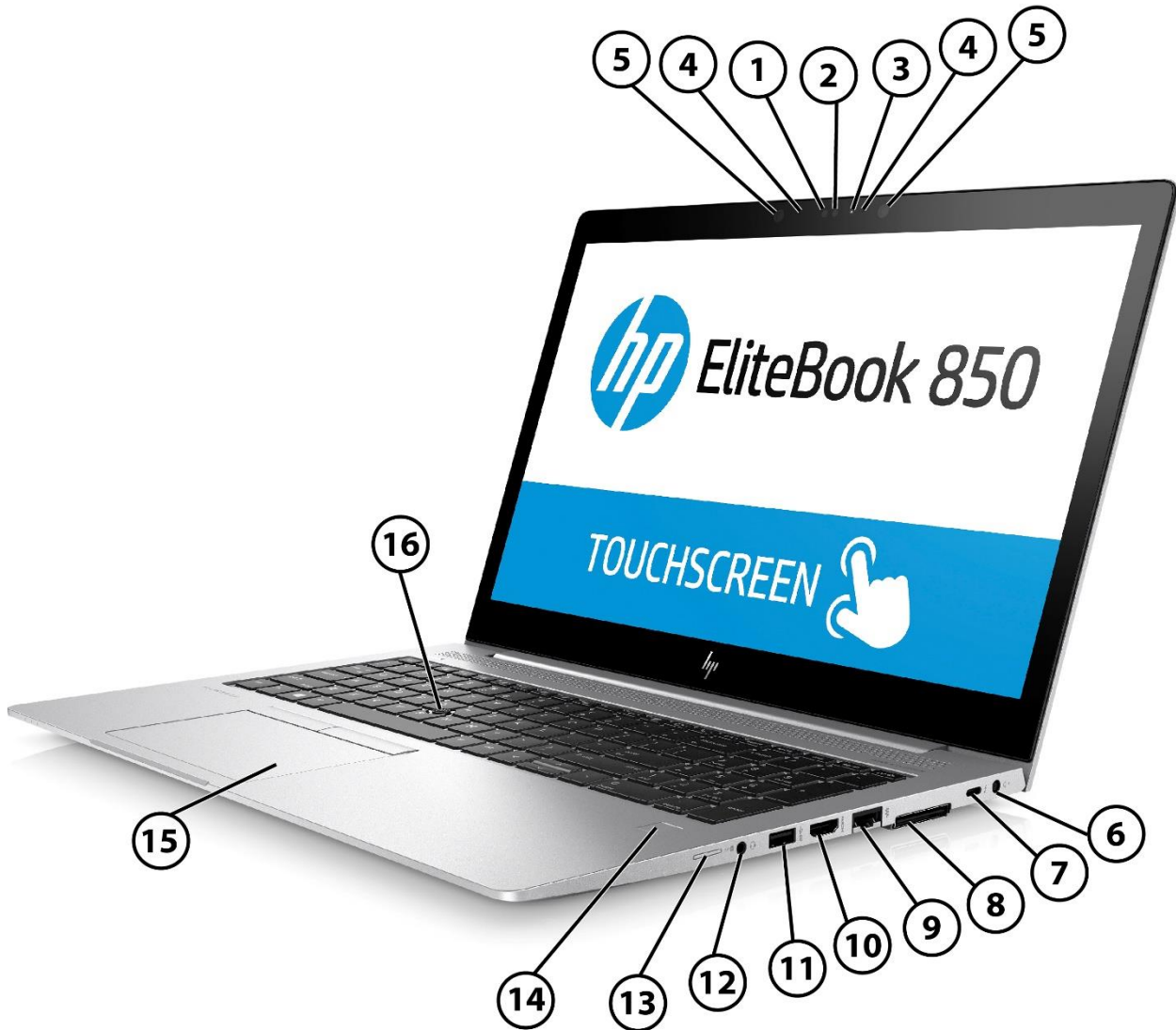


### Overview

### HP EliteBook 850 G5 Notebook PC



#### Left

- |  |                                    |
|--|------------------------------------|
| 1. HD Camera (Select models only)      | 9. Ethernet port                   |
| 2. IR Camera (Select models only)      | 10. HDMI port (Cable not included) |
| 3. Webcam LED (Select models only)     | 11. USB 3.1 Gen 1 port             |
| 4. Internal microphones                | 12. Audio combo jack               |
| 5. IR Camera LEDs (Select models only) | 13. SIM card slot <sup>1</sup>     |
| 6. Power connector                     | 14. Fingerprint reader             |
| 7. USB Type-C™ with Thunderbolt™       | 15. Clickpad                       |
| 8. Docking connector                   | 16. Pointstick                     |

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. Indicator LEDs:  
Power light  
Wireless light  
Storage usage light
2. Smartcard Reader (Select models)
3. USB 3.1 Gen 1 charging port

#### Right

4. Security Lock slot (Lock sold separately)
5. Power button

### Overview

#### AT A GLANCE

- Eye-catching ultraslim design, premium precision-crafted machined aluminum (CNC), seamless formed aluminum chassis for clean, crisp, premium look and feel
- Choice of 8th Generation Intel® Core™ i5, i7 Processors and 7th generation Intel® Core™ i5 Processors
- Designed to support all HP docking options including HP's traditional Ultraslim mechanical dock and all-new Thunderbolt dock<sup>2</sup> (Available in May 2018)
- Featuring HP Collaboration Keyboard with Clickpad to manage most commonly used conferencing functions with a single keystroke
- Innovative world-facing third mic improves inbound ambient noise cancellation
- Optional ultrabright displays with ambient light sensor
- Enterprise grade security with HP SureStart, HP Privacy Camera<sup>3</sup>, HP Sure View<sup>2</sup>, HP Sure Run, HP Sure Recover, SmartCard Reader<sup>2</sup> and Fingerprint reader<sup>2</sup>
- Choice of displays:
  - 39.6cm (15.6") diagonal FHD IPS anti-glare LED-backlit non-touch, 220 cd/m<sup>2</sup>, 45% sRGB
  - 39.6cm (15.6") diagonal FHD IPS anti-glare LED-backlit non-touch, 400 cd/m<sup>2</sup>, 72% sRGB
  - 39.6cm (15.6") diagonal FHD IPS LED-backlit Corning® Gorilla® Glass 3 touch, 220 cd/m<sup>2</sup>, 45% sRGB
- Optional AMD Radeon RX540 discrete graphics with 2 GB GDDR5 video memory
- Flexible wireless connectivity options
- Preinstalled with Windows 10 versions or FreeDOS 2.0
- Choice of solid state drives up to 1 TB and DDR4 memory up to 32 GB
- Supports fast charging (50% in 30 minutes) with no impact on battery recharge cycles<sup>4</sup>
- Optional HD camera or Infra Red camera with multi-array microphone
- Battery life TBD
- Pending MIL-STD testing<sup>5</sup>

2. Sold separately or as an optional feature.

3. Only available with non-touch configurations.

4. Recharges your battery up to 50% within 30 minutes when the system is off or in standby mode. Power adapter with a minimum capacity of 65 watts is required. After charging has reached 50% capacity, charging will return to normal. Charging time may vary +/-10% due to System tolerance.

