

### Overview

#### HP Pro x360 435 G10 Notebook PC



#### Left

- |                                    |   |
|------------------------------------|---|
| 1. Internal Microphones (2)        | 7. World-facing 5MP Camera (Optional)   |
| 2. Webcam LED                      | 8. World-facing Camera LED (Optional)   |
| 3. HP Privacy Camera               | 9. Vents  |
| 4. Webcam and IR Camera (Optional) | 10. SuperSpeed USB Type-A 5 Gbps signaling rate charging Port (USB 3.2 Gen 1) |
| 5. IR Camera LED (Optional)        | 11. Nano Security Lock Slot (Lock Sold Separately)                            |
| 6. Clickpad                        |   |

### Overview



#### Right

- |  |   |
|--|---|
| 1. Speakers  | 6. HDMI 2.1 Ports (Cable not included)      |
| 2. Power Button  | 7. Audio Combo Jack                         |
| 3. Power Connector   | 8. MicroSD Card Reader                      |
| 4. SuperSpeed USB Type-C® 10Gbps signaling rate (USB Power Delivery, DisplayPort™ 1.4) | 9. Touch Fingerprint Sensor (Select Models) |
| 5. SuperSpeed USB Type-A 5 Gbps signaling rate Port (USB 3.2 Gen 1)                    |   |

### Overview



### Overview

#### At a Glance

- Preinstalled with Windows 11 versions or FreeDOS
- A stylish and professional convertible adapts with versatile use modes from traditional laptop to tablet, stand and tent that enables to create, present and collaborate
- Sleek and durable anodized aluminum top cover and keyboard deck
- Choice of AMD Barcelo™ 7000 series mobile processors, R7, R5 and R3
- Display include your choice of 33.8 cm (13.3") diagonal IPS Wide Viewing Angle, FHD, touch screen with Corning® Gorilla® Glass 5
- Commercial-grade security features including HP Sure Start, HP Sure Sense, HP Client Security, HP Sure Click, Camera Privacy Shutter and optional HP Sure View
- Captures the world around with an optional world facing- camera in the keyboard
- Supports wireless LAN options for connectivity on the go including gigabit data rate Wi-Fi 6E
- Supports fast charging (50% in 30 minutes) with no impact on battery recharge cycles
- Passed MIL-STD 810H tests <sup>1</sup>
- Synchronized hinge allows the EliteBook to ProBook to open to 177° +/- 3° without lifting the keyboard and offers visibility from multiple angles.

1. 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 Pro x360 435 G10 Notebook PC

OPERATING SYSTEMS

- Preinstalled
- Windows 11 Pro <sup>1</sup>

Windows 11 Pro Education <sup>1</sup>

Windows 11 Home - HP recommends Windows 11 Pro for business <sup>1</sup>

Windows 11 Home Single Language - HP recommends Windows 11 Pro for business <sup>1</sup>

Windows 11 Pro (Windows 11 Enterprise or Windows 10 Enterprise available with a Volume Licensing Agreement) <sup>1</sup>

Windows 11 Pro (preinstalled with Windows 10 Pro Downgrade)<sup>1,2</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 is automatically updated and enabled. High speed internet and Microsoft account required. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com>.

2. This system is preinstalled with Windows 10 Pro software and also comes with a license for Windows 11 Pro software and provision for recovery software. You may only use one version of the Windows software at a time. Switching between versions will require you to uninstall one version and install the other version. You must back up all data (files, photos, etc.) before uninstalling and installing operating systems to avoid loss of your data.

PROCESSORS

Processor <sup>3,4,5</sup>	Cores	Threads	L3 Cache	Max Boost Frequency <sup>6</sup>	Base Frequency	Pro
AMD Ryzen™ 7 PRO 7730U	8	16	16MB	4.50GHz	2.00GHz	X
AMD Ryzen™ 5 PRO 7530U	6	12	16MB	4.50GHz	2.00GHz	X
AMD Ryzen™ 7 7730U	8	16	16MB	4.50GHz	2.00GHz	
AMD Ryzen™ 5 7530U	6	12	16MB	4.50GHz	2.00GHz	
AMD Ryzen™ 3 7330U	4	8	8MB	4.30GHz	2.30GHz	

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. AMD’s numbering is not a measurement of clock speed.

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

5. In accordance with Microsoft’s support policy, HP does not support the Windows 8 or Windows 7 operating system on products configured with Intel and AMD 7th generation and forward processors or provide any Windows 8 or Windows 7 drivers on <http://www.support.hp.com>.

6. Max Boost clock frequency performance varies depending on hardware, software and overall system configuration.



## Technical Specifications

### CHIPSET

Chipset is integrated with processor

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### GRAPHICS

#### Integrated

AMD Radeon™ Graphics<sup>7</sup>

#### Supports

Support HW decode, DX12, HDMI2.1, via HDMI up to 4K@60Hz

7. HD content required to view HD images.

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### DISPLAY

#### Touch

33.8 cm (13.3") diagonal FHD UWVA eDP 1.3+PSR Low Blue Light touch screen with Corning® Gorilla® Glass 5, IPS, Bright View, Narrow Bezel, micro edge, 1000 nits, 72% NTSC with HD + IR camera, HP Sure View Reflect integrated privacy screen (1920 x 1080) with HP Eye Ease<sup>7,8,9,10,11</sup>

33.8 cm (13.3") diagonal FHD UWVA eDP BrightView WLED slim touch screen with Corning® Gorilla® Glass 5, 250 nits, 45% NTSC with HD Webcam (1920 x 1080)<sup>7,8,9,11</sup>

33.8 cm (13.3") diagonal FHD UWVA eDP BrightView WLED slim touch screen with Corning® Gorilla® Glass 5, 250 nits, 45% NTSC with HD Webcam + IR camera (1920 x 1080)<sup>7,8,9,11</sup>

33.8 cm (13.3") diagonal FHD UWVA eDP+PSR BrightView WLED ultra slim touch screen with Corning® Gorilla® Glass 5, Low Power, 400 nits, 72% NTSC with HD Webcam + IR camera (1920 x 1080) with HP Eye Ease<sup>7,8,9,11</sup>

33.8 cm (13.3") diagonal FHD UWVA eDP+PSR BrightView WLED ultra slim touch screen with Corning® Gorilla® Glass 5, Low Power, 400 nits, 72% NTSC with HD Webcam (1920 x 1080) with HP Eye Ease<sup>7,8,9,11</sup>

#### Display Size (Diagonal)

13.3"

33.8 cm (13.3")

7. HD content required to view HD images.

8. Sold separately or as an optional feature.

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

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

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

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## Technical Specifications

### DOCKING (Sold Separately)

<b>Docking station model #1</b>	HP Thunderbolt 120W G4 Dock
<b>Docking station model #2</b>	HP Thunderbolt 280W G4 Dock
<b>Docking station model #3</b>	HP USB-C Dock G5
<b>Docking station model #4</b>	HP USB-C/A Universal Dock G2
<b>Docking station model #5</b>	HP USB-C G5 Essential Dock

[For additional aftermarket options and docking specs please see page 40.](#)

### STORAGE AND DRIVES

#### Primary Storage

2 TB PCIe® NVMe™ TLC 2280 Solid State Drive <sup>12</sup>  
1 TB PCIe® NVMe™ TLC 2280 Solid State Drive <sup>12</sup>  
512 GB PCIe® NVMe™ TLC Solid State Drive <sup>12</sup>  
256 GB PCIe® NVMe™ M.2 SSD <sup>12</sup>  
128 GB PCIe® NVMe™ M.2 SSD <sup>12</sup>

<sup>12</sup>. For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 10 and 11) is reserved for system recovery software.

