled

Windows 10 Pro 64 – HP recommends Windows 10 Pro for business <sup>1</sup>  
 Windows 10 Pro 64 (National Academic License)<sup>2</sup>  
 Windows 10 Home 64 <sup>1</sup>  
 Windows 10 Home Single Language 64 <sup>1</sup>  
 Windows 10 Pro (Windows 10 Enterprise available with a Volume Licensing Agreement) <sup>1</sup>  
 Windows 10 Enterprise 64 (Web Support)<sup>1</sup>  
 FreeDOS

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. 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/>.

#### PROCESSORS

Intel® Core™ i7-1165G7 with Intel® UHD Graphics 620 (1.8 GHz base frequency, up to 4.9 GHz with Intel® Turbo Boost Technology, 8 MB L3 cache, 4 cores) <sup>3,4,5,6</sup>  
 Intel® Core™ i7-1185G7 (up to 4.8 GHz with Intel® Turbo Boost Technology, 12 MB L3 cache, 4 cores), supports Intel® vPro® Technology <sup>3,4,5,6</sup>  
 Intel® Core™ i5-1135G7 with Intel® UHD Graphics 620 (1.8 GHz base frequency, up to 4.9 GHz with Intel® Turbo Boost Technology, 8 MB L3 cache, 2 cores) <sup>3,4,5,6</sup>  
 Intel® Core™ i5-1145G7 (up to 4.4 GHz with Intel® Turbo Boost Technology, 8 MB L3 cache, 4 cores), supports Intel® vPro® Technology <sup>3,4,5,6</sup>

##### Processor Family

11th Generation Intel® Core™ i7 processor (i7-1165G7) <sup>6</sup>  
 11th Generation Intel® Core™ i5 processor (i5-1135G7) <sup>6</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. Intel® Turbo Boost performance varies depending on hardware, software and overall system configuration. See [www.intel.com/technology/turboboost](http://www.intel.com/technology/turboboost) for more information.

6. 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>.

#### CHIPSET



### Technical Specifications

Chipset is integrated with processor

#### GRAPHICS

##### Integrated

Intel® Iris® Xe Graphics<sup>7</sup>

##### Supports

Support HD decode, DX12, HDMI 2.0b, HDCP 2.3<sup>8</sup>

7. Intel® Iris® Xe Graphics capabilities require system to be configured with Intel® Core™ i5 or i7 processors and dual channel memory. Intel® Iris® Xe Graphics with Intel® Core™ i5 or 7 processors and single channel memory will only function as UHD graphics.

8. HDMI cable sold separately.

#### DISPLAY

##### Touch

33.8 cm (13.3") diagonal FHD IPS BrightView WLED-backlit bent touch screen 250 nits, 45% NTSC with HD camera (1920 x 1080)<sup>9,10,11</sup>

33.8 cm (13.3") diagonal FHD IPS BrightView WLED-backlit bent touch screen, 250 nits, 45% NTSC with HD camera for WWAN (1920 x 1080)<sup>9,10,11</sup>

33.8 cm (13.3") diagonal FHD IPS BrightView WLED-backlit bent touch screen, 400 nits, 72% NTSC with Low Power, Ambient Light Sensor and HD+IR camera (1920 x 1080)<sup>9,10,11</sup>

33.8 cm (13.3") diagonal FHD IPS BrightView WLED-backlit bent touch screen, 400 nits, 72% NTSC with Low Power, Ambient Light Sensor and HD+IR camera for WWAN (1920 x 1080)<sup>9,10,11</sup>

33.8 cm (13.3") diagonal FHD IPS Anti-Glare WLED-backlit bent touch screen 400 nits, 72% NTSC with Low Power, Ambient Light Sensor and HD+IR camera for WWAN (1920 x 1080)<sup>9,10,11</sup>

HP Sure View Reflect Integrated Privacy Screen 33.8 cm (13.3") diagonal FHD IPS BrightView WLED-backlit bent touch screen, 1000 nits, 72% NTSC with Ambient Light Sensor and HD+IR camera (1920 x 1080)<sup>9,10,11</sup>

HP Sure View Reflect Integrated Privacy Screen 33.8 cm (13.3") diagonal FHD IPS BrightView WLED-backlit bent touch screen, 1000 nits, 72% NTSC with Ambient Light Sensor and HD+IR camera for WWAN (1920 x 1080)<sup>9,10,11</sup>

HP Sure View Reflect Integrated Privacy Screen 33.8 cm (13.3") diagonal FHD IPS Anti-Glare WLED-backlit bent touch screen, 1000 nits, 72% NTSC with Ambient Light Sensor and HD+IR camera (1920 x 1080)<sup>9,10,11,12</sup>

HP Sure View Reflect Integrated Privacy Screen 33.8 cm (13.3") diagonal FHD IPS Anti-Glare WLED-backlit bent touch screen with Corning® Gorilla® Glass 5, 1000 nits, 72% NTSC with Ambient Light Sensor and HD+IR camera for WWAN (1920 x 1080)<sup>9,10,11,12</sup>

HP Sure View Reflect Integrated Privacy Screen 33.8 cm (13.3") diagonal FHD IPS Anti-Glare WLED-backlit bent touch screen, 400 nits, 72% NTSC with Low Power, Ambient Light Sensor and HD+IR camera for WWAN (1920 x 1080)<sup>9,10,11,12</sup>

##### HDMI 2.0<sup>13</sup>

Support resolution up to 4K @60 Hz

9. FHD/HD content required to view FHD/HD images.



### Technical Specifications

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

11. Actual brightness will be lower with touchscreen or Sure View.

12. HP Sure View integrated privacy screen is an optional feature that must be configured at purchase and is designed to function in landscape orientation.

13. HDMI cable sold separately.

Docking station model (Sold separately)	Total number of supported displays (incl. the notebook display)	Max resolutions supported for DP 1.4 hosts with DSC	Dock Connectors	Technical limitations / additional information For more details refer to HP Dock QuickSpecs <a href="http://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c04168358">http://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c04168358</a>  All information below applies to platforms running DP 1.4 with DSC
HP Thunderbolt Dock G2	Max number of displays = 4	Dual 8K@ 60Hz in high res mode	2xDP, 1xVGA, 1xTB, 1xUSB-C alt-mode	Max displays = 4 with max resolution of 5K@ 30Hz running Thunderbolt host  Max resolution possible is dual 8K displays @ 60Hz running Thunderbolt host or running a non-Thunderbolt host in High Resolution mode  The highest resolution for dual displays running a non-Thunderbolt host in Multi-function mode is one 5K dual cable (using both DP ports) + one 4K on USB-C DP port
HP USB-C Dock G5	3	Dual 5K@ 30Hz + 1 4K UHD (multi-function mode)	1xHDMI, 2xDP	Three maximum displays supported are two 5K@ 30 Hz on DP ports plus one 4K UHD@ 30 Hz on HDMI in Multi-function mode  Highest resolution with dual displays is two 8K@ 60Hz host in High Resolution mode  The highest resolution for running a non-Thunderbolt host in Multi-function mode is a single 5K dual cable (using both DP ports) + one 4K on HDMI port

## Technical Specifications

HP USB-C/A Universal Dock G2	3	Triple 4K UHD@ 60Hz	1xHDMI, 2xDP	<p>In High Resolution, mode the max available is one display. This dock's best use case is triple display.</p> <p>The best resolution for dual display is two 4K UHD@ 60Hz</p> <p>Highest triple displays resolution available is three 4KUHD @60Hz using both DP and 1 HDMI port.</p> <p>Best single display is with High Resolution mode using HDMI port.</p>
HP USB-C Travel Dock G2	1	Single 4K@ 30 Hz 4960 x 2160 (via HDMI)	1xHDMI, 1xVGA	Single external display using either HDMI or VGA

## STORAGE AND DRIVES

## Primary M.2 Storage

128 GB PCIe® Gen3x2 NVMe™ M.2 SSD TLC<sup>14</sup>256 GB PCIe® Gen3x4 NVMe™ M.2 SSD TLC<sup>14</sup>512 GB PCIe® Gen3x4 NVMe™ M.2 SSD TLC<sup>14</sup>1 TB PCIe® Gen3x4 NVMe™ M.2 SSD TLC<sup>14</sup>2 TB PCIe® Gen3x4 NVMe™ M.2 SSD TLC<sup>14</sup>256 GB PCIe® NVMe™ Value M.2 SSD<sup>14</sup>512 GB PCIe® NVMe™ Value M.2 SSD<sup>14</sup>512 GB PCIe® Gen 3x4 NVMe™ M.2 SED TLC OPAL2<sup>14</sup>256 GB PCIe® Gen3x4 NVMe™ M.2 SED TLC OPAL2<sup>14</sup>512 Intel® PCIe® NVMe™ QLC M.2 SSD with 32 GB Intel® Optane™ memory H10<sup>14,15</sup>

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

15. Intel® Optane™ H10 memory system acceleration does not replace or increase the DRAM in your system. Requires 8th Gen or higher Intel® Core™ processor, BIOS version with Intel® Optane™ supported, Windows 10 64-bit, and an Intel® Rapid Storage Technology (Intel® RST) driver.