5. MIL-STD-810G testing is pending and is conducted on select HP products. Testing is not intended to demonstrate fitness of U.S. Department of Defense (DoD) 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.**

### Features

#### PRODUCT NAME

HP EliteBook 850 G5 Notebook PC

#### OPERATING SYSTEM

<b>Preinstalled</b>	Windows 10 Pro 64 <sup>1</sup> Windows 10 Home 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/>

#### PROCESSORS

Intel® Core™ i5-7200U with Intel® HD Graphics 620 (2.5 GHz base frequency, up to 3.1 GHz with Intel® Turbo Boost Technology, 3 MB cache, 2 cores)<sup>2,3,4</sup>

Intel® Core™ i5-7300U with Intel® HD Graphics 620 (2.6 GHz base frequency, up to 3.5 GHz with Intel® Turbo Boost Technology, 3 MB cache, 2 cores)<sup>2,3,4</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>2,3,4</sup>

Intel® Core™ i5-8350U 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>2,3,4</sup>

Intel® Core™ i7-8550U 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>2,3,4</sup>

Intel® Core™ i7-8650U with Intel® UHD graphics 620 (1.9 GHz base frequency, up to 3.9 GHz with Intel® Turbo Boost Technology, 8 MB cache, 4 cores)<sup>2,3,4</sup>

##### Processor Family

7th Generation Intel® Core™ i5 processor (i5-7300U, i5-7200U models)

8th Generation Intel® Core™ i5 processor (i5-8350U, i5-8250U models)

8th Generation Intel® Core™ i7 processor (i7-8650U, i7-8550U models)

2. 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.

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

4. **NOTE:** 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

Chipset is integrated with processor

### Features

#### GRAPHICS

##### Integrated

Intel® HD Graphics 620<sup>5</sup>  
Intel® UHD Graphics 620<sup>5</sup>

##### Discrete

AMD Radeon™ RX 540 (2 GB GDDR5 video memory)<sup>6,7</sup>  
Support HD decode, DX12, HDMI 1.4b<sup>8</sup>

5. HD content required to view HD images.

6. Sold separately or as an optional feature.

7. AMD Dynamic Switchable Graphics technology requires an Intel® processor, plus an AMD Radeon™ discrete graphics configuration and is not available on FreeDOS and Linux OS. With AMD Dynamic Switchable Graphics technology, full enablement of all discrete graphics video and display features may not be supported on all systems (e.g. OpenGL applications will run on the integrated GPU or the APU as the case may be).

8. HDMI cable sold separately.

#### DISPLAY

##### Non-Touch

39.6 cm (15.6") diagonal FHD IPS anti-glare LED-backlit, 220 cd/m<sup>2</sup>, 45% sRGB (1920 x 1080)<sup>9,10,11</sup>

39.6 cm (15.6") diagonal FHD IPS anti-glare LED-backlit, 220 cd/m<sup>2</sup>, 45% sRGB with HD camera (1920 x 1080)<sup>9,10,11</sup>

39.6 cm (15.6") diagonal FHD IPS anti-glare LED-backlit, 220 cd/m<sup>2</sup>, 45% sRGB with HD IR webcam (1920 x 1080)<sup>9,10,11</sup>

39.6 cm (15.6") diagonal FHD IPS anti-glare LED-backlit, 220 cd/m<sup>2</sup>, 45% sRGB for WWAN (1920 x 1080)<sup>9,10,11</sup>

39.6 cm (15.6") diagonal FHD IPS anti-glare LED-backlit, 220 cd/m<sup>2</sup>, 45% sRGB with HD camera for WWAN (1920 x 1080)<sup>9,10,11</sup>

39.6 cm (15.6") diagonal FHD IPS anti-glare LED-backlit, 220 cd/m<sup>2</sup>, 45% sRGB with HD IR webcam for WWAN (1920 x 1080)<sup>9,10,11</sup>

39.6 cm (15.6") diagonal FHD IPS anti-glare LED-backlit, 400 cd/m<sup>2</sup>, 72% sRGB with Ambient Light Sensor and HD IR webcam (1920 x 1080)<sup>9,10,11</sup>

39.6 cm (15.6") diagonal FHD IPS anti-glare LED-backlit, 400 cd/m<sup>2</sup>, 72% sRGB with Ambient Light Sensor and HD IR webcam for WWAN (1920 x 1080)<sup>9,10,11</sup>

39.6 cm (15.6") diagonal UHD IPS anti-glare LED-backlit, 400 cd/m<sup>2</sup>, 72% sRGB with Ambient Light Sensor and HD IR webcam for WWAN (3840 x 2160)<sup>9,10,11</sup>

##### Touch

39.6 cm (15.6") diagonal FHD IPS LED-backlit touch screen with Corning® Gorilla® Glass 3, 220 cd/m<sup>2</sup>, 45% sRGB with HD IR webcam (1920 x 1080)<sup>9,10,11</sup>

39.6 cm (15.6") diagonal FHD IPS LED-backlit touch screen with Corning® Gorilla® Glass 3, 220 cd/m<sup>2</sup>, 45% sRGB with HD IR webcam for WWAN (1920 x 1080)<sup>9,10,11</sup>

##### HDMI 1.4b

Supports resolution up to 4k @ 60Hz

##### Displays support

Supports 2 independent displays when docked on the HP Ultralim Dock - Max. resolution = 2.5K @ 60Hz (DP1) & 2.5K @ 60Hz (DP2)<sup>11</sup>