### MEMORY

#### Maximum Memory

32 GB DDR4-3200 SDRAM <sup>13</sup>

#### Memory

32 GB DDR4-3200 MHz RAM (2 x 16 GB) <sup>13</sup>  
16 GB DDR4-3200 MHz RAM (1 x 16 GB) <sup>13</sup>  
16 GB DDR4-3200 MHz RAM (2 x 8 GB) <sup>13</sup>  
8 GB DDR4-3200 MHz RAM (1 x 8 GB) <sup>13</sup>  
8 GB DDR4-3200 MHz RAM (2 x 4 GB) <sup>13</sup>  
4 GB DDR4-3200 MHz RAM (1 x 4 GB) <sup>13</sup>

#### Memory Slots

2 SODIMM

Both slots are accessible/upgradeable by IT or self-maintainers only (CSR-B).

<sup>13</sup>. 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.

## Technical Specifications

### NETWORKING/COMMUNICATIONS

#### WLAN

Realtek RTL8852CE 802.11ax 2x2 Wi-Fi 6E + Bluetooth® 5.3 Wireless Card <sup>14</sup>

Mediatek RZ616 Wi-Fi 6E + Bluetooth® 5.3 Wireless Card <sup>14</sup>

Qualcomm® Fast Connect 6900 Wi-Fi 6E (2x2) and Bluetooth® 5.2 Wireless Card <sup>14</sup>

#### Miracast

Native Miracast Support <sup>15</sup>

14. Wi-Fi 6E requires a Wi-Fi 6E router, and Windows 11, to function in the 6GHz band. Availability of public wireless access points limited. Wi-Fi 6E is backwards compatible with prior 802.11 specs. And available in countries where Wi-Fi 6E is supported.

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

### AUDIO/MULTIMEDIA

#### Audio

Integrated microphone (Dual Array)

#### Camera

User-facing 720p HD camera <sup>7,8</sup>

User-facing 720p HD + IR camera for face authentication with Windows Hello <sup>7,8</sup>

World-facing 5MP auto-focus secondary camera <sup>7,8</sup>

7. HD content required to view HD images.

8. Sold separately or as an optional feature.

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

#### Keyboard

HP Premium Keyboard, spill resistant with DuraKeys and optional backlit <sup>16</sup>

#### 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 Programmable Key

Power Button



## Technical Specifications

16. Backlit keyboard is an optional feature.

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### SOFTWARE AND SECURITY

#### Preinstalled Software

##### Software

HP Quick Drop<sup>17</sup>  
HP PC Hardware Diagnostics Windows  
myHP  
HP Smart Support<sup>18</sup>  
HP Services Scan<sup>19</sup>  
HP Connection Optimizer  
HP Hotkey Support  
HP Support Assistant<sup>20</sup>  
HP Notifications  
HP Privacy Settings  
HP Power Manager  
Buy Microsoft Office (Sold separately)

#### Manageability Features

HP Connect<sup>21</sup>  
HP Image Assistant Gen5 (download)  
HP Manageability Integration Kit (download)<sup>22</sup>  
HP Client Management Script Library (download)  
HP Patch Assistant (download)<sup>23</sup>  
HP Driver Packs (download)  
HP Client Catalog (download)  
HP Cloud Recovery<sup>24</sup>

#### Security Management

HP Sure Click<sup>25</sup>  
HP Sure Sense<sup>26</sup>  
HP Sure Run<sup>27</sup>  
HP Sure Recover<sup>28</sup>  
HP Sure Start<sup>29</sup>  
HP Tamper Lock  
HP Sure Admin<sup>30</sup>

#### BIOS

HP BIOSphere Gen6<sup>31</sup>  
HP Secure Erase<sup>32</sup>  
Absolute Persistence Module<sup>33</sup>  
BIOS Update via Network  
HP Wake on WLAN  
Secured-Core PC Enable<sup>34</sup>  
TPM 2.0 Embedded Security Chip (Common Criteria EAL4+ Certified) (FIPS 140-2 Level 2 Certified)  
HP Fingerprint Sensor<sup>35</sup>

## Technical Specifications

**IPv6 Support**

Yes

**FirstNet Certified:**

Yes

**The BIOS on this notebook implements ISO/IEC 19678:2015 guidelines (formerly NIST 800-147).**

UEFI version: 2.7

Class: Class 3

17. HP Quick Drop requires Internet access and Windows 10 or higher PC preinstalled with HP QuickDrop app and either an Android device (phone or tablet) running Android 7 or higher with the Android HP QuickDrop app, and /or an iOS device (phone or tablet) running iOS 12 or higher with the iOS HP QuickDrop app.

18. HP Smart Support requires HP TechPulse to be installed. For more information about how to enable or to download HP Smart Support, please visit <http://www.hp.com/smart-support>. HP Services Scan is provided thru Windows Update and will check entitlement on each hardware device to determine if an HP TechPulse-enabled service has been purchased, and will download applicable software automatically. HP TechPulse is a telemetry and analytics platform that provides critical data around devices and applications and is not sold as a standalone service. HP TechPulse follows stringent GDPR privacy regulations and is ISO27001, ISO27701, ISO27017 and SOC2 Type2 certified for Information Security. Internet access with connection to TechPulse portal is required. For full system requirements or to disable this feature, please visit

<http://www.hpdaas.com/requirements>

19. HP Services Scan is provided with Windows Update on select products and will check entitlement on each hardware device to determine if an HP TechPulse-enabled service has been purchased, and will download applicable software automatically. HP TechPulse is a telemetry and analytics platform that provides critical data around devices and applications and is not sold as a standalone service. HP TechPulse follows stringent GDPR privacy regulations and is ISO27001, ISO27701, ISO27017 and SOC2 Type2 certified for Information Security. Internet access with connection to TechPulse portal is required. For full system requirements or to disable this feature, please visit <http://www.hpdaas.com/requirements>. Not applicable in China.