## Technical Specifications

### MEMORY

**Maximum Memory**

32GB DDR4-3200 SDRAM <sup>16</sup>

**Memory**

32 GB DDR4-3200 SDRAM <sup>16</sup>

16 GB DDR4-3200 SDRAM <sup>16</sup>

8 GB DDR4-3200 SDRAM <sup>16</sup>

**Memory Slots****Memory soldered down**

DDR4 SODIMM, System runs at: 3200

Supports Dual Channel Memory

16. 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.

### NETWORKING/COMMUNICATIONS

**WLAN**

Intel® Dual Band Wireless-AX201 802.11a/b/g/n/ac (2x2) Wi-Fi 6 and Bluetooth® 5 Combo, vPro® <sup>17,18</sup>

Intel® Dual Band Wireless-AX201 802.11a/b/g/n/ac (2x2) Wi-Fi 6 and Bluetooth® 5 Combo, non-vPro® <sup>17</sup>

**WWAN**

Intel® XMM™ 7360 LTE-Advanced Cat 9 <sup>19</sup>

Qualcomm® Snapdragon™ X55 5G Module Cat 20<sup>20</sup>

Near Field Communication (NFC) module <sup>22</sup>

NPC300 Near Field Communication module

**Miracast**

Native Miracast Support <sup>21</sup>

17. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 is backwards compatible with prior 802.11 specs. The specifications for Wi-Fi 6 (802.11ax) are draft 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 802.11ax devices.

18. For full Intel® vPro™ functionality, Windows, a vPro supported processor, vPro enabled chipset, vPro enabled WLAN card and discrete TPM 2.0 are required. See <https://www.intel.com/content/www/us/en/architecture-and-technology/vpro/vpro-platform-general.html>

19. WWAN module is an optional feature, requires factory configuration 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. LTE not available on all products, in all regions.

20. 5G module is an optional feature that must be configured at purchase. AT&T and T-Mobile networks supported in the U.S. Module designed for 5G networks as carriers deploy Evolved-Universal Terrestrial Radio Access New Radio Dual Connectivity (ENDC) with both 100Mhz of 5G NR and LTE channel bandwidth, using 256QAM 4x4 as defined by 3GPP, requires activation and separately purchased service contract. Check with service provider for coverage and availability in your area. Connection, upload and download speeds will vary due to network, location, environment, network conditions, and other factors. 5G not available on all products, in all regions. Backwards compatible to 4G LTE and 3G HSPA technologies. 5G module planned to be available in select countries, where carrier supported.





### Technical Specifications

21. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming.  
22. Sold separately or as an optional feature.

---

#### AUDIO/MULTIMEDIA

##### Audio

Audio by Bang & Olufsen  
2 Integrated stereo speakers  
World-facing 3rd mic

##### Camera

720p HD camera <sup>9,22</sup>  
720p HD+IR camera <sup>9,22</sup>

##### Sensor

ALS (ambient light sensor)  
Hall Sensor  
HP Tamper Lock <sup>54</sup>

9. FHD/HD content required to view FHD/HD images.  
22. Sold separately or as an optional feature.  
54. HP Tamper Lock must be enabled by the customer or your administrator.
-

### Technical Specifications

---

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

##### Keyboard

HP Premium Keyboard, spill resistant, Backlit keyboard and DuraKeys  
HP Premium Keyboard, spill resistant, Non-Backlit keyboard and DuraKeys  
HP Premium Keyboard, spill resistant, Backlit keyboard and DuraKeys Privacy

##### Pointing Device

Clickpad with multi-touch gesture support, taps enabled as default  
Microsoft Precision Touchpad Default Gestures Support

##### Function Keys

F1 - Display Switching  
F2 - Blank or Privacy  
F3 - Brightness Down  
F4 - Brightness Up  
F5 - Audio Mute  
F6 - Volume Down  
F7 - Volume Up  
F8 - Mic Mute  
F9 - Blank or Backlit Toggle  
F10 - Insert  
F11 - Airplane Mode  
F12 - HP Command Center (Programmable Key)  
Print Screen  
Power Button (with LED)

##### Hidden Function Keys

Fn+R - Break  
Fn+S - Sys Rq  
Fn+C - Scroll Lock

---

#### SOFTWARE AND SECURITY

##### Preinstalled Software

###### BIOS

HP BIOSphere Gen6 <sup>23</sup>  
HP Drive Lock & Automatic Drive Lock  
BIOS Update via Network  
Power On Authentication  
HP Secure Erase <sup>24</sup>  
Absolute Persistence Module <sup>25</sup>  
HP LAN-Wireless Protection  
Pre-boot Authentication

###### Software

HP Connection Optimizer <sup>26</sup>  
HP Hotkey Support  
myHP  
HP Support Assistant <sup>27</sup>  
HP QuickDrop  
HP Noise Cancellation Software



### Technical Specifications

Touchpoint Customizer for Commercial  
 HP Notifications  
 HP Privacy Settings  
 HP Wireless Button Driver  
 HP Power Manager  
 HP WorkWell  
 Tile App <sup>28</sup>  
 HP Programmable Key  
 HP PC Hardware Diagnostics Windows  
 Buy Microsoft Office (Sold separately)

#### Manageability Features

HP Driver Packs (download) <sup>29</sup>  
 HP Manageability Integration Kit Gen4 (download) <sup>30</sup>  
 HP System Software Manager (SSM) (download)  
 HP BIOS Config Utility (BCU) (download)  
 HP Client Catalog (download)  
 HP Client Management Script Library (download)  
 HP Image Assistant (download)

#### Client Security Software

HP Client Security Manager Gen7 <sup>55</sup>  
 Windows Defender <sup>31</sup>

#### Security Management

Pre-boot Authentication  
 USB enable/disable (via BIOS)  
 Power-on password (via BIOS)  
 Setup password (via BIOS)  
 HP Fingerprint Sensor <sup>32</sup>  
 Support for chassis padlocks and cable lock devices  
 HP Pro Security Edition (Select models) <sup>33</sup>  
 HP Sure Click <sup>34</sup>  
 HP Sure Sense <sup>35</sup>  
 HP Sure Start Gen7 <sup>36</sup>  
 HP Sure Run Gen4<sup>49</sup>  
 HP Sure Recover Gen4<sup>50</sup>  
 HP Sure Admin <sup>37</sup>  
 HP Sure View <sup>38</sup>  
 TPM 2.0 Embedded Security Chip shipped with Windows 10 (Common Criteria EAL4+ Certified) (FIPS 140-2 Level 2 Certified) <sup>39</sup>  
 Secured-core PC capable<sup>52</sup>

23. HP BIOSphere Gen6 is available on select HP Pro and Elite PCs. Features may vary depending on the platform and configurations.

24. HP Secure Erase for the methods outlined in the National Institute of Standards and Technology Special Publication 800-88 "Clear" sanitation method. HP Secure Erase does not support platforms with Intel® Optane™.

25. Absolute firmware module is shipped turned off and can only be activated with the purchase a license subscription and full activation of the software agent. License subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. Certain conditions apply. For full details visit:  
<https://www.absolute.com/about/legal/agreements/absolute/>