Supports 2 independent displays when docked on the HP Thunderbolt™ Dock G2 (Available in May 2018) - Max. resolution = 4K @ 60Hz (DisplayPort) & 4K @ 60Hz (Thunderbolt)<sup>11</sup>

9. HD content required to view HD images.

10. Sold separately or as an optional feature.

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

### Features

#### STORAGE AND DRIVES

**Primary M.2 Storage**

128 GB SATA-3 SS TLC<sup>12</sup>  
256 GB PCIe NVMe Value SS TLC<sup>12</sup>  
256 GB PCIe Gen3x4 NVMe SS TLC<sup>12</sup>  
256 GB SATA-3 SS TLC Opal 2<sup>12</sup>  
360 GB PCIe Gen3x4 NVMe SS TLC (Intel®)<sup>12</sup>  
512 GB PCIe Gen3x4 NVMe SS TLC<sup>12</sup>  
512 GB PCIe Gen3x4 NVMe SS TLC Opal 2<sup>12</sup>  
512 GB SATA-3 SS TLC FIPS-140-2<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 30 GB (for Windows 10) is reserved for system recovery software.

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#### MEMORY

**Maximum Memory**

32 GB DDR4-2400 SDRAM<sup>13</sup>

**Memory**

32 GB DDR4-2400 SDRAM (2 X 16 GB)<sup>13</sup>  
16 GB DDR4-2400 SDRAM (1 X 16 GB)<sup>13</sup>  
16 GB DDR4-2400 SDRAM (2 X 8 GB)<sup>13</sup>  
8 GB DDR4-2400 SDRAM (1 x 8 GB)<sup>13</sup>  
8 GB DDR4-2400 SDRAM (2 x 4 GB)<sup>13</sup>  
4 GB DDR4-2400 SDRAM (1 x 4 GB)<sup>13</sup>

**Memory Slots**

2 SODIMM

Both slots are upgradeable

System runs at 2133 for Intel® 7th generation processors

System runs at 2400 for Intel® 8th generation processors

Supports Dual Channel Memory.

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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### Features

#### NETWORKING/COMMUNICATIONS

##### WLAN<sup>14</sup>

Intel® Dual Band Wireless-AC 8265 802.11a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 4.2 Combo, vPro™<sup>15</sup>  
Intel® Dual Band Wireless-AC 8265 802.11a/b/g/n/ac (2x2) Wi-Fi® and Bluetooth® 4.2 Combo, non-vPro™<sup>15</sup>  
Realtek RTL8822BE 802.11ac (2x2) Wi-Fi® and Bluetooth® 4.2 Combo, non-vPro™<sup>15</sup>

##### WWAN<sup>14</sup>

HP lt4132 LTE/HSPA+ 4G Mobile Broadband<sup>16</sup>  
Intel® XMM™ 7360 LTE-Advanced<sup>16</sup>

##### NFC<sup>14</sup>

NXP NPC300 Near Field Communication Module

##### Miracast

Native Miracast Support<sup>17</sup>

##### Ethernet

Intel® I219-LM 10/100/1000 GbE, vPro™<sup>18</sup>  
Intel® I219-V 10/100/1000 GbE, non-vPro™<sup>18</sup>

14. Sold separately or as an optional feature.

15. 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.

16. WWAN module 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. The term "10/100/1000" or "Gigabit" Ethernet indicates compatibility with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

#### AUDIO/MULTIMEDIA

##### Audio

Audio by Bang & Olufsen  
Integrated 3 Multi Array Microphone  
2 Integrated Stereo Speakers (74Db)

##### Webcam

HD camera<sup>19,20</sup>  
HD IR camera<sup>19,20</sup>

19. HD content required to view HD images.

20. Sold separately or as an optional feature.

### Features

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

##### **Keyboard**

HP Premium Collaboration Keyboard, spill resistant with drain  
Backlit keyboard available as an option

##### **Pointing Device**

Clickpad with multi-touch gestures enabled, 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 - numlk  
F11 - Wireless  
F12 - Calendar  
Share/Present  
Call Answer  
Call End

##### **Hidden Functions**

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

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### Features

#### SOFTWARE AND SECURITY

##### Preinstalled Software

###### BIOS

- HP BIOSphere Gen4<sup>22</sup>
- HP DriveLock & Automatic DriveLock
- BIOS Update via Network
- Master Boot Record Security
- Power On Authentication
- Secure Erase<sup>23</sup>
- Absolute Persistence Module<sup>24</sup>
- Pre-boot Authentication
- HP Wireless Wakeup

###### Software

- HP Native Miracast Support<sup>21</sup>
- HP LAN-Wireless Protection
- HP Connection Optimizer
- HP Velocity
- HP ePrint + JetAdvantage<sup>25</sup>
- HP Hotkey Support - CMIT
- HP Recovery Manager
- HP Jumpstart
- HP Support Assistant<sup>26</sup>
- HP Noise Cancellation Software
- HP PhoneWise<sup>33</sup>
- Buy Office

###### Manageability Features

- HP Driver Packs<sup>31</sup>
- HP System Software Manager (SSM)
- HP BIOS Config Utility (BCU)
- HP Client Catalog
- HP Manageability Integration Kit Gen2<sup>28</sup>
- Ivanti Management Suite<sup>29</sup>
- HP Collaboration Keyboard

###### Client Security Software

- HP Client Security Suite Gen4<sup>30</sup> including:
  - HP Security Manager<sup>27</sup> (including Credential Manager, HP Password Manager, HP Spare Key)
- Power On Authentication
- HP Fingerprint Sensor<sup>35</sup>

### Features

HP Device Access Manager  
HP Power On Authentication  
Microsoft Defender<sup>32</sup>

#### Security Management

HP BIOSphere Gen4<sup>22</sup>  
HP DriveLock & Automatic DriveLock  
BIOS Update via Network  
Secure Erase<sup>23</sup>  
Pre-boot Authentication  
TPM 2.0 Embedded Security Chip shipped with Windows 10 (Common Criteria EAL4+ Certified)<sup>36</sup>  
SATA 0,1 port disablement (viaBIOS)  
RAID configurations<sup>34</sup>  
Serial, USB enable/disable (viaBIOS)  
Power-on password (viaBIOS)  
Setup password (viaBIOS)  
Support for chassis padlocks and cable lock devices  
HP Sure Click<sup>37</sup>  
HP Sure Start Gen4<sup>38</sup>