20. HP Support Assistance requires Windows and Internet Access

21. HP Connect is available from the Azure Market Place for HP Pro, Elite, Z and Point-of-Sale PCs managed with Microsoft Endpoint Manager. Subscription to Microsoft Endpoint Manager required and sold separately. Network connection required.

22. HP Manageability Integration Kit can be downloaded from <http://www8.hp.com/us/en/ads/clientmanagement/overview.html>.

23. HP Patch Assistant available on select HP PCs with the HP Manageability Kit that are managed through Microsoft System Center Configuration Manager. HP Manageability Integration Kit can be downloaded from <http://www8.hp.com/us/en/ads/clientmanagement/overview.html>.

24. HP Cloud Recovery is available for Z by HP, HP Elite and Pro desktops and laptops PCs with Intel® or AMD processors and requires an open, wired network connection. **NOTE:** You must back up important files, data, photos, videos, etc. before use to avoid loss of data. Details please refer to: <https://support.hp.com/us-en/document/c05115630>.

25. HP Sure Click requires Windows 10 Pro or higher or Enterprise. See [https://bit.ly/2PrLT6A\\_SureClick](https://bit.ly/2PrLT6A_SureClick) for complete details.

26. HP Sure Sense is available on select HP PCs with Windows 10 Pro, Windows 10 Enterprise, Windows 11 Pro, or Windows 11 Enterprise OS.

27. HP Sure Run Gen5 is available on select HP PCs and requires Windows 10 and higher.

28. HP Sure Recover Gen5 with Embedded Reimaging is an optional feature which requires Windows 10 and higher must be configured at purchase. You must back up important files, data, photos, videos, etc. before use to avoid loss of data. Network based recovery using Wi-Fi is only available on PCs with Intel Wi-Fi Module

29. HP Sure Start Gen7 is available on select HP PCs and requires Windows 10 and higher

## Technical Specifications

30. HP Sure Admin requires Windows 10 or higher, 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
31. HP BIOSphere Gen6 features may vary depending on the platform and configuration.
32. 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™.
33. 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/>
34. Secured-Core PC Enable requires an Intel® vPro®, AMD Ryzen™ Pro processor or Qualcomm® processor with SD850 or higher and requires 8 GB or more system memory. Secured-core PC is enabled from the factory.
35. HP Fingerprint sensor is an optional feature that must be configured at purchase.

## POWER

### Power Supply

- HP Smart 65 W USB Type-C® adapter <sup>36</sup>
- HP Smart 65 W EM External AC power adapter <sup>36</sup>
- HP Smart 65 W External AC power adapter <sup>36</sup>
- HP Smart 45 W USB Type-C™ adapter <sup>36</sup>
- HP Smart 45 W External AC power adapter <sup>36</sup>

### Battery

- HP Long Life 3-cell, 42 Wh Li-ion polymer<sup>37,38</sup>
- Supports HP Fast Charge <sup>39</sup>

### Power Cord

- 3-wire plug - 1m <sup>36</sup>
- 2-wire plug - 1m <sup>36</sup>

### Battery Life

- Up to 15 hours and 15 minutes with 42whr battery (HP Long Life 3-Cell, 42 Whr Polymer, UMA graphic, AMD R7 Pro, display set to 200 nits, 2\*4G memory, 256 GB SSD) <sup>40</sup>

### Battery Weight

- HP Long Life 3-cell - 42 Wh Polymer - .42 lb
- HP Long Life 3-cell - 42 Wh Polymer - 190 g

36. Availability may vary by country.
37. Battery is internal and not replaceable by customer. Serviceable by warranty.
38. 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.
39. 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.

## Technical Specifications

40. 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.

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## WEIGHTS & DIMENSIONS

### Product Weight

Starting at 3.19 lb <sup>41</sup>

Starting at 1.45 kg <sup>41</sup>

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

12.15 x 8.78 x 0.71 in

30.85 x 22.29 x 1.79 cm

### Packaging Dimensions (W x D x H) <sup>42</sup>

12"-15" boxes (305mm height): 1200mm x 1000mm x 1080mm

16"-17" boxes (345mm height): 1200mm x 1000mm x 1200mm

41. Weight will vary by configuration. Does not include power adapter.

42. Product packaging size varies based on options chosen. Please contact your HP representative for your packaging size details.

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## PORTS/SLOTS

1 AC Power 1 HDMI <sup>43</sup>

1 Headphone/microphone combo jack

2 SODIMM

2 SuperSpeed USB Type-A 5 Gbps signaling rate charging Port (USB 3.2 Gen 1)

1 SuperSpeed USB Type-C® 10Gbps signaling rate (USB Power Delivery, DisplayPort™ 1.4)

### Expansion Slots

1 micro SD

43. HDMI cable sold separately

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### Technical Specifications

#### 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. 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>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 [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.

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## Technical Specifications

## SYSTEM UNIT

## Stand-Alone Power Requirements

## (AC Power)

Nominal Operating Voltage	19V
Average Operating Power	
Integrated graphics	AMD
Discrete Graphics	N/A
Max Operating Power	UMA<45W

## Temperature

Operating	32° to 95° F (0° to 35° C)
Non-operating	-4° to 140° F (-20° to 60° C)

## Relative Humidity

Operating	10% to 90%, non-condensing
Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature

## Shock

Operating	40 G, 2 ms, half-sine
Non-operating	200 G, 2 ms, half-sine

## Random Vibration

Operating	0.75 grams
Non-operating	1.50 grams

## Altitude (unpressurized)

Operating	-50 to 10,000 ft (-15.24 to 3,048 m)
Non-operating	-50 to 40,000 ft (-15.24 to 12,192 m)

## Planned Industry Standard

## Certifications

Regulatory Model Number	HSN-I54C
CSA/UL 62368-1	Yes
CSA	Yes
ENERGY STAR®	Certified <sup>45</sup>
EPEAT®	EPEAT® Gold in the United States <sup>46</sup>
FCC/ICES/CISPR/VCCI	Yes
CE MARKING	Yes
GS Mark	No
Related commodity should comply with ISO 9241 Standards.	
China CCC/SRRC	Yes
Taiwan BSMI/NCC	Yes
Korea KCC/KC/KES	Yes
Ukraine NSoC/TEC	Yes
EAEU Compliance	Yes
Saudi Arabian Compliance	Yes
TCO	Yes
WW RoHS	Yes
Low Blue Light	Yes

Technical Specifications

45. Configurations of the HP Pro 435 x360 G10 Notebook PC that are ENERGY STAR® qualified are identified HP Pro 435 x360 G10 Notebook PC ENERGY STAR on HP websites and on <http://www.energystar.gov>.  
46. Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. EPEAT® status varies by country. Visit <http://www.epeat.net> for more information.

DISPLAYS

1. Actual brightness will be lower with touchscreen or HP Sure View.  
**NOTE:** All specifications represent the typical specifications provided by HP's component manufacturers; actual performance may vary either higher or lower.