26. HP Connection Optimizer requires Windows 10.

27. HP Support Assistant requires Windows and Internet access.



### Technical Specifications

28. Tile is an optional feature that must be configured at the factory and requires Windows 10. Some features require optional subscription to Tile Premium. Tile application for Windows 10 available for download from the Windows Store. Mobile phone app available for download from App Store and Google Play. Requires iOS 11 and greater or Android 6.0 and greater see <https://support.thetileapp.com/hc/en-us/articles/200424778> for more information. HP Tile will function as long as the PC has battery power.
29. HP Driver Packs not preinstalled, however available for download at <http://www.hp.com/go/clientmanagement>.
30. HP Manageability Integration Kit can be downloaded from <http://www8.hp.com/us/en/ads/clientmanagement/overview.html>.
31. Windows Defender Opt in and internet connection required for updates.
32. HP Fingerprint sensor is an optional feature that must be configured at purchase.
33. HP Pro Security Edition is available preloaded on select HP PCs and includes HP Sure Click Pro and HP Sure Sense Pro. 3-year license required. The HP Pro Security Edition software is licensed under the license terms of the HP End User License Agreement (EULA) that can be found at: [https://h30670.www3.hp.com/ecommerce/common/disclaimer.do#EN\\_US](https://h30670.www3.hp.com/ecommerce/common/disclaimer.do#EN_US) as modified by the following: "7. Term. Unless otherwise terminated earlier pursuant to the terms contained in this EULA, the license for the HP Pro Security Edition (HP Sure Sense Pro and HP Sure Click Pro) is effective upon activation and will continue for thirty-six (36) months thereafter ("Initial Term"). At the end of the Initial Term you may either (a) purchase a renewal license for the HP Pro Security Edition from HP.com, HP Sales or an HP Channel Partner, or (b) continue using the standard versions of HP Sure Click and HP Sure Sense at no additional cost with no future software updates or HP Support." HP Pro Security Edition is optimized for the SMB environment and ships pre-configured - manageability is optional. The HP Pro Security Edition supports a limited tool set that can be used by the HP Manageability Integration Kit which can be downloaded from <http://www.hp.com/go/clientmanagement>.
34. HP Sure Click requires Windows 10 Pro or Enterprise. See [https://bit.ly/2PrLT6A\\_SureClick](https://bit.ly/2PrLT6A_SureClick) for complete details
35. HP Sure Sense is available on select HP PCs and is not available with Windows10 Home.
36. HP Sure Start Gen7 is available on select HP PCs.
37. HP Sure Admin requires Windows 10, HP BIOS, HP Manageability Integration Kit from <http://www.hp.com/go/clientmanagement> and HP Sure Admin Local Access Authenticator smartphone app from the Android or Apple store.
38. HP Sure View Reflect integrated privacy screen is designed to function in landscape orientation.
39. Firmware TPM is version 2.0.
49. HP Sure Recover Gen4 is available on select HP PCs and requires an open network connection. You must back up important files, data, photos, videos, etc. before using HP Sure Recover to avoid loss of data.
50. HP Sure Run Gen4 is available on select Windows 10 based HP Pro, Elite and Workstation PCs with select Intel® or AMD processors.
52. Secured-core PC capable requires an Intel vPro or AMD Ryzen Pro processor. Requires 8 GB or more system memory. Secured-core PC functionality can be enabled from the factory.
55. HP Client Security Manager Gen7 requires Windows and is available on the select HP Elite and Pro PCs.

### SMART CARD READER

<b>Smart Card Reader (Optional)</b>	<b>Model number</b>	Alcor AU9560
	<b>FIPS 201 Compliant</b>	Yes

### POWER

#### Power Supply



### Technical Specifications

HP Smart 45 W External AC power adapter <sup>40</sup>  
HP Smart 45 W External AC power adapter, 2-prong (Japan only)<sup>40</sup>  
HP Smart 65 W External AC power adapter <sup>40</sup>  
HP Smart 65 W EM External AC power adapter<sup>40</sup>  
HP 65 W Slim USB Type-C AC power adapter <sup>40</sup>  
**HP 65 W USB Type-C AC power adapter**

#### Primary Battery

HP Long Life 3-cell, 53 Wh Li-ion <sup>41,51</sup>

#### Power Cord

2-wire plug - 1m (Japan only)  
3-wire plug - 1m  
Premium - 1m

#### Battery life

Up to TBD hours and TBD minutes<sup>42</sup>

#### Battery Weight

210g±10g

40. Availability may vary by country.

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

42. Windows 10 MM18 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.

51. Actual battery Watt-hours (Wh) will vary from design capacity. Battery capacity will naturally decrease with shelf life, time, usage, environment, temperature, system configuration, loaded apps, features, power management settings and other factors.



### Technical Specifications

#### WEIGHTS & DIMENSIONS

##### Product Weight

Touch

Starting at 2.98 lb (1.35 kg) <sup>43</sup>

##### Product Dimensions

12.1 x 8.07 x 0.71 in

30.75 x 20.5 x 1.79 cm

43. Weight will vary by configuration.

#### PORTS/SLOTS

2 Thunderbolt™ 4 with USB4™ Type-C® 40Gbps signaling rate <sup>53</sup>

2 Super Speed USB Type-A 5Gbps signaling rate (1 charging)

1 HDMI 2.0b <sup>44</sup>

1 Headphone/microphone combo

1 4.5 mm AC Adapter Port

1 nano SIM card slot<sup>45</sup>

1 Smartcard reader (Optional)

1 Nano Security Lock Slot (Lock sold separately)

44. HDMI cable sold separately

45. 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.

53. SuperSpeed USB 20Gbps is not available with Thunderbolt™ 4

#### SERVICE AND SUPPORT

1-year and 3-year limited warranties and 90 day software limited warranty options depending on country.

Batteries have a default one year limited warranty except for HP Long Life batteries which will follow the one or three year warranty of the platform. Refer to <http://www.hp.com/support/batterywarranty/>

for additional battery information. 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 [www.hp.com/go/cpc](http://www.hp.com/go/cpc). HP services are governed by the applicable HP terms and conditions of service provided or indicated to Customer at the time of purchase. Customer may have additional statutory rights according to applicable local laws, and such rights are not in any way affected by the HP terms and conditions of service or the HP Limited Warranty provided with your HP Product.

#### SYSTEM UNIT

##### Stand-Alone Power

##### Requirements (AC Power)

**Nominal Operating Voltage** 19.5V



### Technical Specifications

	<b>Average Operating Power</b>	1.825W
	<b>Integrated graphics</b>	Yes
	<b>Discrete Graphics</b>	N/A
	<b>Max Operating Power</b>	UMA < 45W
<b>Temperature</b>	<b>Operating</b>	32° to 95° F (0° to 35° C)
	<b>Non-operating</b>	41° to 95° F (5° to 35° C) (writing optical)
<b>Relative Humidity</b>	<b>Operating</b>	10% to 90%, non-condensing
	<b>Non-operating</b>	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
<b>Shock</b>	<b>Operating</b>	40 G, 2 ms, half-sine
	<b>Non-operating</b>	200 G, 2 ms, half-sine
<b>Random Vibration</b>	<b>Operating</b>	0.75 grms
	<b>Non-operating</b>	1.50 grms
<b>Altitude (unpressurized)</b>	<b>Operating</b>	-50 to 10,000 ft (-15.24 to 3,048 m)
	<b>Non-operating</b>	-50 to 40,000 ft (-15.24 to 12,192 m)
<b>Planned Industry Standard Certifications</b>	<b>UL</b>	YES
	<b>CSA</b>	YES
	<b>FCC Compliance</b>	YES
	<b>ENERGY STAR®</b>	Select models <sup>47</sup>
	<b>EPEAT®</b>	EPEAT 2019 Gold in United States <sup>48</sup>
	<b>ICES</b>	YES
	<b>Australia /</b>	YES
	<b>NZ A-Tick Compliance</b>	YES
	<b>CCC</b>	YES
	<b>Japan VCCI Compliance</b>	YES
	<b>KC</b>	YES
	<b>BSMI</b>	YES
	<b>CE Marking Compliance</b>	YES
	<b>BNCI or BELUS</b>	YES
	<b>CIT</b>	YES
	<b>GOST</b>	YES
	<b>Saudi Arabian Compliance (ICCP)</b>	YES
	<b>SABS</b>	YES





### Technical Specifications

47. Configurations of the HP EliteBook x360 830 G8 Notebook PC that are ENERGY STAR® certified are identified as HP EliteBook x360 830 G8 Notebook ENERGY STAR on HP websites and on <http://www.energystar.gov>.

48. Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. EPEAT® status varies by country. Visit [www.epeat.net](http://www.epeat.net) for more information.

### DISPLAYS

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

1. Actual brightness will be lower with touchscreen or Sure View.

<b>LCD 13.3 inch Diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 45% cg 250nits eDP 1.2 w/o PSR</b>	<b>Outline Dimensions (W x H x D)</b>	299.06 x 176.54 mm (max) (FPC folding included)
	<b>Active Area</b>	293.76 x 165.24 mm (typ.)
	<b>Weight</b>	260 g (max)
	<b>Diagonal Size</b>	13.3 inch
	<b>Thickness</b>	3.0 mm/ 5.0 mm (PCB) (max)
	<b>Interface</b>	eDP 1.2 (2lane)
	<b>Surface Treatment</b>	BrightView Glass
	<b>Touch Enabled</b>	Yes
	<b>Contrast Ratio</b>	600:1 (typ.)
	<b>Refresh Rate</b>	60 Hz
	<b>Brightness</b>	250 nits (Panel Only) <sup>1</sup>
	<b>Pixel Resolution</b>	1920 x 1080 (FHD)
	<b>Format</b>	RGB
	<b>Backlight</b>	LED
	<b>Color Gamut Coverage</b>	NTSC 45%
	<b>Color Depth</b>	6 bits
	<b>Viewing Angle</b>	UWVA 85/85/85/85

<b>LCD 13.3 inch Diagonal FHD (1920 x 1080) Anti-Glare</b>	<b>Outline Dimensions (W x H x D)</b>	299.06 x 176.54 mm (max) (FPC folding included)
	<b>Active Area</b>	293.76 x 165.24 mm (typ.)