#### Security

##### TPM

Model: Infineon SLB9670  
Version: 7.62.3126.0  
Revision: TPM 2.0  
FIPS 140-2 Compliant: Yes (select models only)

##### Smartcard Reader

Model number: Alcor AU9560  
FIPS 201 Compliant: Yes

##### IPv6 Certification:

Yes

**MD5 Hash:** Please follow the instructions below to access MD5 Hash.

Log-on to <http://hp.com/support>, enter your product name, select software and drivers, select OS, select driver. After selecting the driver, click on “Associated files” and then click on “Download”. When opening the file, under “Purpose” you should see the appropriate “SOFTPAQ MD5:” Field

##### Is the BIOS on this notebook ISO/IEC 19678:2015 (formerly NIST 800-147) compliant?:

Yes

UEFI version: 2.5

### Features

21. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming
22. HP BIOSphere Gen4 features may vary depending on the PC platform and configurations requires 8th Gen Intel® processors.
23. Secure Erase for the methods outlined in the National Institute of Standards and Technology Special Publication 800-88. Supported on Elite platforms with BIOS version F.03 or higher.
24. 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.
25. 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.
26. HP Support Assistant requires Windows and Internet access.
27. HP Driver Packs not preinstalled, however available for download at <http://www.hp.com/go/clientmanagement>.
28. HP Manageability Integration Kit can be downloaded from <http://www8.hp.com/us/en/ads/clientmanagement/overview.html>
29. Ivanti Management Suite subscription required.
30. HP Client Security Suite Gen4 requires Windows and Intel® or AMD 8th generation processors.
31. HP Password Manager requires Internet Explorer or Chrome or FireFox. Some websites and applications may not be supported. User may need to enable or allow the add-on / extension in the internet browser.
32. Microsoft Defender Opt in and internet connection required for updates.
33. HP PhoneWise Client is only available on select platforms. For supported platforms and HP PhoneWise system requirements see <http://www.hp.com/go/HPPhoneWise>.
34. HP Sure Start Gen4 is available on HP EliteBook products equipped with Intel® 8th generation processors
35. HP Fingerprint Sensor sold separately or as an optional feature.
36. Firmware TPM is version 2.0. Hardware TPM is v1.2, which is a subset of the TPM 2.0 specification version v0.89 as implemented by Intel® Platform Trust Technology (PTT).
37. RAID configuration is optional and does require a second hard drive.
- 38 HP Sure Click is available on select HP platforms and supports Microsoft® Internet Explorer and Chromium™. Check <http://h20195.www2.hp.com/v2/GetDocument.aspx?docname=4AA7-0922ENW> for all compatible platforms as they become available.

### Features

#### POWER

##### Power Supply

HP Smart 45 W External AC power adapter<sup>39</sup>  
HP Smart 45 W External AC power adapter, 2-prong (Japan only)<sup>39</sup>  
HP Smart 65 W External AC power adapter<sup>39</sup>  
HP Smart 65 W EM External AC power adapter<sup>39</sup>  
45 W USB Type-C™ adapter<sup>39</sup>  
65 W USB Type-C™ adapter<sup>39</sup>

##### Primary Battery

HP Long Life 3-cell, 50 Wh Li-ion<sup>40</sup>

##### Power Cord

2-wire plug - 1.0m (Japan only)<sup>39</sup>  
3-wire plug - 1.0m<sup>39</sup>  
3-wire plug - 1.8m<sup>39</sup>  
Duckhead power cord - 1.0m<sup>39</sup>  
Duckhead power cord - 1.8m<sup>39</sup>

##### Battery Life

TBD

[39. Availability may vary by country.](#)

[40. Battery is internal and not replaceable by customer. Serviceable by warranty.](#)

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#### WEIGHTS & DIMENSIONS

##### Weight

Starting at 3.94 lb (non-touch); Starting at 4.37 lb (touch)<sup>41</sup>  
Starting at 1.78 kg (non-touch); Starting at 1.93 kg (touch)<sup>41</sup>

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

###### Non-touch

14.60 x 9.91 x 0.72 in  
37 x 25.2 x 1.83 cm

###### Touch

14.60 x 9.91 x 0.73 in  
37 x 25.2 x 1.86 cm

[41. Weight will vary by configuration.](#)

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### Features

#### PORTS/SLOTS

##### Ports

- 1 Thunderbolt™ (USB Type-C™ connector)
- 2 USB 3.1 Gen 1 (1 charging)
- 1 HDMI 1.4b<sup>42</sup>
- 1 RJ-45
- 1 docking connector
- 1 headphone/microphone combo
- 1 AC power
- 1 SIM card slot<sup>43</sup>
- 1 Smartcard reader<sup>43</sup>

42. HDMI cable sold separately.

43 Sold separately or as an optional feature.

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#### SERVICE AND SUPPORT

3 year and 1 year limited warranties and 90-day software limited warranty options depending on country. Batteries have a default one year limited warranty except for Long Life batteries which will have same 1 year or 3 year limited warranty as the platform. On-site service and extended coverage is also available. HP Care Pack Services 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>44</sup>

44. 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

#### SYSTEM UNIT

<b>Stand-Alone Power Requirements</b> (AC Power)	<b>Nominal Operating Voltage</b>	19V
	<b>Average Operating Power</b>	Win 10
	<b>Integrated Graphics</b>	6.78W
	<b>Discrete Graphics</b>	18W
	<b>Max Operating Power</b>	Discrete < 65W UMA < 45W
<b>Temperature</b>	<b>Operating</b>	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)
	<b>Non-operating</b>	-4° to 140° F (-20° to 60° C)
<b>Relative Humidity</b>	<b>Operating</b>	10% to 90%, non-condensing
	<b>Non-operating</b>	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
<b>Shock</b>	<b>Operating</b>	40 G, 2 ms, half-sine
	<b>Non-operating</b>	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</b> (unpressurized)	<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>1</sup>
	<b>EPEAT®</b>	Registered Gold in United States <sup>2</sup>
	<b>ICES</b>	Yes
	<b>Australia / 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	
<b>UKRSERTCOMPUTER</b>		

1. Configurations of the HP Elitebook 850 G5 that are ENERGY STAR® qualified are identified as HP Elitebook 850 G5 ENERGY STAR on HP websites and on <http://www.energystar.gov>.