<b>13.3 in FHD (1920 x 1080) UWVA Low Blue Light sRGB NB2Y 1000 eDP 1.3+PSR 100 PrivacyG4 Plus flat LCD Panel</b>	<b>Outline Dimensions (W x H x D)</b>	299.060 x 185.550 (max)
	<b>Active Area</b>	293.760 x 165.240 (typ)
	<b>Weight</b>	210 (max)
	<b>Diagonal Size</b>	13.3 (inch)
	<b>Surface Treatment</b>	Bright View glass
	<b>Touch Enabled</b>	Yes <sup>1</sup>
	<b>Contrast Ratio</b>	1500:1 (typ)
	<b>Refresh Rate</b>	60 Hz
	<b>Brightness</b>	1000 nits <sup>1</sup>
	<b>Pixel Resolution - Format</b>	1920 x1080 (FHD)
	<b>Backlight</b>	WLED
	<b>Pixel Resolution</b>	RGB
	<b>Color Gamut Coverage</b>	sRGB 100%
	<b>Color Depth</b>	8
	<b>Viewing Angle</b>	UWVA 85/85/85/85
	<b>Low Blue Light</b>	Yes
	<b>Power Consumption (W, EBL@ 150nits max/ 200nits max)</b>	N/A

<b>Panel LCD 13.3 inch FHD (1920x1080) WLED UWVA 45percent cg 250nits eDP 1.2 w/o PSR slim NWBZ</b>	<b>Outline Dimensions (W x H)</b>	300.56 x 187.77 mm (max) (w/ PCB & w/o bracket)
	<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>Surface Treatment</b>	Bright View glass
	<b>Touch Enabled</b>	Yes <sup>1</sup>
	<b>Contrast Ratio</b>	600:1 (typ.)
	<b>Refresh Rate</b>	60 Hz
	<b>Brightness</b>	250 nits <sup>1</sup>
	<b>Pixel Resolution - Format</b>	1920 x 1080 (FHD)
	<b>Backlight</b>	LED
	<b>Pixel Resolution</b>	RGB Stripe





Technical Specifications

Color Gamut Coverage	45%
Color Depth	6
Viewing Angle	UWVA 85/85/85/85
Low Blue Light	No
Power Consumption (W, EBL@ 150nits max/ 200nits max)	2.40 (max)/ NA

Panel LCD 13.3 inch FHD (1920x1080) WLED UWVA 72percent cg 400nits eDP 1.4+PSR2 ultraslim LP NWBZ

Outline Dimensions (W x H)	299.06 x 185.54 mm (max)
Active Area	293.76 x 165.24 mm (typ.)
Weight	170 g (max)
Diagonal Size	13.3 (inch)
Surface Treatment	Bright View glass
Touch Enabled	Yes <sup>1</sup>
Contrast Ratio	1200:1 (typ.)
Refresh Rate	60 Hz
Brightness	400 nits <sup>1</sup>
Pixel Resolution - Format	1920 x 1080 (FHD)
Backlight	LED
Pixel Resolution	RGB Stripe
Color Gamut Coverage	NTSC 72%
Color Depth	8
Viewing Angle	UWVA 85/85/85/85
Low Blue Light	No
Power Consumption (W, EBL@ 150nits max/ 200nits max)	1.09 (max)/ 1.30 (max)



## Technical Specifications

## STORAGE AND DRIVES

For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 10 and 11) is reserved for system recovery software.

<b>SSD 128GB 2230 PCIe NVMe Value</b>	<b>Form Factor</b>	M.2 2230
	<b>Capacity</b>	128 GB
	<b>NAND Type</b>	Value
	<b>Interface</b>	PCIe NVMe Gen4X4
	<b>Minimum Sequential Read</b>	2000 MB/s $\pm$ 10%
	<b>Minimum Sequential Write</b>	600 MB/s $\pm$ 10%
	<b>Logical Blocks</b>	250,069,680
	<b>Features</b>	Pyrite 2.0; TRIM; L1.2

<b>SSD 256GB 2280 PCIe NVMe Value</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	256 GB
	<b>NAND Type</b>	Value
	<b>Interface</b>	PCIe NVMe Gen3X4 or Gen4X4
	<b>Minimum Sequential Read</b>	2000 MB/s $\pm$ 10%
	<b>Minimum Sequential Write</b>	900 MB/s $\pm$ 10%
	<b>Logical Blocks</b>	500,118,192
	<b>Features</b>	Pyrite 2.0; TRIM; L1.2

<b>SSD 512GB 2280 PCIe-4x4 NVMe Three Layer Cell</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	512GB
	<b>NAND Type</b>	TLC
	<b>Interface</b>	PCIe NVMe Gen4X4
	<b>Minimum Sequential Read</b>	6400 MB/s $\pm$ 10%
	<b>Minimum Sequential Write</b>	3500 MB/s $\pm$ 10%
	<b>Logical Blocks</b>	1,000,215,215
	<b>Features</b>	Pyrite 2.0; TRIM; L1.2

<b>1TB 2280 PCIe-4x4 NVMe Three Layer Cell</b>	<b>Form Factor</b>	M.2 2280
	<b>Capacity</b>	1TB
	<b>NAND Type</b>	TLC
	<b>Interface</b>	0.02 lb (10 g)
	<b>Minimum Sequential Read</b>	PCIe NVMe Gen4X4
	<b>Minimum Sequential Write</b>	6400 MB/s $\pm$ 10%
	<b>Logical Blocks</b>	5000 MB/s $\pm$ 10%
	<b>Operating Temperature</b>	2,000,409,264
	<b>Form Factor</b>	Pyrite 2.0; TRIM; L1.2

## Technical Specifications

2TB 2280 PCIe-4x4 NVMe Three Layer Cell	Form Factor	M.2 2280
	Capacity	2TB
	NAND Type	TLC
	Interface	PCIe NVMe Gen4X4
	Minimum Sequential Read	6400 MB/s ± 10%
	Minimum Sequential Write	5000 MB/s ± 10%
	Logical Blocks	4,000,797,360
	Features	Pyrite 2.0; TRIM; L1.2

## Technical Specifications

## NETWORKING/COMMUNICATIONS

<b>Realtek RTL8852CE 802.11ax 2x2 Wi-Fi 6E + Bluetooth® 5.3 Wireless Card (802.11ax 2x2, supporting gigabit data rate) <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
	<b>Interoperability</b>	Wi-Fi certified
	<b>Frequency Band</b>	• 802.11b/g/n/ax 2.402 – 2.482 GHz • 802.11a/n/ac/ax 5.15 – 5.25 GHz 5.25 – 5.35 GHz 5.47 – 5.725 GHz 5.825 – 5.850 GHz 5.955 – 6.415 GHz 6.435 – 6.515 GHz 6.535 – 6.875 GHz 6.895 – 7.115 GHz
	<b>Data Rates</b>	• 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) • 802.11ac : MCS0 ~ MCS9, (20MHz, 40MHz, ,80MHz & 160MHz) • 802.11ax : MCS0 ~ MCS11, (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>2</sup></b>	• IEEE and WiFi certified 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 (personal) certification • IEEE 802.11i • WAPI • EAP
	<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>3</sup></b>	• 802.11b : +17dBm minimum • 802.11g : +16dBm minimum • 802.11a : +17dBm minimum