### Technical Specifications

<b>WLED UWVA sRGB 100% cg 400nits eDP 1.4+PSR2 bent</b>	<b>Weight</b>	175 g (max)
	<b>Diagonal Size</b>	13.3 inch
	<b>Thickness</b>	2.0 mm / 3.8 mm (PCB) (max)
	<b>Interface</b>	eDP 1.4 w/ PSRII (2 lane)
	<b>Surface Treatment</b>	BrightView Glass
	<b>Touch Enabled</b>	Yes
	<b>Contrast Ratio</b>	1500:1 (typ.)
	<b>Refresh Rate</b>	60Hz
	<b>Brightness</b>	400 nits (Panel Only) <sup>1</sup>
	<b>Pixel Resolution</b>	1920 x 1080 (FHD)
	<b>Format</b>	RGB
	<b>Backlight</b>	LED
	<b>Color Gamut Coverage</b>	sRGB 100% (NTSC 72%)
	<b>Color Depth</b>	8 bits
	<b>Viewing Angle</b>	UWVA 85/85/85/85

<b>LCD 13.3-in Diagonal FHD (1920 x 1080) Anti-Glare WLED UWVA 72% cg 1000nits eDP 1.4+PSR HP Sure View Reflect</b>	<b>Outline Dimensions (W x H x D)</b>	299.06 x 176.54 mm (max)
	<b>Active Area</b>	293.76 x 165.24 mm (typ.)
	<b>Weight</b>	220 g (max)
	<b>Diagonal Size</b>	13.3 inch
	<b>Thickness</b>	3.9 mm (max)
	<b>Interface</b>	eDP 1.4 + PSR (4 lane)
	<b>Surface Treatment</b>	Anti-glare glass
	<b>Touch Enabled</b>	Yes
	<b>Contrast Ratio</b>	1500:1 (typ.)
	<b>Refresh Rate</b>	60 Hz
	<b>Brightness</b>	1000 nits <sup>1</sup>
	<b>Pixel Resolution</b>	1920 x 1080 (FHD)
	<b>Format</b>	RGB
	<b>Backlight</b>	LED
	<b>Color Gamut Coverage</b>	72%
	<b>Color Depth</b>	8bits
	<b>Viewing Angle</b>	UWVA 85/85/85/85

<b>Panel LCD 13.3 inch FHD (1920x1080) Anti-Glare</b>	<b>Outline Dimensions (W x H x D)</b>	299.06 x 176.54 mm (max) (FPC folding included)
	<b>Active Area</b>	293.76 x 165.24 mm (typ.)



### Technical Specifications

<b>WLED UWVA sRGB</b>	<b>Weight</b>	175 g (max)
<b>100percent cg 400nits eDP</b>	<b>Diagonal Size</b>	13.3 inch
<b>1.4+PSR2 bent</b>	<b>Thickness</b>	2.0 mm / 3.8 mm (PCB) (max)
	<b>Interface</b>	eDP 1.4 w/ PSR11 (2 lane)
	<b>Surface Treatment</b>	BrightView Glass
	<b>Touch Enabled</b>	Yes
	<b>Contrast Ratio</b>	1500:1 (typ.)
	<b>Refresh Rate</b>	60Hz
	<b>Brightness</b>	400 nits (Panel Only) <sup>1</sup>
	<b>Pixel Resolution</b>	1920 x 1080 (FHD)
	<b>Format</b>	RGB
	<b>Backlight</b>	LED
	<b>Color Gamut Coverage</b>	sRGB 100% (NTSC 72%)
	<b>Color Depth</b>	8 bits
	<b>Viewing Angle</b>	UWVA 85/85/85/85

<b>Panel LCD 13.3-in FHD</b>	<b>Outline Dimensions (W x H x D)</b>	299.06 x 176.54 mm (max)
<b>(1920x1080) Anti-Glare</b>	<b>Active Area</b>	293.76 x 165.24 mm (typ.)
<b>WLED UWVA 72percent cg</b>	<b>Weight</b>	220 g (max)
<b>1000nits eDP 1.4+PSR HP</b>	<b>Diagonal Size</b>	13.3 inch
<b>Sure View Reflect</b>	<b>Thickness</b>	3.9 mm (max)
	<b>Interface</b>	eDP 1.4 + PSR (4 lane)
	<b>Surface Treatment</b>	Anti-glare glass
	<b>Touch Enabled</b>	Yes
	<b>Contrast Ratio</b>	1500:1 (typ.)
	<b>Refresh Rate</b>	60 Hz
	<b>Brightness</b>	1000 nits <sup>1</sup>
	<b>Pixel Resolution</b>	1920 x 1080 (FHD)
	<b>Format</b>	RGB
	<b>Backlight</b>	LED
	<b>Color Gamut Coverage</b>	72%
	<b>Color Depth</b>	8bits
	<b>Viewing Angle</b>	UWVA 85/85/85/85

## Technical Specifications

## STORAGE AND DRIVES

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

<b>SSD 128GB 2280 PCIe-3x2 Three Layer Cell</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	128GB
	<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 or Gen3X2
	<b>Maximum Sequential Read</b>	Up To 2047 MB/s
	<b>Maximum Sequential Write</b>	Up To 1200 MB/s
	<b>Logical Blocks</b>	250,069,680
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]
	<b>Features</b>	ATA Security; TRIM; L1.2
<hr/>		
<b>SSD 256GB 2280 PCIe-3x4 NVMe Self Encrypted OPAL2 TLC</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	256GB
	<b>NAND Type</b>	TLC
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Interface</b>	ATA-8, SATA 3.0
	<b>Maximum Sequential Read</b>	Up To 3500 MB/s
	<b>Maximum Sequential Write</b>	Up To 2200 MB/s
	<b>Logical Blocks</b>	500,118,192
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]
	<b>Features</b>	ATA Security (Option); TCG Opal 2.0; TRIM; L1.2
<hr/>		
<b>SSD 256GB 2280 PCIe NVMe Value Solid State Drive</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	256GB
	<b>NAND Type</b>	TLC
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<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>	500,118,192
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]
	<b>Features</b>	TRIM; L1.2



### Technical Specifications

<b>SSD 256GB 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>	2800 ~ 3500 MB/s
	<b>Maximum Sequential Write</b>	1400 ~ 2200 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; TRIM; L1.2

<b>SSD 512GB 2280 M2 PCIe-3x4 SS NVMe TLC</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	512GB
	<b>NAND Type</b>	TLC
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<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

<b>SSD 512GB 2280 PCIe-3x4 NVMe Self Encrypted OPAL2 TLC</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	512GB
	<b>NAND Type</b>	TLC
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<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>	TRIM; L1.2

<b>SSD 512GB 2280 PCIe NVMe Value</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	512GB
	<b>NAND Type</b>	TLC



### Technical Specifications

<b>Height</b>	0.09 in (2.3 mm)
<b>Width</b>	0.87 in (22 mm)
<b>Interface</b>	PCIe NVMe Gen3X4
<b>Maximum Sequential Read</b>	Up to 1700 MB/s
<b>Maximum Sequential Write</b>	Up to 1500 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>	TRIM; L1.2

#### SSD 1TB 2280 PCIe-3x4 NVMe TLC SS

<b>Form Factor</b>	M.2 2280
<b>Capacity</b>	1TB
<b>NAND Type</b>	TLC
<b>Height</b>	0.09 in (2.3 mm)
<b>Width</b>	0.87 in (22 mm)
<b>Interface</b>	PCIe NVMe Gen3X4
<b>Maximum Sequential Read</b>	Up to 3480 MB/s
<b>Maximum Sequential Write</b>	Up to 2800 MB/s
<b>Logical Blocks</b>	2,000,409,264
<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]
<b>Features</b>	TRIM; L1.2

#### SSD 512GB 2280 PCIe-3x2x2 NVMe+SSD 32GB 3D Xpoint

<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>Interface</b>	PCIe NVMe Gen3X4
<b>Maximum Sequential Read</b>	Up to 2400 MB/s
<b>Maximum Sequential Write</b>	Up to 1300 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>	TRIM; L1.2

#### SSD 2TB 2280 PCIe-3x4 NVMe Three Layer Cell

<b>Form Factor</b>	M.2 2280
<b>Capacity</b>	2TB
<b>NAND Type</b>	TLC
<b>Height</b>	0.09 in (2.3 mm)
<b>Width</b>	0.87 in (22 mm)
<b>Interface</b>	PCIe NVMe Gen3X4
<b>Maximum Sequential Read</b>	Up To 3500 MB/s
<b>Maximum Sequential Write</b>	Up To 3000MB/s



## Technical Specifications

Logical Blocks	3,907,029,168
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]
Features	ATA Security; TRIM; L1.2