2. EPEAT® registered where applicable. EPEAT registration varies by country. See <http://www.epeat.net> for registration status by country. Search keyword generator on HP's 3rd party option store for solar generator accessories at <http://www.hp.com/go/options>.

### Technical Specifications

#### DISPLAYS

**Panel LCD 15.6 inch FHD (1920x1080) Anti-Glare WLED UWVA 45% cg 220nits eDP slim NB Non-Touch**

<b>Outline Dimensions (W x H)</b>	350.96 x 216.75 (max.)
<b>Active Area</b>	344.16 x 193.59 (typ.)
<b>Weight</b>	370g max.
<b>Diagonal Size</b>	15.6"
<b>Thickness</b>	3.2mm max.
<b>Interface</b>	eDP 1.2
<b>Surface Treatment</b>	IPS
<b>Touch Enabled</b>	No
<b>Contrast Ratio</b>	600:1 (typ) - AG
<b>Refresh Rate</b>	60Hz
<b>Brightness</b>	220 nits typical (Panel Only)
<b>Pixel Resolution</b>	1920 x 1080 (FHD)
<b>Format</b>	RGB
<b>Backlight</b>	LED
<b>Color Gamut Coverage</b>	45%
<b>Color Depth</b>	6 bits + Hi FRC
<b>Viewing Angle</b>	UWVA 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.

**Panel LCD 15.6 inch FHD (1920x1080) WLED UWVA 45% cg 220nits eDP slim NB Touch**

<b>Outline Dimensions (W x H)</b>	350.96 x 216.75 (max.)
<b>Active Area</b>	344.16 x 193.59 (typ.)
<b>Weight</b>	568g max.
<b>Diagonal Size</b>	15.6"
<b>Thickness</b>	3.4mm max.
<b>Interface</b>	eDP 1.2
<b>Surface Treatment</b>	IPS
<b>Touch Enabled</b>	Yes
<b>Contrast Ratio</b>	600:1 (typ)
<b>Refresh Rate</b>	60Hz
<b>Brightness</b>	220 nits typical (Panel Only)
<b>Pixel Resolution</b>	1920 x 1080 (FHD)
<b>Format</b>	RGB
<b>Backlight</b>	LED
<b>Color Gamut Coverage</b>	45%
<b>Color Depth</b>	6 bits + Hi FRC
<b>Viewing Angle</b>	UWVA 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

**Panel LCD 15.6 inch FHD (1920x1080) Anti-Glare WLED UWVA 72% cg 400nits eDP 1.3 + PSR slim NB**

<b>Outline Dimensions (W x H)</b>	350.96 x 216.75 (max.)
<b>Active Area</b>	344.16 x 193.59 (typ.)
<b>Weight</b>	370g max.
<b>Diagonal Size</b>	"15.6
<b>Thickness</b>	"
<b>Interface</b>	3.2mm max.
<b>Surface Treatment</b>	eDP 1.3 + PSR (2 lane)
<b>Touch Enabled</b>	IPS
<b>Contrast Ratio</b>	No
<b>Refresh Rate</b>	600:1 (typical)
<b>Brightness</b>	60Hz
<b>Pixel Resolution</b>	400 nits typical (Panel Only)
<b>Format</b>	1920 x 1080 (FHD)
<b>Backlight</b>	RGB
<b>Color Gamut Coverage</b>	LED
<b>Color Depth</b>	72%
<b>Viewing Angle</b>	6 bits + Hi FRC

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

**Panel LCD 15.6 inch UHD (3840x2160) Anti-Glare WLED UWVA 72% cg 400nits eDP 1.3 + PSR ultraslim NB**

<b>Outline Dimensions (W x H)</b>	350.96 x 216.95 max.
<b>Active Area</b>	344.2176 x 193.6224 typ.
<b>Weight</b>	320g max.
<b>Diagonal Size</b>	15.6"
<b>Thickness</b>	2.6 (mm) max.
<b>Interface</b>	eDP1.3+PSR
<b>Surface Treatment</b>	IPS
<b>Touch Enabled</b>	No
<b>Contrast Ratio</b>	300:1 (typical)
<b>Refresh Rate</b>	1200:1 (typ)
<b>Brightness</b>	400 nits typical (Panel Only)
<b>Pixel Resolution</b>	3840 x 2160 (UHD)
<b>Format</b>	RGB
<b>Backlight</b>	LED
<b>Color Gamut Coverage</b>	72%
<b>Color Depth</b>	8 bit
<b>Viewing Angle</b>	UWVA 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

#### STORAGE<sup>1</sup>

<b>SSD 128GB 2280 M2 SATA-3 TLC</b>	<b>Drive Weight</b>	0.02 lb (10 g)
	<b>Capacity</b>	128GB
	<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 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

<b>SSD 1TB 2280 PCIe-3x4 NVMe TLC DS</b>	<b>Drive Weight</b>	0.02 lb (10 g)
	<b>Capacity</b>	1024GB
	<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 2800 MB/s
	<b>Maximum Sequential Write</b>	Up To 1600 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

<b>SSD 256GB 2280 M2 PCIe-3x4 SS NVMe TLC</b>	<b>Drive Weight</b>	0.02 lb (10 g)
	<b>Capacity</b>	1024GB
	<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 2800 MB/s
	<b>Maximum Sequential Write</b>	Up To 1600 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

### Technical Specifications

<b>SSD 256GB 2280 M2 SATA-3 Self Encrypted OPAL2 TLC</b>	<b>Drive Weight</b>	0.02 lb (10 g)
	<b>Capacity</b>	256GB
	<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 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>	DIPM; TRIM; DEVSLP

<b>256GB 2280 PCIe NVMe Value Solid State Drive</b>	<b>Drive Weight</b>	M.2 2280
	<b>Capacity</b>	256 GB
	<b>Height</b>	TLC
	<b>Width</b>	0.09 in (2.3 mm)
	<b>Interface</b>	0.87 in (22 mm)
	<b>Performance</b>	0.02 lb (10 g)
	<b>Maximum Sequential Read</b>	PCIe NVMe Gen3X4
	<b>Maximum Sequential Write</b>	Up To 1700 MB/s
	<b>Logical Blocks</b>	Up To 600 MB/s
	<b>Operating Temperature</b>	500,118,192
<b>Features</b>	32° to 158°F (0° to 70°C) [ambient temp]	