Technical Specifications

	<ul style="list-style-type: none"><li>• 802.11n HT20(2.4GHz) : +14dBm minimum</li><li>• 802.11n HT40(2.4GHz) : +13dBm minimum</li><li>• 802.11n HT20(5GHz) : +14dBm minimum</li><li>• 802.11n HT40(5GHz) : +13dBm minimum</li><li>• 802.11ac VHT80(5GHz) : +10dBm minimum</li><li>• 802.11ac VHT160(5GHz) : +10dBm minimum</li><li>• 802.11ax HE40(2.4GHz) : +12dBm minimum</li><li>• 802.11ax HE80(5GHz) : +10dBm minimum</li><li>• 802.11ax HE160(5GHz) : +10dBm minimum</li><li>• 802.11ax HE80(6GHz) : +10dBm minimum</li><li>• 802.11ax HE160(6GHz) : +10dBm minimum</li></ul>	
Power Consumption	<ul style="list-style-type: none"><li>• Transmit mode :2.5 W</li><li>• Receive mode :2 W</li><li>• Idle mode (PSP) 180 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>	
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode	
Receiver Sensitivity <sup>4</sup>	<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(VHT80) : -84dBm maximum</li><li>• 802.11ac, MCS9(VHT80) : -59dBm maximum</li><li>• 802.11ac, MCS9(VHT160) : -58.5dBm maximum</li><li>• 802.11ax, MCS11(HE40): -57dBm maximum</li><li>• 802.11ax, MCS11(HE80): -54dBm maximum</li><li>• 802.11ax, MCS11(HE160): -53.5dBm maximum</li></ul>	
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5/6 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications	
Form Factor	PCI-Express M.2 MiniCard	
Dimensions	<ul style="list-style-type: none"><li>1. Type 2230 : 2.3 x 22.0 x 30.0 mm</li><li>2. Type 1216: 1.67 x 12.0 x 16.0 mm</li></ul>	
Weight	<ul style="list-style-type: none"><li>1. Type 2230 : 2.8g</li><li>2. Type 126: 1.3g</li></ul>	
Operating Voltage	3.3v +/- 9%	
Temperature	Operating	14° to 158° F (–10° to 70° C)
	Non-operating	–40° to 176° F (–40° to 80° C)
Humidity	Operating	10% to 60% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
Altitude	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)



## Technical Specifications

LED Activity N/A

**HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0/5.1/5.2/5.3 Wireless Technology**

<b>Bluetooth Specification</b>	4.0/4.1/4.2/5.0/5.1/5.2/5.3 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 + 4 dBm for BR and EDR.
<b>Power Consumption</b>	Peak (Tx): 330 mW 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 & 15.407
<b>Power Management Certifications</b>	ETS 300 328 Low Voltage Directive 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) BT5.2 ESR9/10 Compliance LE Advertisement Extensions Channel Selection Algo Limited High Duty Cycle Non-Connectable Advertising

Technical Specifications

- 2Mbps LE
- LE Long Range
- Windows BT profiles support
- BT5.3
- Periodic Advertisement interval
- Encryption key size control enhancements

1. Wi-Fi 6E requires a Wi-Fi 6E router, sold separately, to function in the 6GHz band. Availability of public wireless access points limited. Wi-Fi 6E is backwards compatible with prior 802.11 specs. And available in countries where Wi-Fi 6E is supported. Wi-Fi 6E 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.
2. Check latest software/driver release for updates on supported security features.
3. 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.
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).

Mediatek RZ616 Wi-Fi 6E Wireless LAN Standards  
+ Bluetooth® 5.3 Wireless  
Card (802.11ax 2x2,  
supporting gigabit data  
rate)<sup>1</sup>

- 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 802.11j
- IEEE 802.11k
- IEEE 802.11mc
- IEEE 802.11r
- IEEE 802.11v
- IEEE 802.11w

Interoperability  
Frequency Band

- Wi-Fi certified
- 802.11b/g/n/ax  
2.402 – 2.482 GHz
- 802.11a/n/ac/ax  
5.15 – 5.25 GHz  
5.25 – 5.35 GHz  
5.47 – 5.725 GHz  
5.825 – 5.850 GHz  
5.925 – 7.125 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, (20MHz, 40MHz, ,80MHz & 160MHz)





## Technical Specifications

<b>Modulation</b>	<ul style="list-style-type: none"> <li>• 802.11ax : MCS0 ~ MCS11, (20MHz, 40MHz, ,80MHz &amp; 160MHz)</li> </ul> <p>Direct Sequence Spread Spectrum OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM</p>
<b>Security<sup>2</sup></b>	<ul style="list-style-type: none"> <li>• IEEE and WiFi certified 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>• WPA3 (personal) certification</li> <li>• IEEE 802.11i</li> <li>• WAPI</li> </ul>
<b>Network Architecture Models</b>	<p>Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)</p>
<b>Roaming</b>	IEEE 802.11 compliant roaming between access points
<b>Output Power<sup>3</sup></b>	<p>2.4GHz (MIMO, typical):</p> <ul style="list-style-type: none"> <li>• 802.11b : +18dBm</li> <li>• 802.11g : +16.5dBm</li> <li>• 802.11n/ac/ax (HT20/VHT20/HE20) : +16dBm</li> <li>• 802.11n/ac/ax (HT40/VHT40/HE40) : +12.5dBm</li> </ul> <p>5GHz (MIMO, typical):</p> <ul style="list-style-type: none"> <li>• 802.11a : +13dBm</li> <li>• 802.11n/ac/ax (HT20/VHT20/HE20) : +13.5dBm</li> <li>• 802.11n/ac/ax (HT40/VHT40/HE40) : +12.5dBm</li> <li>• 802.11ac/ax (VHT80/HE80) : +11.5dBm</li> <li>• 802.11ax HE160 : +11.5dBm</li> </ul> <p>6GHz LPI mode (MIMO, typical)</p> <ul style="list-style-type: none"> <li>• 802.11a : 0dBm</li> <li>• 802.11ax HE20 : +1dBm</li> <li>• 802.11ax HE40 : +4dBm</li> <li>• 802.11ax HE80 : +7dBm</li> <li>• 802.11ax HE160 : +7.5dBm</li> </ul>
<b>Power Consumption</b>	<ul style="list-style-type: none"> <li>• Transmit mode :2.5 W</li> <li>• Receive mode :2 W</li> <li>• Idle mode (PSP) 180 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>	<p>ACPI and PCI Express compliant power management 802.11 compliant power saving mode</p>
<b>Receiver Sensitivity<sup>4</sup></b>	<p>2.4GHz (SISO):</p> <ul style="list-style-type: none"> <li>• 802.11b, 11Mbps : -82dBm maximum</li> <li>• 802.11g, 54Mbps : -71dBm maximum</li> <li>• 802.11n, MCS7 : -64dBm maximum</li> <li>• 802.11ac, MCS9 : -52dBm maximum</li> <li>• 802.11ax, MCS11(HT40): -49dBm maximum</li> </ul> <p>5GHz (SISO):</p>