### Technical Specifications

#### NETWORKING/COMMUNICATIONS

<b>Intel® Wi-Fi® 6 AX201 + Bluetooth® 5 (802.11ax 2x2, vPro™, supporting gigabit data rate<sup>5</sup>) vPro<sup>®1</sup></b>	<b>Wireless LAN Standards</b>	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac IEEE 802.11ax IEEE 802.11d IEEE 802.11e IEEE 802.11h IEEE 802.11i IEEE 802.11k IEEE 802.11r IEEE 802.11v
	<b>Interoperability</b> <b>Frequency Band</b>	Features Wi-Fi 6 technology •802.11b/g/n/ax 2.402 – 2.482 GHz •802.11a/n/ac/ax 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"802.11b/g/n/ax
	<b>Data Rates</b>	•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, ,80MHz & 160MHz) •802.11ax MCS0 ~ MCS11, (1SS and 2SS) (20MHz, 40MHz, ,80MHz & 160MHz)
	<b>Modulation</b>	Direct Sequence Spread Spectrum OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM,1024QAM
	<b>Security<sup>3</sup></b>	•IEEE 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 •WPA3 certification •IEEE 802.11i •WAPI
	<b>Network Architecture Models</b>	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
	<b>Roaming</b>	IEEE 802.11 compliant roaming between access points
	<b>Output Power<sup>2</sup></b>	•802.11g : +17.5dBm minimum •802.11a : +18.5dBm minimum •802.11n HT20(2.4GHz): +15.5dBm minimum •802.11n HT40(2.4GHz): +14.5dBm minimum •802.11n HT20(5GHz): +15.5dBm minimum •802.11n HT40(5GHz): +14.5dBm minimum •802.11ac VHT80(5GHz): +11.5dBm minimum •802.11ac VHT160(5GHz): +11.5dBm minimum •802.11ax HT40(2.4GHz): +10dBm minimum •802.11ax VHT160(5GHz): +10dBm minimum



### Technical Specifications

<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 (PSP180 mW(WLAN Associated)</li> <li>•Idle mode:50 mW(WLAN unassociated)</li> <li>•Connected Standby/Modern 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
<b>Receiver Sensitivity<sup>4</sup></b>	<ul style="list-style-type: none"> <li>•802.11b, 1Mbps: 93.5dBm maximum</li> <li>•802.11b, 11Mbps: 84dBm maximum</li> <li>•802.11a/g, 6Mbps: -86dBm maximum</li> <li>•802.11a/g, 54Mbps: 72dBm maximum</li> <li>•802.11n, MCS07: 67dBm maximum</li> <li>•802.11n, MCS15: 64dBm maximum</li> <li>•802.11ac, MCS0: 84dBm maximum</li> <li>•802.11ac, MCS9: 59dBm maximum</li> <li>•802.11ax, MCS11(HT40): -59dBm maximum</li> <li>•802.11ax, MCS11(VHT160): -58.5dBm maximum</li> </ul>
<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 with CNVi Interface
<b>Dimensions</b>	1. Type 2230: 2.3 x 22.0 x 30.0 mm 2. Type 1216: 1.67 x 12.0 x 16.0 mm
<b>Weight</b>	1. Type 2230: 2.8g 2. Type 126: 1.3g
<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

#### HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0/5.1 Wireless Technology

<b>Bluetooth Specification</b>	4.0/4.1/4.2/5.0/5.1 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>Signaling Data Rate</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 + 9.5 dBm for BR and EDR.
<b>Power Consumption</b>	Peak (Tx): 330 mW



### Technical Specifications

	Peak (Rx): 230 mW Selective Suspend: 17 mW
<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
<b>Bluetooth Profiles Supported</b>	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>Security &amp; Manageability</b>	Intel® vPro™ support with appropriate Intel® chipset components

1. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 is backwards compatible with prior 802.11 specs. The specifications for Wi-Fi 6 (802.11ax) are draft 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 802.11ax devices. Only available in countries where 802.11ax is supported.
2. Maximum output power may vary by country according to local regulations.  
12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.
3. Check latest software/driver release for updates on supported security features.
4. 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).
5. Wi-Fi 5 or 6 is designed to support gigabit data rate when transferring files between two devices connected to the same router. Requires a wireless router, sold separately, that supports 80MHz and higher channels.

#### Wireless LAN

IEEE 802.11a



### Technical Specifications

**Intel® Wi-Fi® 6 AX201 Standards**  
**+ Bluetooth®5**  
**(802.11ax 2x2, non-**  
**vPro, supporting**  
**gigabit data rate<sup>5</sup>)**  
**non-vPro<sup>®1</sup>**

IEEE 802.11b  
 IEEE 802.11g  
 IEEE 802.11n  
 IEEE 802.11ac  
 IEEE 802.11ax  
 IEEE 802.11d  
 IEEE 802.11e  
 IEEE 802.11h  
 IEEE 802.11i  
 IEEE 802.11k  
 IEEE 802.11r  
 IEEE 802.11v

**Interoperability**  
**Frequency Band**

Features Wi-Fi 6 technology

•802.11b/g/n/ax  
 2.402 – 2.482 GHz  
 •802.11a/n/ac/ax  
 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"

**Data Rates**

•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, ,80MHz & 160MHz)  
 •802.11ax: MCS0 ~ MCS11, (1SS and 2SS) (20MHz, 40MHz, ,80MHz & 160MHz)

**Modulation**

Direct Sequence Spread Spectrum  
 OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM

**Security<sup>3</sup>**

•IEEE 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  
 •WPA3 certification  
 •IEEE 802.11i  
 •WAPI

**Network**  
**Architecture Models**

Ad-hoc (Peer to Peer)  
 Infrastructure (Access Point Required)

**Roaming**

IEEE 802.11 compliant roaming between access points

**Output Power<sup>2</sup>**

•802.11b : +18.5dBm minimum  
 •802.11g : +17.5dBm minimum  
 •802.11a : +18.5dBm minimum  
 •802.11n HT20(2.4GHz) : +15.5dBm minimum  
 •802.11n HT40(2.4GHz) : +14.5dBm minimum  
 •802.11n HT20(5GHz) : +15.5dBm minimum  
 •802.11n HT40(5GHz) : +14.5dBm minimum  
 •802.11ac VHT80(5GHz) : +11.5dBm minimum  
 •802.11ac VHT160(5GHz) : +11.5dBm minimum  
 •802.11ax HT40(2.4GHz) : +10dBm minimum  
 •802.11ax VHT160(5GHz) : +10dBm minimum

**Power Consumption**

•Transmit mode2.0 W



## Technical Specifications

		<p>Receive mode 1.6 W</p> <p>Idle mode (PSP) 180 mW (WLAN Associated)</p> <p>Idle mode 50 mW (WLAN unassociated)</p> <p>Connected Standby 10 mW</p> <p>Radio disabled 8 mW"</p>
<b>Power Management</b>		ACPI and PCI Express compliant power management
		802.11 compliant power saving mode
<b>Receiver Sensitivity<sup>4</sup></b>		<ul style="list-style-type: none"> <li>• 802.11b, 1 Mbps: 93.5 dBm maximum</li> <li>• 802.11b, 11 Mbps: 84 dBm maximum</li> <li>• 802.11a/g, 6 Mbps: 86 dBm maximum</li> <li>• 802.11a/g, 54 Mbps: 72 dBm maximum</li> <li>• 802.11n, MCS07: 67 dBm maximum</li> <li>• 802.11n, MCS15: 64 dBm maximum</li> <li>• 802.11ac, MCS0: 84 dBm maximum</li> <li>• 802.11ac, MCS9: 59 dBm maximum</li> <li>• 802.11ax, MCS11(HT40): -59 dBm maximum</li> <li>• 802.11ax, MCS11(VHT160): -58.5 dBm maximum</li> </ul>
<b>Antenna type</b>		<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>
<b>Form Factor</b>		PCI-Express M.2 MiniCard with CNVi Interface
<b>Dimensions</b>		<p>1. Type 2230: 2.3 x 22.0 x 30.0 mm</p> <p>2. Type 1216: 1.67 x 12.0 x 16.0 mm</p>
<b>Weight</b>		<p>1. Type 2230: 2.8g</p> <p>2. Type 126: 1.3g</p>
<b>Operating Voltage</b>		3.3v +/- 9%
<b>Temperature</b>		<p>Operating: 14° to 158° F (-10° to 70° C)</p> <p>Non-operating: -40° to 176° F (-40° to 80° C)</p>
<b>Humidity</b>		<p>Operating: 10% to 90% (non-condensing)</p> <p>Non-operating: 5% to 95% (non-condensing)</p>
<b>Altitude</b>		<p>Operating: 0 to 10,000 ft (3,048 m)</p> <p>Non-operating: 0 to 50,000 ft (15,240 m)</p>
<b>LED Activity</b>		LED Amber – Radio OFF; LED Off – Radio ON
<b>HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0/5.1 Wireless Technology</b>	<b>Bluetooth Specification</b>	4.0/4.1/4.2/5.0/5.1 Compliant
	<b>Frequency Band</b>	2402 to 2480 MHz
	<b>Number of Available Channels</b>	<p>Legacy: 0~79 (1 MHz/CH)</p> <p>BLE: 0~39 (2 MHz/CH)</p>
	<b>Data Rates and Throughput</b>	<p>Legacy: 3 Mbps data rate; throughput up to 2.17 Mbps</p> <p>BLE: 1 Mbps data rate; throughput up to 0.2 Mbps</p> <p>Legacy: Synchronous Connection Oriented links up to 3, 64 kbps, voice channels</p> <p>Legacy: Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)</p>
	<b>Transmit Power</b>	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 9.5 dBm for BR and EDR.
	<b>Power Consumption</b>	<p>Peak (Tx): 330 mW</p> <p>Peak (Rx): 230 mW</p> <p>Selective Suspend: 17 mW</p>