<b>SSD 360GB 2280 PCIe-3x4 NVMe TLC</b>	<b>Drive Weight</b>	0.02 lb (10 g)
	<b>Capacity</b>	360GB
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Interface</b>	PCIe NVMe Gen3X4
	<b>Performance</b>	
	<b>Maximum Sequential Read</b>	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	

### Technical Specifications

<b>SSD 512GB 2280 M2 PCIe-3x4 SS NVMe TLC</b>	<b>Drive Weight</b>	0.02 lb (10 g)
	<b>Capacity</b>	512GB
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Interface</b>	PCIe NVMe Gen3X4
	<b>Performance</b>	
	<b>Maximum Sequential Read</b>	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 M2 SATA-3 TLC FIPS</b>	<b>Drive Weight</b>	0.02 lb (10 g)
	<b>Capacity</b>	512GB
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Interface</b>	ACS-3, SATA 3.2
	<b>Performance</b>	
	<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>	DIPM; TRIM; DEVSLP

<b>SSD 512GB 2280 PCIe-3x4 NVMe Self Encrypted OPAL2 TLC</b>	<b>Drive Weight</b>	0.02 lb (10 g)
	<b>Capacity</b>	512GB
	<b>Height</b>	0.09 in (2.3 mm)
	<b>Width</b>	0.87 in (22 mm)
	<b>Interface</b>	PCIe NVMe Gen3X4
	<b>Performance</b>	
	<b>Maximum Sequential Read</b>	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>	DIPM; TRIM; DEVSLP

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

### Technical Specifications

#### NETWORKING/COMMUNICATIONS

<b>Intel® 802.11a/b/g/n/ac (2x2) WiFi and Bluetooth® 4.2 Combo<sup>1</sup></b>	<b>Wireless LAN Standards</b>	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac
	<b>Interoperability</b>	Wi-Fi certified
	<b>Frequency Band</b>	802.11b/g/n <ul style="list-style-type: none"> <li>• 2.402 – 2.482 GHz</li> </ul> 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>
	<b>Data Rates</b>	<ul style="list-style-type: none"> <li>• 802.11b: 1, 2, 5.5, 11 Mbps</li> <li>• 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps</li> <li>• 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps</li> <li>• 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz)</li> <li>• 802.11ac : MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz)</li> </ul>
	<b>Modulation</b>	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM
	<b>Security<sup>3</sup></b>	<ul style="list-style-type: none"> <li>• IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only</li> <li>• AES-CCMP: 128 bit in hardware •802.1x authentication •WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. •WPA2 certification •IEEE 802.11i •Cisco Certified Extensions, all versions through CCX4 and CCX Lite</li> <li>• WAPI</li> </ul>
	<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>	<ul style="list-style-type: none"> <li>• 802.11b : +14dBm minimum</li> <li>• 802.11g : +12dBm minimum</li> <li>• 802.11a : +12dBm minimum</li> <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> <li>• Connected Standby 10mW</li> <li>• Radio disabled 8 mW</li> </ul>
	<b>Power Management</b>	ACPI compliant power management 802.11 compliant power saving mode

### Technical Specifications

<b>Receiver Sensitivity<sup>4</sup></b>	802.11b, 1Mbps : -93.5dBm maximum 802.11b, 11Mbps : -84dBm maximum 802.11a/g, 6Mbps : -86dBm maximum 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 Half-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>	<b>Operating</b> 14° to 158° F (-10° to 70° C) <b>Non-operating</b> -40° to 176° F (-40° to 80° C)
<b>Humidity</b>	<b>Operating</b> 10% to 90% (non-condensing) <b>Non-operating</b> 5% to 95% (non-condensing)
<b>Altitude</b>	<b>Operating</b> 0 to 10,000 ft (3,048 m) <b>Non-operating</b> 0 to 50,000 ft (15,240 m)
<b>LED Activity</b>	<b>LED Amber</b> – Radio OFF; <b>LED White</b> – Radio ON

### 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>Power Management Certifications</b>	Microsoft Windows ACPI, and USB Bus Support 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 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
2. The FCC has declared as of September 1, 2014 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.
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).

### Technical Specifications

<b>HP It4132 LTE/HSPA+ 4G Mobile Broadband<sup>5</sup></b>	<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 30 x 2.3 mm

5. 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

<b>Intel® XMM™ 7360 LTE-Advanced<sup>6</sup></b>	<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), 1400 (Band 11), 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), 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>	5.8 g
	<b>Dimensions (Length x Width x Thickness)</b>	42 x 30 x 2.3 mm

6. 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

<b>Realtek 802.11b/g/n (2x2) WiFi and Bluetooth® 4.2 Combo<sup>7</sup></b>	<b>Wireless LAN Standards</b>	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac
	<b>Interoperability</b>	Wi-Fi certified
	<b>Frequency Band</b>	802.11b/g/n [2] • 2.402 – 2.482 GHz
	<b>Data Rates</b>	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps 802.11n: MCS 0 ~ MCS 07, (20MHz)
	<b>Modulation</b>	Direct Sequence Spread Spectrum BPSK, QPSK, CCK, 16-QAM, 64-QAM,
	<b>Security<sup>9</sup></b>	<ul style="list-style-type: none"> <li>• IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only</li> <li>• AES-CCMP: 128 bit in hardware</li> <li>• 802.1x authentication</li> <li>• WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES.</li> <li>• WPA2 certification</li> <li>• IEEE 802.11i</li> <li>• Cisco Certified Extensions, all versions through CCX4 and CCX Lite</li> <li>• WAPI</li> </ul>
	<b>Network Architecture Models</b>	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
	<b>Roaming</b>	IEEE 802.11 compliant roaming between access points
	<b>Output Power<sup>8</sup></b>	<ul style="list-style-type: none"> <li>• 802.11b : +14dBm minimum</li> <li>• 802.11g : +12dBm minimum</li> <li>• 802.11a : +12dBm minimum</li> <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> <li>• Connected Standby 10mW</li> <li>• Radio disabled 8 mW</li> </ul>
	<b>Power Management</b>	ACPI compliant power management 802.11 compliant power saving mode
	<b>Receiver Sensitivity<sup>10</sup></b>	802.11b, 1Mbps : -93.5dBm maximum 802.11b, 11Mbps : -84dBm maximum 802.11a/g, 6Mbps : -86dBm maximum 802.11a/g, 54Mbps : -72dBm maximum 802.11n, MCS07 : -67dBm maximum 802.11n, MCS15 : -64dBm maximum 802.11ac, MCS0 : -84dBm maximum