Technical Specifications

	<ul style="list-style-type: none"><li>• 802.11a, 54Mbps : -71dBm maximum</li><li>• 802.11n, MCS07 : -64dBm maximum</li><li>• 802.11ac, MCS9 : -52dBm maximum</li><li>• 802.11ax, MCS11(HE80/HE160): -46dBm maximum</li></ul> 6GHz (SISO): <ul style="list-style-type: none"><li>• 802.11a, 54Mbps : -71dBm maximum</li><li>• 802.11n, MCS7 : -64dBm maximum</li><li>• 802.11ac, MCS9 : -52dBm maximum</li><li>• 802.11ax, MCS11(HE160): -46dBm maximum</li></ul>
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5/6 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications
Form Factor	PCI-Express M.2 MiniCard
Dimensions	1. Type 2230 : 2.3 x 22.0 x 30.0 mm 2. Type 1216: 1.67 x 12.0 x 16.0 mm
Weight	1. Type 2230 : 2.8g 2. Type 126: 1.3g
Operating Voltage	3.3v +/- 9%
Temperature	<b>Operating</b> 14° to 158° F (–10° to 70° C) <b>Non-operating</b> –40° to 176° F (–40° to 80° C)
Humidity	<b>Operating</b> 10% to 60% (non-condensing) <b>Non-operating</b> 5% to 95% (non-condensing)
Altitude	<b>Operating</b> 0 to 10,000 ft (3,048 m) <b>Non-operating</b> 0 to 50,000 ft (15,240 m)
LED Activity	N/A

HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0/5.1/5.2/5.3Wireless Technology

Bluetooth Specification	4.0/4.1/4.2/5.0/5.1/5.2/5.3 Compliant
Frequency Band	2402 to 2480 MHz
Number of Available Channels	Legacy : 0~79 (1 MHz/CH) BLE : 0~39 (2 MHz/CH)
Signaling Data Rate	Legacy : 3 Mbps data rate; throughput up to 2.17 Mbps BLE : 1 Mbps data rate; throughput up to 0.2 Mbps Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)
Transmit Power	The Bluetooth component shall operate as a Class 1.5 Bluetooth device with a maximum transmit power of + 14 dBm and 10 dBm for BR and EDR, respectively.
Power Consumption	Peak (Tx): 330 mW Peak (Rx): 230 mW Selective Suspend: 17 mW
Bluetooth Software	Microsoft Windows Bluetooth Software
Supported Link Topology	

## Technical Specifications

<b>Power Management</b>	Microsoft Windows ACPI, and USB Bus Support
<b>Certifications</b>	FCC (47 CFR) Part 15C, Section 15.247 & 15.407
<b>Power Management</b>	ETS 300 328
<b>Certifications</b>	Low Voltage Directive CE Mark
<b>Bluetooth Software 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) BT5.2 ESR9/10 Compliance LE Advertisement Extensions Channel Selection Algo Limited High Duty Cycle Non-Connectable Advertising 2Mbps LE LE Long Range Windows BT profiles support BT5.3 Periodic Advertisement interval Encryption key size control enhancements

1. Wi-Fi 6E requires a Wi-Fi 6E router, sold separately, to function in the 6GHz band. Availability of public wireless access points limited. Wi-Fi 6E is backwards compatible with prior 802.11 specs. And available in countries where Wi-Fi 6E is supported. Wi-Fi 6E 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.
2. Check latest software/driver release for updates on supported security features.
3. 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.
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>Qualcomm® Fast Connect 6900 Wi-Fi 6E + Bluetooth® 5.2 Wireless Card (802.11ax 2x2, AMD AIM-T AME, supporting gigabit file transfer speeds)</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 802.11u IEEE 802.11v IEEE 802.11w
	<b>Interoperability</b>	Wi-Fi certified
	<b>Frequency Band</b>	• 802.11b/g/n/ax 2.402 – 2.482 GHz • 802.11a/n/ac/ax 5.15 – 5.25 GHz 5.25 – 5.35 GHz 5.47 – 5.725 GHz 5.825 – 5.850 GHz 5.925 – 7.125 GHz
	<b>Data Rates</b>	• 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11a: 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, 4096QAM
	<b>Security<sup>3</sup></b>	• AES-CCMP: 128 bit in hardware • 802.1x authentication • WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification WPA3 (personal/enterprise) certification • IEEE 802.11i
	<b>Network Architecture Models</b>	Wi-Fi Direct in Win10 for peer-to-peer connection. Infrastructure (Access Point Required)
	<b>Roaming</b>	IEEE 802.11 compliant roaming between access points
	<b>Output Power<sup>2</sup></b>	2.4GHz (MIMO, typical): • 802.11b : +18dBm • 802.11g : +16.5dBm • 802.11n/ac/ax (HT20/VHT20/HE20) : +16dBm • 802.11n/ac/ax (HT40/VHT40/HE40) : +12.5dBm