### Technical Specifications

<b>Bluetooth Software Supported Link Topology</b>	Microsoft Windows Bluetooth Software
<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
<b>Bluetooth Profiles Supported</b>	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)

1. Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 6 is backwards compatible with prior 802.11 specs. The specifications for Wi-Fi 6 (802.11ax) are draft 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 802.11ax devices. Only available in countries where 802.11ax is supported.
2. Maximum output power may vary by country according to local regulations.
- 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.
3. Check latest software/driver release for updates on supported security features.
4. 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).
5. Wi-Fi 5 or 6 is designed to support gigabit data rate when transferring files between two devices connected to the same router. Requires a wireless router, sold separately, that supports 80MHz and higher channels.

<b>Intel® XMM™ 7360 LTE-Advanced</b>	<b>Technology/Operating bands</b>	FDD LTE: LTE: 2100 (Band 1), 1900 (Band 2), 1800 (Band 3), 1700 (Band 4), 850 (Band 5), 2600 (Band 7), 900 (Band 8), 1400 (Band 11), 700 (Band 12), 700 (Band 13) 700 (Band 17), 850 (Band 18), 850 (Band 19), 800 (Band 20), 1450 (Band 21), 850 (Band 26) 700 (Band 28) MHz, 700 (Band 29), 2300 (Band 30), 2100 (Band 66) MHz TDD LTE: 2600 (Band 38), 1900 (Band 39) 2300 (Band 40), 2500 (Band 41) MHz HSPA+: 2100 (Band 1), 1900 (Band 2), 1700 (Band 4), 850 (Band 5), 900 (Band 8) MHz
	<b>Wireless protocol standards</b>	3GPP Release 11 LTE Specification CAT.9, MAX 60MHz aggregation BW WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification
	<b>GPS</b>	Standalone, A-GPS (MS-B and LTO)



### Technical Specifications

<b>GPS bands</b>	GPS 1575.42 MHz $\pm$ 1.023 MHz, GLONASS 1596-1607MHz, Beidou 1561.098 $\pm$ 2.046 MHz
<b>Maximum data rates</b>	LTE: 450 Mbps (DL 3CA), 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

WWAN module is an optional feature, requires factory configuration 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. LTE not available on all products, in all regions.



### Technical Specifications

Qualcomm®  
Snapdragon™ X55  
5G Cat 20<sup>1</sup>

Technology/  
Operating bands

WCDMA/HSDPA/HSUPA/HSPA+ operating bands:  
Band 1: 1920 to 1980 MHz (UL), 2110 to 2170 MHz (DL)  
Band 2: 1850 to 1910 MHz (UL), 1930 to 1990 MHz (DL)  
Band 4: 1710 to 1755 MHz (UL), 2110 to 2155 MHz (DL)  
Band 5: 824 to 849 MHz (UL), 869 to 894 MHz (DL)  
Band 6: 830 to 840 MHz (UL), 875 to 885 MHz (DL)  
Band 8: 880 to 915 MHz (UL), 925 to 960 MHz (DL)  
Band 9: 1750 to 1785 MHz (UL), 1845 to 1880 MHz (DL)  
Band 19: 830 to 845 MHz (UL), 875 to 890 MHz (DL)  
LTE FDD/TDD operating bands:  
Band 1: 1920 to 1980 MHz (UL), 2110 to 2170 MHz (DL)  
Band 2: 1850 to 1910 MHz (UL), 1930 to 1990 MHz (DL)  
Band 3: 1710 to 1785 MHz (UL), 1805 to 1880 MHz (DL)  
Band 4: 1710 to 1755 MHz (UL), 2110 to 2155 MHz (DL)  
Band 5: 824 to 849 MHz (UL), 869 to 894 MHz (DL)  
Band 7: 2500 to 2570 MHz (UL), 2620 to 2690 MHz (DL)  
Band 8: 880 to 915 MHz (UL), 925 to 960 MHz (DL)  
Band 12: 699 to 716 MHz (UL), 729 to 746 MHz (DL)  
Band 13: 777 to 787 MHz (UL), 746 to 756 MHz (DL)  
Band 14: 788 to 798 MHz (UL), 758 to 768 MHz (DL)  
Band 17: 704 to 716 MHz (UL), 734 to 746 MHz (DL)  
Band 18: 815 to 830 MHz (UL), 860 to 875 MHz (DL)  
Band 19: 830 to 845 MHz (UL), 875 to 890 MHz (DL)  
Band 20: 832 to 862 MHz (UL), 791 to 821 MHz (DL)  
Band 25: 1850 to 1915 MHz (UL), 1930 to 1995 MHz (DL)  
Band 26: 814 to 849 MHz (UL), 859 to 894 MHz (DL)  
Band 28: 703 to 748 MHz (UL), 758 to 803 MHz (DL)  
Band 29: 717 to 728 MHz (DL)  
Band 30: 2305 to 2315 MHz (UL), 2350 to 2360 MHz (DL)  
Band 32: 1452 to 1496 MHz (DL)  
Band 34: 2010 to 2025 MHz (UL/DL)  
Band 38: 2570 to 2620 MHz (UL/DL)  
Band 39: 1880 to 1920 MHz (UL/DL)  
Band 40: 2300 to 2400 MHz (UL/DL)  
Band 41: 2496 to 2690 MHz (UL/DL)  
Band 42: 3400 to 3600 MHz (UL/DL)  
Band 46: 5150 to 5925 MHz (DL)  
Band 48: 3550 to 3700 MHz (UL/DL)  
Band 66: 1710 to 1800 MHz (UL), 2110 to 2200 MHz (DL)  
Band 71: 663 to 698 MHz (UL), 617 to 652 MHz (DL)  
5G NR Sub 6GHz  
n1: 1920 to 1980 MHz (UL), 2110 to 2170 MHz (DL)  
n2: 1850 to 1910 MHz (UL), 1930 to 1990 MHz (DL)  
n3: 1710 to 1785 MHz (UL), 1805 to 1880 MHz (DL)  
n5: 824 to 849 MHz (UL), 869 to 894 MHz (DL)  
n7: 2500 to 2570 MHz (UL), 2620 to 2690 MHz (DL)  
n8: 880 to 915 MHz (UL), 925 to 960 MHz (DL)  
n12: 699 to 716 MHz (UL), 729 to 746 MHz (DL)  
n20: 832 to 862 MHz (UL), 791 to 821 MHz (DL)  
n28: 703 to 748 MHz (UL), 758 to 803 MHz (DL)  
n41: 2496 to 2690 MHz (UL/DL)  
n66: 1710 to 1800 MHz (UL), 2110 to 2200 MHz (DL)  
n71: 663 to 698 MHz (UL), 617 to 652 MHz (DL)  
n77: 3300 to 4200 MHz (UL/DL)  
n78: 3300 to 3800 MHz (UL/DL)  
n79: 4400 to 5000 MHz (UL/DL)



### Technical Specifications

Wireless protocol standards	5G NR Air Interface 1 3GPP Rel15 5G NR sub-6 LTE Rel14 20 layers and 2 Gbps downlink (DL) throughput – 4 × 4 MIMO across 5x CA 200 Mbps uplink (UL) throughput – 40 MHz ULCA and 256 QAM WCDMA R99, 3GPP Release 5, 6, 7 and 8 UMTS Specification
GPS	Standalone, A-GPS (MS-A, MS-B)
GPS bands	GPS: L1 (1575.42MHz); L5 (1176MHz) GLONASS: L1 (1602MHz) BeidouB1(1561.098MHz) Galileo E1 (1575.42); E5a (1176MHz)
Maximum data rates	5G sub 6G : 3.8 Gbps LTE: ue-CategoryDL 20, (DL : 2 Gbps ) ue-CategoryUL 13 , (UL: 150Mbps) DC-HSPA+: 42 Mbps (Download), 5.76 Mbps (Upload) HSPA+: 21 Mbps (Download), 5.76 Mbps (Upload)
Maximum output power	LTE: 23 dBm in all band except B41 LTE B41 HPUE = 26dBm HSPA+: 23.5 dBm
Maximum power consumption	5G Sub 6 : 2500 mA LTE: 1,300 mA (peak); 1100 mA (average) HSPA+: 1,100 mA (peak); 800 mA (average)
Form Factor	M.2, 3042-S3 Key B
Weight	8 g
Dimensions (Length x Width x Thickness)	42 mm × 30 mm × 2.6 mm

1. 5G module is an optional feature that must be configured at purchase. AT&T and T-Mobile networks supported in the U.S. Module designed for 5G networks as carriers deploy Evolved-Universal Terrestrial Radio Access New Radio Dual Connectivity (ENDC) with both 100MHz of 5G NR and LTE channel bandwidth, using 256QAM 4x4 as defined by 3GPP, requires activation and separately purchased service contract. Check with service provider for coverage and availability in your area. Connection, upload and download speeds will vary due to network, location, environment, network conditions, and other factors. 5G not available on all products, in all regions. Backwards compatible to 4G LTE and 3G HSPA technologies. 5G module planned to be available in select countries, where carrier supported.