### Technical Specifications

<b>Antenna type</b>	802.11ac, MCS9 : -59dBm maximum High efficiency antenna with spatial diversity, mounted in the display enclosure
<b>Form Factor</b>	Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications
<b>Dimensions</b>	PCI-Express M.2 MiniCard Type 2230 : 2.3 x 22.0 x 30.0 mm Or Type 1630 : 2.3 x 16.0 x 30.0 mm
<b>Weight</b>	Type 2230 : 2.8g Or Type 1630 : 2g
<b>Operating Voltage</b>	3.3v +/- 9%
<b>Temperature</b>	Operating: 14° to 158° F (-10° to 70° C) Non-operating: -40° to 176° F (-40° to 80° C)
<b>Humidity</b>	<b>Operating:</b> 10% to 90% (non-condensing) <b>Non-operating:</b> 5% to 95% (non-condensing)
<b>Altitude</b>	<b>Operating:</b> 0 to 10,000 ft (3,048 m) <b>Non-operating:</b> 0 to 50,000 ft (15,240 m)
<b>LED Activity</b>	<b>LED Amber</b> – Radio OFF <b>LED White</b> – Radio ON

### Technical Specifications

#### 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.

7. 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
8. The FCC has declared as of September 1, 2014 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.
9. Check latest software/driver release for updates on supported security features.
10. 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).

### Technical Specifications

#### Near Field Communications Controller (optional)

<b>Dimensions (L x W x H)</b>	Module 25 mm by 10 mm by 2.0 mm
<b>Chipset</b>	NPC100
<b>System interface</b>	I2C
<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(1)</b>	ISO/IEC 14443 A ISO/IEC 14443 B ISO/IEC 15693 MIFARE 1K MIFARE 4K MIFARE DESFire FeliCa Jewel and Topaz cards
<b>Card Emulation (PICC-VICC) Mode(1)</b>	ISO/IEC 14443 A ISO/IEC 14443 B and B' MIFARE FeliCa
<b>Frequency</b>	13.56 MHz
<b>NFC Modes Supported</b>	Reader/Writer, Peer-to-Peer
<b>Raw RF Data Rates</b>	106, 212, 424, 848 kbps
<b>Operating temperature</b>	0°C to 70°C
<b>Storage temperature</b>	-20°C to 125°C
<b>Humidity</b>	10-90% operating 5-95% non-operating
<b>Supply Operating voltage</b>	2.97 to 5.5 Volts
<b>I/O Voltage</b>	1.8V or 3.3V

#### Power Consumption

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

<b>Mode</b>	Power Consumption, Typical
<b>Polling</b>	7.3 mA
<b>Detected Test Tag Type 1</b>	Total 283.8 mA Net Module 236.8 mA
<b>Detected Test Tag Type 2</b>	Total 288.8 mA Net Module 241.8 mA
<b>Detected Test Tag Type 3</b>	Total 287.7 mA Net Module 240.7 mA

### Technical Specifications

<b>Detected Test Tag Type 4</b>	Total 282.3 mA Net Module 235.3 mA
<b>Antenna</b>	Antenna connector, 0.5mm pitch, 7 connector FPC. Antenna matching is external to module.

### POWER

<b>AC Adapter 65 Watt nPFC USB type C™</b>	<b>Dimensions</b>	74x74x28.5mm	
	<b>Weight</b>	unit: 245g +/- 10g	
<b>Output</b>	<b>Input</b>	<b>Input Efficiency</b> 81.5% min at 115 Vac/ 230Vac @ 5V/3A 86.7% min at 115 Vac/ 230Vac @ 9V/3A 88% min at 115 Vac/ 230Vac @ 10V/5A 88% min at 115 Vac/ 230Vac @ 12V/5A 89% min at 115 Vac/ 230Vac @ 15V/4.33A 89% min at 115 Vac/ 230Vac @ 20V/3.25A	
		<b>Input frequency range</b> 47 ~ 63 Hz	
		<b>Input AC current</b> 1.7 A at 90 VAC and maximum load	
		<b>Output power</b> 65W	
		<b>DC output</b> 5V/9V/10V/12V/15V/20V	
		<b>Hold-up time</b> 5ms at 115 Vac input	
		<b>Output current limit</b> <8.0A	
	<b>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>		5% to 95%	
<b>EMI and Safety Certifications</b>	<b>Storage Humidity</b>	5% 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 100,000 hours at 25°C ambient condition.		