Technical Specifications

	5GHz (MIMO, typical): <ul style="list-style-type: none"><li>• 802.11a : +13dBm</li><li>• 802.11n/ac/ax (HT20/VHT20/HE20) : +13.5dBm</li><li>• 802.11n/ac/ax (HT40/VHT40/HE40) : +12.5dBm</li><li>• 802.11ac/ax (VHT80/HE80) : +11.5dBm</li><li>• 802.11ax HE160 : +11.5dBm</li></ul> 6GHz LPI mode (MIMO, typical):: <ul style="list-style-type: none"><li>• 802.11a : 0dBm</li><li>• 802.11ax HE20 : +1dBm</li><li>• 802.11ax HE40 : +4dBm</li><li>• 802.11ax HE80 : +7dBm</li><li>• 802.11ax HE160 : +7.5dBm</li></ul>
Power Consumption	<ul style="list-style-type: none"><li>• Transmit mode: 3.0 W</li><li>• Receive mode: 2.0 W</li><li>• Idle mode (WLAN associated): 300mW</li><li>• Idle mode (WLAN unassociated): 100mW</li><li>• Modern Connected Standby: 10mW</li><li>• Radio disabled: 8 mW</li></ul>
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode
Receiver Sensitivity[3]	2.4GHz (SISO): <ul style="list-style-type: none"><li>• 802.11b, 11Mbps : -82dBm maximum</li><li>• 802.11g, 54Mbps : -71dBm maximum</li><li>• 802.11n, MCS7 : -64dBm maximum</li><li>• 802.11ac, MCS9 : -52dBm maximum</li><li>• 802.11ax, MCS11(HT40): -49dBm maximum</li></ul> 5GHz (SISO): <ul style="list-style-type: none"><li>• 802.11a, 54Mbps : -71dBm maximum</li><li>• 802.11n, MCS07 : -64dBm maximum</li><li>• 802.11ac, MCS9 : -52dBm maximum</li><li>• 802.11ax, MCS11(HE80/HE160): -46dBm maximum</li></ul> 6GHz (SISO): <ul style="list-style-type: none"><li>• 802.11a, 54Mbps : -71dBm maximum</li><li>• 802.11n, MCS7 : -64dBm maximum</li><li>• 802.11ac, MCS9 : -52dBm maximum</li><li>• 802.11ax, MCS11(HE160): -46dBm maximum</li></ul>
Antenna type	High efficiency antenna with spatial diversity, mounted in the display enclosure Two embedded dual band 2.4/5/6 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications
Form Factor	PCI-Express M.2 MiniCard
Dimensions	Type 2230 : 2.3 x 22.0 x 30.0 mm
Weight	Type 2230 : 3g
Operating Voltage	3.3 +/- 0.165v
Temperature	<b>Operating</b> 14° to 140° F (–10° to 60° C) <b>Non-operating</b> –40° to 185° F (–40° to 85° C)
Humidity	<b>Operating</b> 10% to 60% (non-condensing)

## Technical Specifications

<b>Altitude</b>	<b>Non-operating</b>	5% to 95% (non-condensing)
	<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>	N/A	

**HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0/5.1/5.2 Wireless Technology**

<b>Bluetooth Specification</b>	4.0/4.1/4.2/5.0/5.1/5.2 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 1.5 Bluetooth device with a maximum transmit power of + 14 dBm and 10 dBm for BR and EDR, respectively.
<b>Power Consumption</b>	Peak (Tx): 330 mW Peak (Rx): 230 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 & 15.407
<b>Power Management Certifications</b>	ETS 300 328 Low Voltage Directive 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>	AMD AIM-T AME support with appropriate AMD chipset components

### Technical Specifications

1. Wi-Fi 6E requires a Wi-Fi 6E router, sold separately, to function in the 6GHz band. Availability of public wireless access points limited. Wi-Fi 6E is backwards compatible with prior 802.11 specs. And available in countries where Wi-Fi 6E is supported. Wi-Fi 6E 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.
  2. Check latest software/driver release for updates on supported security features.
  3. 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.
  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).
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Technical Specifications

POWER

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

AC Adapter 45 Watt nPFC Standard USB Type C® Straight 1.8m	Dimensions (H x W x D)	3.701 x 1.693 x 1.071 in (9.4 x 4.3 x 2.72 cm)		
	Weight	0.44 lb (200 g) max (Not including power cord. Power cord varies by country.)		
	Input	Input Efficiency	Average Efficiency of 25%, 50%, 75%, 100% load condition with 115Vac/230Vac Spec: 5V : 81.5% 9V : 86.7% 12V : 87.41% 15V : 87.8%	
		Input frequency range	47 ~ 63Hz	
	Output	Input AC current	Max. 1.4 A at 90 Vac	
		Output power	5V/15W 9V/27W 12V/36W 15V/45W	
		DC output	5V/9V/12V/15V	
		Hold-up time	100% load 5ms at 115 Vac input	
		Output current limit	<5.0A	
		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		20% to 95%	
	Storage Humidity		10% to 95%	
	EMI and Safety Certifications		Eg: *CE Mark - full compliance with LVD and EMC directives * Worldwide safety standards - IEC60950-1 and/or IEC62368-1, EN60950-1 and/or EN62368-1, UL60950-1 and/or UL62368-1 , Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55032 Class B, FCC Class B, CISPR32 Class B, CCC, NOM-001 NYCE. * MTBF - over 200,000 hours at 25°C ambient condition.	



Technical Specifications

<b>AC Adapter 45 Watt Smart nPFC Standard Barrel 4.5mm Right Angle 1.8m</b>	<b>Dimensions (H x W x D)</b>	3.74 x 1.772 x 1.043 in (9.5 x 4.5 x 2.65 cm)	
	<b>Weight</b>	0.44 lb (200 g) max (Not including power cord. Power cord varies by country.)	
	<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>	45W
		<b>DC output</b>	19.5V
		<b>Hold-up time</b>	100% load 5ms at 115 Vac input/80% load 10ms at 115 Vac input
		<b>Output current limit</b>	<8.0A
	<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>	Eg:	
		*CE Mark - full compliance with LVD and EMC directives	
		* Worldwide safety standards - IEC60950-1 and/or IEC62368-1, EN60950-1 and/or EN62368-1, UL60950-1 and/or UL62368-1 , Class1, SELV;	
		Agency approvals - C-UL-US, NORDICS, DENAN, EN55032 Class B, FCC Class B, CISPR32 Class B, CCC, NOM-001 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>	3.543 x 2.008 x 1.122 in (9.0 x 5.1 x 2.85 cm)	
	<b>Weight</b>	0.53 lb (240 g) max (Not including power cord. Power cord varies by country.)	
	<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% 12V : 88% 15V : 88% 20V : 89%
		<b>Input frequency range</b>	47 ~ 63 Hz
		<b>Input AC current</b>	1.6 A at 90 VAC and maximum load
	<b>Output</b>	<b>Output power</b>	5V/15W
			9V/27W 12V/60W

Technical Specifications

			15V/60W
			20V/65W
			5V/9V/12V/15V/20V
			100% load 5ms at 115 Vac input
Connector	Environmental Design	DC output	<8.0A
		Hold-up time	USB TYPE C®
		Output current limit	
		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			Eg:
			*CE Mark - full compliance with LVD and EMC directives
			* Worldwide safety standards - IEC60950-1 and/or IEC62368-1, EN60950-1 and/or EN62368-1, UL60950-1 and/or UL62368-1 , Class1, SELV;
			Agency approvals - C-UL-US, NORDICS, DENAN, EN55032 Class B, FCC Class B, CISPR32 Class B, CCC, NOM-001 NYCE.
			* MTBF - over 200,000 hours at 25°C ambient condition.