#### NXP NPC300 Near Field Communication Module

<b>Dimensions (L x W x H)</b>	Module 17 mm by 10 mm by 2.0 mm
<b>Chipset</b>	NPC300
<b>System interface</b>	I <sup>2</sup> C
<b>NFC RF standards</b>	ISO/IEC 14443 A ISO/IEC 14443 B ISO/IEC 15693 ISO/IEC 18092 ECMA-340 NFCIP-1 Target and Initiator ECMA-320 NFCIP-2
<b>NFC Forum Support</b>	Tag Type 1, Type 2, Type3 and Type 4, NFCIP-1 and NFCIP-2
<b>Reader (PCD-VCD) Mode<sup>1</sup></b>	ISO/IEC 14443 A



### Technical Specifications

	ISO/IEC 14443 B
	ISO/IEC 15693
	MIFARE 1K
	MIFARE 4K
	MIFARE DESFire
	FeliCa
	Jewel and Topaz cards
<b>Card Emulation (PICC-VICC) Mode<sup>1</sup></b>	ISO/IEC 14443 A
	ISO/IEC 14443 B and B'
	MIFARE
	FeliCa
<b>Frequency</b>	13.56 MHz
<b>NFC Modes Supported</b>	Reader/Writer, Peer-to-Peer
<b>Raw RF Data Rates</b>	106, 212, 424, 848 kbps
<b>Operating temperature</b>	-25°C to 80°C
<b>Storage temperature</b>	-25°C to 125°C
<b>Humidity</b>	10-90% operating
	5-95% non-operating
<b>Supply Operating voltage</b>	2.7 to 5.5 Volts
<b>I/O Voltage</b>	1.8V or 3.3V

#### Power Consumption (Booster enable, VBAT= 3.3V, VCC\_BOOST = 5V)

<b>Mode</b>	Power Consumption, Typical (2)
<b>Polling</b>	710.93 mW
<b>Detected Test Tag Type 1</b>	152.09 mW
<b>Detected Test Tag Type 2</b>	341.26 mW
<b>Detected Test Tag Type 3</b>	383.76 mW
<b>Detected Test Tag Type 4</b>	312.26 mW
<b>Antenna</b>	Antenna connector, 0.3mm pitch, 7 connector FPC. Antenna matching is external to module.

#### Built-in Tile™ module<sup>1</sup>

<b>Bluetooth Specification</b>	Bluetooth Core Specification v5.0
<b>Frequency Band</b>	2400 to 2483.5 MHz
<b>Number of Available Channels</b>	0-39 Channels with 2MHz bandwidth at each channel
<b>Data Rate</b>	BLE : 1 Mbps data rate
<b>Transmit Power</b>	Max TX power : 8dBm
<b>Power Consumption</b>	"<0.1mW at idle mode (ready to be found)
<b>"</b>	
<b>Form Factor</b>	PCI-Express M.2 MiniCard
<b>Dimensions</b>	Type 3042 : 30 x 42 x 2.3 mm
<b>Weight</b>	Weight : 4.0g



### Technical Specifications

<b>Operating Voltage</b>	DC 3.135V ~ 3.6V, Typical 3.3V
<b>Temperature</b>	Operating: -10°C ~ +55°C Non-operating: - 40°C ~ +85°C

1. Tile is an optional feature that must be configured at the factory and requires Windows 10. Some features require optional subscription to Tile Premium.. Tile application for Windows 10 available for download from the Windows Store. Mobile phone app available for download from App Store and Google Play. Requires iOS 11 and greater or Android 6.0 and greater see <https://support.thetileapp.com/hc/en-us/articles/200424778> for more information. HP Tile will function as long as the PC has battery power.



### Technical Specifications

#### POWER

<b>AC Adapter 65 Watt Smart nPFC Standard Barrel 4.5mm Right Angle 1.8m</b>	<b>Dimensions (H x W x D)</b>	107.0x47.0x30.0mm
	<b>Weight</b>	unit: 250g +/- 10g <a href="#">Not including power cord. Power cord varies by country</a>
	<b>Input</b>	<b>Input Efficiency</b> 88.0 % at 115 Vac and 89.0 % at 230Vac
		<b>Input frequency range</b> 47 ~ 63 Hz
		<b>Input AC current</b> Max. 1.7 A at 90 Vac
	<b>Output</b>	<b>Output power</b> 65 W
		<b>DC output</b> 19.5 V
		<b>Hold-up time</b> 5ms at 115 Vac input
		<b>Output current limit</b> <11.0A
	<b>Connector</b>	4.5mm Barrel Type
<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>		ECE Mark - full compliance with LVD and EMC directives* Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE.* MTBF - over 200,000 hours at 25°C ambient condition.

<b>AC Adapter 45 Watt Smart nPFC Standard Barrel 4.5mm Right Angle 1.8m</b>	<b>Dimensions (H x W x D)</b>	95.0x40.0x26.5mm
	<b>Weight</b>	unit: 200g +/- 10g <a href="#">Not including power cord. Power cord varies by country</a>
	<b>Input</b>	<b>Input Efficiency</b> 87.74 % at 115 Vac and 88.4 % at 230Vac
		<b>Input frequency range</b> 47 ~ 63 Hz
		<b>Input AC current</b> Max. 1.4 A at 90 Vac
	<b>Output</b>	<b>Output power</b> 45 W
		<b>DC output</b> 19.5 V
		<b>Hold-up time</b> 5ms at 115 Vac input
		<b>Output current limit</b> <8.0 A
	<b>Connector</b>	<b>4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords</b>
<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)



### Technical Specifications

	EMI and Safety Certifications	Humidity	20% to 95%
		Storage Humidity	10% to 95%
		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.	

---

AC Adapter 45 Watt Smart nPFC Standard Barrel 4.5mm Right Angle 1.8m 2prong	Dimensions (H x W x D)	95x45x26.8mm		
	Weight	unit: 200g +/- 10g Not including power cord. Power cord varies by country		
	Input	Input Efficiency	87.74 % at 115 Vac and 88.4 % at 230Vac	
		Input frequency range	47 ~ 63 Hz	
		Input AC current	Max. 1.4 A at 90 Vac	
	Output	Output power	45 W	
		DC output	19.5 V	
		Hold-up time	5ms at 115 Vac input	
		Output current limit	<8.0 A	
	Connector	4.5 mm Barrel Type		
	Environmental Design	Operating temperature	32°F to 95°F (0°to 35°C)	
		Non-operating (storage) temperature	-4°F to 185°F (-20°to 85°C)	
		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.		

### Technical Specifications

<b>AC Adapter 65 Watt Smart nPFC EM Barrel 4.5mm New EM</b>	<b>Dimensions (H x W x D)</b>	102x55x30mm
	<b>Weight</b>	270g +/- 10g <a href="#">Not including power cord. Power cord varies by country</a>
	<b>Input</b>	<b>Input Efficiency</b> 88.0 % at 115 Vac and 89.0 % at 230Vac
		<b>Input frequency range</b> 47 to 63 Hz
		<b>Input AC current</b> Max. 1.7 A at 90 Vac
		<b>Output Power</b> 65 W
	<b>Output</b>	<b>DC output</b> 19.5V
		<b>Hold-up time</b> 5 msec at 115 VAC input
		<b>Output current limit</b> <11.0A
	<b>Connector</b>	<b>4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords</b>
	<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>EMI and Safety Certifications</b>	<b>Storage Humidity</b> 10% to 95%

CE Mark - full compliance with LVD and EMC directives  
Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE.  
MTBF - over 200,000 hours at 25°C ambient condition.