### Technical Specifications

<b>AC Adapter 45 Watt nPFC USB type C™</b>	<b>Dimensions</b>	62.0x62.0x28.5mm	
	<b>Weight</b>	unit: 220g +/- 10g	
<b>Output</b>	<b>Input</b>	<b>Input Efficiency</b> Average Efficiency of 25%, 50%, 75%, 100% load condition with 115Vac/230Vac Spec:5V : 81.5%9V : 86.7%10V : 87.5%12V : 87.8%15V : 87.8%20V : 87.8%	
		<b>Input frequency range</b> 47 ~ 63Hz	
		<b>Input AC current</b> Max. 1.4 A at 90 Vac	
		<b>Output power</b> 5V/15W 9V/27W 10V/37.5W 12V/45W 15V/45W 20V/45W	
		<b>DC output</b> 5V / 9V / 10V /12V / 15V / 20V	
		<b>Hold-up time</b> 5ms at 115 Vac input	
		<b>Output current limit</b> <5.0A	
	<b>Connector</b>	USB Type-C™	
	<b>Environmental Design</b>	<b>Operating temperature</b>	32°F to 95°F (0°to 35°C)
		<b>Non-operating (storage) temperature</b>	-4oF to 185oF (-20oto 85oC)
<b>Altitude</b>		0 to 16,400 ft (0 to 5000m)	
<b>Humidity</b>		20% to 95%	
<b>Storage Humidity</b>		10% to 95%	
<b>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>HP 45W Smart AC adapter</b>	<b>Dimensions</b>	3.74 x 1.57 x 1.04 in (9.5 x 4.0 x 2.65 cm)		
	<b>Weight</b>	0.386 lb (175g) max		
	<b>Input</b>	<b>Input Efficiency</b>	87.74% at 115Vac and 88.4% at 230Vac	
		<b>Input frequency range</b>	47 ~ 63Hz	
		<b>Input AC current</b>	Max. 1.4 A at 90 Vac	
	<b>Output</b>	<b>Output power</b>	45W	
		<b>DC output</b>	19.5V	
		<b>Hold-up time</b>	5 msec at 115 VAC input	
		<b>Output current limit</b>	<8.0A	
		<b>Connector</b>	4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords	
	<b>Environmental Design</b>	<b>Operating temperature</b>	32° to 95° F (0° to 35° C)	
		<b>Non-operating (storage) temperature</b>	-4° 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>Safety Certifications</b>	CE Mark - full compliance with LVD and EMC directives Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. MTBF - over 200,000 hours at 25°C ambient condition.			
<b>HP 65W Smart AC adapter</b>	<b>Dimensions</b>	107.0x47.0x30.0mm		
	<b>Weight</b>	unit: 250g +/- 10g		
	<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>	65W	
		<b>DC output</b>	19.5V	
		<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>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>HP 65W EM Smart AC adapter</b>	<b>Dimensions</b>	102x55x30mm	
	<b>Weight</b>	270g +/- 10g	
	<b>Input</b>	<b>Input Efficiency</b>	87% min at 115V/230V
		<b>Input frequency range</b>	47 to 63 Hz
	<b>Output</b>	<b>Input AC current</b>	1.7 A at 90 VAC and maximum load
		<b>DC output</b>	65W(19.5V/3.33A)
		<b>Hold-up time</b>	5 msec at 115 VAC input
		<b>Output current limit</b>	<11A, Over voltage protection- 29V max automatic shutdown
	<b>Connector</b>	4.5mm Barrel Type, 3 pin/grounded, mates with interchangeable cords	
	<b>Environmental Design</b>	<b>Operating temperature</b>	0° to 35° C
		<b>Non-operating (storage) temperature</b>	-20° to 85° C
		<b>Altitude</b>	0 to 5,000 m
		<b>Humidity</b>	0% to 95%
<b>Storage Humidity</b>		0% to 95%	
<b>Safety Certifications</b>	CE Mark - full compliance with LVD and EMC directives Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. MTBF - over 200,000 hours at 25°C ambient condition.		
<b>Battery TT 3 Cell WHr 56 Long Life -PL</b>	<b>Dimensions (H x W x L)</b>	L 281.7mm x W 79.65mm x H 7.15mm	
	<b>Weight</b>	219 +/- 10g	
	<b>Cells/Type</b>	3cell Lithium-Ion Polymer cell / P615383A1	
	<b>Energy</b>	<b>Voltage</b>	11.55V/
		<b>Amp-hour capacity</b>	4.610Ah/ 4.850Ah
		<b>Watt-hour capacity</b>	506 Wh
	<b>Temperature</b>	<b>Operating (Charging)</b>	0° to 50° C
		<b>Operating (Discharging)</b>	-10° to 60° C
	<b>Fuel Gauge LED</b>	N/A	
	<b>Warranty</b>	3 years	
<b>Optional Travel Battery Available</b>	No		

### COUNTRY OF ORIGIN

China



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

Type	Description	Part #
<b>Cases</b>	HP Exec Midnight 15.6" Backpack	1KM16AA
	HP Slim Top Load	F3W15AA
<b>Docking</b>	HP Thunderbolt Dock 120W G2 (Available in May 2018)	2UK37AA
	HP USB-C Universal Dock	1MK33AA
	HP USB-C Mini Dock	1PM64AA
	HP UltraSlim Docking Station	D9Y32AA
	HP USB-C Dock G4	TBD
<b>Input/Output</b>	HP Slim Wireless Keyboard and Mouse	T6L04AA
	HP Slim USB Keyboard and Mouse	T6T83AA
	HP Wireless (Link-5) Keyboard	T6U20AA
	HP Wireless Premium Mouse	1JR31AA
	HP USB Premium Mouse	1JR32AA
	HP Comfort Grip Wireless Mouse	H2L63AA
	HP Ultra Mobile Wireless Mouse	H6F25AA
	HP Slim Bluetooth Mouse	F3J92AA
	HP Elite Presenter Mouse	2CE30AA
	HP USB-C to USB-A Hub	Z6A00AA
	HP USB-C to DP	N9K78AA
	HP USB-C to VGA	N9K76AA
	HP HDMI to DVI	F5A28AA
	HP HDMI to VGA	H4F02AA
HP USB-C to HDMI 2.0	1WC36AA	
<b>Power</b>	HP 45W USB-C Power Adapter	1HE07AA
	HP 65W USB-C Power Adapter	1HE08AA
	HP Notebook Power Bank	N9F71AA
	HP USB-C Notebook Power Bank	1TZ86AA
	HP 65W Slim AC Adapter	H6Y82AA
	HP 90W Slim AC Adapter	H6Y83AA
	HP 90W Slim Combo AC Adapter w/ USB	H6Y84AA
<b>Storage</b>	HP USB External DVDRW Drive	F2B56AA
	HP 256GB M2 PCIe NVME SSD TLC (2280)	1FU87AA
	HP 512GB M2 PCIe NVME SSD TLC (2280)	1FU88AA
<b>Memory</b>	HP 4GB 2400MHz DDR4 Memory	Z4Y84AA
	HP 8GB 2400MHz DDR4 Memory	Z4Y85AA
	HP 16GB 2400MHz DDR4 Memory	Z4Y86AA

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

<b>Security</b>	HP Docking Station Cable Lock	AU656AA
	HP Keyed Cable Lock	T0Y14AA
	HP Keyed Cable Lock 10mm	T1A62AA
	HP Dual Head Keyed Cable Lock	T1A64AA
<b>UCC</b>	HP USB Collaboration Keyboard	Z9N38AA
	HP Wireless Collaboration Keyboard	Z9N39AA
	HP UC Wireless Mono Headset	W3K08AA
	HP UC Wireless Duo Headset	W3K09AA
	HP UC Speaker Phone	K7V16AA
<b>Displays</b>	HP EliteDisplay E273m 27-inch Monitor	1FH51AA
	HP EliteDisplay E273q 27-inch Monitor	1FH52AA
	HP EliteDisplay E243 23.8-inch Monitor	1FH47AA

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### Summary of Changes

Date of change:	Version History:		Description of change:
	V1 to V2		

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