<b>AC Adapter 65 Watt nPFC Standard USB Type-C Straight 1.8m</b>	<b>Dimensions (H x W x D)</b>	90.0x51x28.5mm
	<b>Weight</b>	unit: 250g +/- 10g <a href="#">Not including power cord. Power cord varies by country</a>
	<b>Input</b>	<b>Input Efficiency</b> 81.5% min at 115 Vac/ 230Vac @ 5V/3A 86.7% min at 115 Vac/ 230Vac @ 9V/3A 88% min at 115 Vac/ 230Vac @ 12V/5A 89% min at 115 Vac/ 230Vac @ 15V/4.33A 89% min at 115 Vac/ 230Vac @ 20V/3.25A
		<b>Input frequency range</b> 47 to 63 Hz
		<b>Input AC current</b> 1.6 A at 90 VAC and maximum load
		<b>Output power</b> 65 W
	<b>Output</b>	<b>DC output</b> 5V/9V/12V/15V/20V
		<b>Hold-up time</b> 5 msec at 115 VAC input
		<b>Output current limit</b> 8.0A MAXIMUM
	<b>Connector</b>	USB Type-C
	<b>Environmental Design</b>	<b>Operating temperature</b> 32°F to 95°F (0°to 35°C)



### Technical Specifications

**Non-operating (storage) temperature** -4°F to 185°F (-20°to 85°C)

**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, ul62368, 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."

**AC Adapter 65 Watt nPFC Slim USB Type-C Straight 1.8m**

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

88x53.5x21mm

#### Weight

unit: 220g +/- 10g

[Not including power cord. Power cord varies by country](#)

#### 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 @ 12V/5A  
89% min at 115 Vac/ 230Vac @ 15V/4.33A  
89% min at 115 Vac/ 230Vac @ 20V/3.25A

**Input frequency range** 47 to 63Hz

**Input AC current** 1.6 A at 90 VAC and maximum load

#### Output

#### Output Power

65 W

#### DC output

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

#### Hold-up time

5 msec at 115 VAC input

#### Output current limit

<8.0A

#### Connector

#### USB Type C

#### Environmental Design

#### Operating temperature

32°F to 95°F (0°to 35°C)

**Non-operating (storage) temperature** -4°F to 185°F (-20°to 85°C)

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

**Humidity** 5% to 95%

**Storage Humidity** 5% to 95%

#### EMI and Safety Certifications

CE Mark - full compliance with LVD and EMC directives  
Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE.  
MTBF - over 100,000 hours at 25°C ambient condition.

**HP 3 Cell 53 Wh Long Life -PL Fast Charge**

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

267.3x59.75x7.5mm

#### Weight

210g±10g

[Not including power cord. Power cord varies by country](#)

#### Cells/Type

3cell Lithium-Ion Polymer cell / 645180





### Technical Specifications

<b>Voltage</b>	11.55V
<b>Amp-hour capacity</b>	4590mAh
<b>Watt-hour capacity<sup>1</sup></b>	53Wh
<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>Fuel Gauge LED</b>	NA
<b>Optional Travel Battery Available</b>	No

1. Actual battery Watt-hours (Wh) will vary from design capacity. Battery capacity will naturally decrease with shelf life, time, usage, environment, temperature, system configuration, loaded apps, features, power management settings and other factors.

### FINGERPRINTREADER

Model  
Synaptics Validity VFS7552 touch sensor  
Mobile Voltage Operation  
3.0V to 3.6V  
Operating Temperature  
14° – 167°F (-10°-75°C)  
Current Consumption Image  
36mA peak  
Low Latency Wait For Finger  
950 uA  
Capture Rate  
30 cm/sec  
ESD Resistance  
IEC 61000-4-2 4B (+15KV)  
  
Detection Matrix  
200\*1 (Plus another secondary line) / 508 dpi / 10mm sensor area  
  
FRR (False Reject Rate) / FAR  
(False Acceptance Rate) FRR ~ 1% @ 1:50K FAR

## Technical Specifications

## ENVIRONMENTAL DATA

## Sustainable Impact Specifications

- Bulk packaging available
- Low halogen<sup>1</sup>
- Ocean-Bound Plastic in speaker enclosure<sup>2</sup>
- Outside Box and corrugated cushions are 100% sustainably sourced and recyclable<sup>3</sup>
- 35% post-consumer recycled plastic<sup>4</sup>

1. External power supplies, WWAN modules, power cords, cables and peripherals excluded.
2. Percentage of ocean-bound plastic contained in each component varies by product
3. 100% outer box packaging and corrugated cushions made from sustainably sourced certified and recycled fibers.
4. Recycled plastic content percentage is based on the definition set in the IEEE 1680.1-2018 standard.

## Country of Origin

China

Type	Description	Part Number
Cases	HP Prelude Pro Top Load	1X645AA
	HP Prelude Pro Backpack	1X644AA
	HP Business Backpack (17.3")	2SC67AA
	HP Business Case (15.6")	2SC66AA
	HP Business Slim Top Load (14.1")	2SC65AA
	HP 14.1 Business Sleeve	2UW01AA
	HP 13.3 Business Sleeve	2UW00AA
Docking	HP Thunderbolt Dock 120W G2	2UK37AA
	HP Thunderbolt Dock 230W G2	2UK38AA
	HP TB Dock w/ Combo Cable (230W)	3TR87AA
	HP TB Dock Audio Module	3AQ21AA
	HP TB Dock 230W G2 Cable	3XB95AA
	HP TB Dock 120W G2 cable	3XB94AA
	HP TB Dock G2 combo cable	3XB96AA
	HP USB Type-C Mini Dock	1PM64AA
	HP USB Type-C Dock G5	5TW10AA
	HP USB Type-C /A Universal Dock G2	5TW13AA
Input / Output	HP Wireless Rechargeable 950MK Mouse and Keyboard	3M165AA



### Technical Specifications

	HP Wired Desktop 320MK Mouse and Keyboard	9SR36AA
	HP Wireless Premium Keyboard	Z9N41AA
	HP USB Essential Keyboard and Mouse	H6L29AA
	HP Wireless Collaboration Keyboard	Z9N39AA
	HP 935 Creator Wireless Mouse	1D0K8AA
	HP 635 Multi-Device Wireless Mouse	1D0K2AA
	HP Comfort Grip Wireless Mouse	H2L63AA
	HP X4000b Bluetooth Mouse	H3T50AA
	HP Wired Desktop 320M Mouse	9VA80AA
	HP USB Travel Mouse	G1K28AA
	HP Bluetooth Travel Mouse	6SP30AA
	HP Wireless Premium Mouse	1JR31AA
	HP USB Premium Mouse	1JR32AA
	HP Elite Presenter Mouse	2CE30AA
	HP Stereo 3.5mm Headset	T1A66AA
	HP Stereo USB Headset	T1A67AA
	HP UC Wireless Mono Headset	W3K08AA
	HP UC Wireless Duo Headset	W3K09AA
	HP USB Type-C to USB-A Hub	Z6A00AA
	HP USB Type-C to DP	N9K78AA
	HP USB Type-C to VGA	N9K76AA
	HP HDMI to VGA	H4F02AA
	HP USB Type-C to HDMI 2.0 Adapter	1WC36AA
	HP USB Type-C to RJ45 Adapter	V7W66AA
	HP USB Type-C Travel Hub G2	7PJ38AA
	HP Elite USB Type-C Hub	4WX89AA
<b>Power</b>	HP 65W Slim AC Adapter	H6Y82AA
	HP 45W Smart AC Adapter	H6Y88AA
	HP 65W Smart AC Adapter	H6Y89AA
	HP 45W 2-prong 4.5 mm DC jack AC Adapter	L6F60AA#ABJ
	HP 45W USB-C Power Adapter	1HE07AA
	HP 65W USB-C Power Adapter	1HE08AA
	65W USB Type-C® Slim Power Adapter	3PN48AA
	HP Notebook Power Bank	N9F71AA
	HP USB-C Essential Power Bank	3TB55AA
<b>Storage</b>	HP USB External DVDRW Drive	F2B56AA
	HP 256GB PCI-e 3x4 NVMe M.2 SSD	TBT
	HP 512GB PCI-e 3x4 NVMe M.2 SSD	TBT
<b>Security</b>	HP Nano Keyed Cable Lock	1AJ39AA
	HP Sure Key Cable Lock	6UW42AA



---

### Technical Specifications



### Summary of changes

Date of change:	Version History:		Description of change:
January 29, 2021	V1 to V2	Update	USB Ports
February 4, 2021	V2 to V3	Added	Processors, WPA3 certification
February 8, 2021	V3 to V4	Update	Smart Card Reader
February 10, 2021	V4 to V5	Update	Environmental Data

Copyright © 2021 HP Development Company, L.P. The only warranties for HP products are set forth in the express limited warranty statements accompanying such products. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Intel®, Core®, and Intel vPro® are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. Bluetooth is a trademark owned by its proprietor and used by HP Inc. under license. USB Type-C® and USB-C® are trademarks of USB Implementers Forum. ENERGY STAR is a registered trademark of the U.S. Environmental Protection Agency. Windows is either a registered trademark or trademark of Microsoft Corporation in the United States and/or other countries.