AC Adapter 65 Watt Smart nPFC EM Barrel 4.5mm	Dimensions (H x W x D)		4.016 x 2.165 x 1.181 in (10.2 x 5.5 x 3 cm)
	Weight		0.58 lb (265 g) max (Not including power cord. Power cord varies by country.)
	Input		Input Efficiency 88.0 % at 115 Vac and 89.0 % at 230Vac
			Input frequency range 47 ~ 63 Hz
			Input AC current Max. 1.7 A at 90 Vac
	Output		Output power 65W
			DC output 19.5V
			Hold-up time 100% lod 5ms at 115 Vac input/80% load 10ms at 115 Vac input
		Output current limit	<11.0A
Connector	Environmental Design	4.5mm Barrel Type	
		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%



Technical Specifications

<b>EMI and Safety Certifications</b>		Eg: *CE Mark - full compliance with LVD and EMC directives * Worldwide safety standards - IEC60950-1 and/or IEC62368-1, EN60950-1 and/or EN62368-1, UL60950-1 and/or UL62368-1 , Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55032 Class B, FCC Class B, CISPR32 Class B, CCC, NOM-001 NYCE. * MTBF - over 200,000 hours at 25°C ambient condition.		
<hr/>				
<b>AC Adapter 65 Watt Smart nPFC Standard Barrel 4.5mm Right Angle 1.8m</b>	<b>Dimensions (H x W x D)</b>	3.543 x 2.008 x 1.122 in (9.0 x 5.1 x 2.85 cm)		
	<b>Weight</b>	0.55 lb (250 g) max (Not including power cord. Power cord varies by country.)		
	<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>	100% load 5ms at 115 Vac input/80% load 10ms 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>	Eg: *CE Mark - full compliance with LVD and EMC directives * Worldwide safety standards - IEC60950-1 and/or IEC62368-1, EN60950-1 and/or EN62368-1, UL60950-1 and/or UL62368-1 , Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55032 Class B, FCC Class B, CISPR32 Class B, CCC, NOM-001 NYCE. * MTBF - over 200,000 hours at 25°C ambient condition.		



## Technical Specifications

3-cell Long Life Li-Ion (42 WHr) <sup>1</sup>	Weight	0.183 kg +/- 10g (0.403 lb)	
	Cells/Type	3cell Lithium-Ion Polymer cell / 545974	
	Energy	Voltage	11.4V
		Amp-hour capacity	3.75Ah
		Watt-hour capacity <sup>1</sup>	42.75Wh
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 140° F (-10° to 60° C)
		Optional Travel Battery Available	N/A

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Technical Specifications**AUDIO**

<b>HD Stereo Codec</b>	Realtek ALC3247-CG
<b>Audio I/O Ports</b>	Headset: CTIA only and Headphone-out
<b>Internal Speaker Amplifier</b>	ALC 3247 has Embedded Class-D 2W Stereo Amplifier
<b>Multi-streaming Capable</b>	Playback multi-streaming can be enabled in the audio control panel to allow independent audio. Following MSFT Behavior
<b>Sampling</b>	DAC: 48kHz ADC: 44.1k/48kHz
<b>Wavetable Syntheses</b>	NA
<b>Analog Audio</b>	Support 3.5mm Headset: CTIA only and Headphone-out
<b># of Channels on Line-Out</b>	NA
<b>Internal Speaker</b>	Yes

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**FINGERPRINT READER**

<b>Sensor vendor</b>	Elan P1515E
<b>Sensor type</b>	Capacitive
<b>DPI resolution</b>	508 DPI
<b>Scan area</b>	80 x 80 pixels
<b>False Rejection Rate</b>	<= 3%
<b>False Acceptance Rate</b>	< 1/100K
<b>Mobile Voltage Operation</b>	3.0V to 3.6V
<b>Operating Temperature</b>	14° – 167°F (-10°-75°C)
<b>Current Consumption</b>	35mA (MAX)
<b>Image</b>	
<b>Low Latency Wait For Finger</b>	900uA (MAX)
<b>Capture Rate</b>	50 cm/sec
<b>ESD Resistance</b>	IEC 61000-4-2 4B (+15KV)
<b>Detection Matrix</b>	80*2 (Plus another secondary line) / 508 dpi / 4*4 mm sensor area

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## Technical Specifications

## ENVIRONMENTAL DATA

<b>Eco-Label Certifications &amp; declarations</b>	<p>This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:</p> <ul style="list-style-type: none"> <li>• IT ECO declaration</li> <li>• US ENERGY STAR®</li> <li>• US Federal Energy Management Program (FEMP)</li> <li>• EPEAT® Gold registered in the United States. See <a href="http://www.epeat.net">http://www.epeat.net</a> for registration status in your country.</li> <li>• TCO Certified</li> <li>• China Energy Conservation Program (CECP)</li> <li>• China State Environmental Protection Administration (SEPA)</li> <li>• Taiwan Green Mark</li> <li>• Korea Eco-label</li> <li>• Japan PC Green label*</li> </ul>		
<b>Sustainable Impact Specifications</b>	<ul style="list-style-type: none"> <li>• <a href="http://hp.com">Product Carbon Footprint (hp.com)</a></li> <li>• 50% recycled metal</li> <li>• Low halogen</li> <li>• External Power Supply 90% Efficiency</li> <li>• Outside Box and corrugated cushions are 100% sustainably sourced and recyclable</li> <li>• Molded Paper Pulp Cushion inside box is 100% sustainably sourced and recyclable</li> <li>• Bulk packaging available</li> </ul>		
<b>System Configuration</b>	The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a “Typically Configured Notebook”.		
<b>Energy Consumption (in accordance with US ENERGY STAR® test method)</b>	<b>115VAC, 60Hz</b>	<b>230VAC, 50Hz</b>	<b>100VAC, 50Hz</b>
Normal Operation (Sort idle)	4.69 W	4.78 W	4.73 W
Normal Operation (Long idle)	1.34 W	1.33 W	1.27 W
Sleep	1.34 W	1.33 W	1.27 W
Off	0.3 W	0.34 W	0.3 W
	<p><b>NOTE:</b> Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.</p>		
<b>Heat Dissipation*</b>	<b>115VAC, 60Hz</b>	<b>230VAC, 50Hz</b>	<b>100VAC, 50Hz</b>
Normal Operation (Short idle)	16.0 BTU/hr	16.3 BTU/hr	16.2 BTU/hr
Normal Operation (Long idle)	4.6 BTU/hr	4.5 BTU/hr	4.3 BTU/hr
Sleep	4.6 BTU/hr	4.5 BTU/hr	4.3 BTU/hr
Off	1.0 BTU/hr	1.2 BTU/hr	1.0 BTU/hr

## Technical Specifications

	<b>*NOTE:</b> Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.		
<b>Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)</b>	Sound Power (L <sub>WAd</sub> , bels)	Sound Pressure (L <sub>pAm</sub> , decibels)	
Typically Configured – Idle	2.6	14.4	
Fixed Disk – Random writes	2.6	14.5	
Optical Drive – Sequential reads	3.4	24.9	
<b>Longevity and Upgrading</b>	This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the		
	Spare parts are available throughout the warranty period and or for up to “5” years after the end of production.		
<b>Additional Information</b>	<ul style="list-style-type: none"><li>• This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.</li><li>• This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.</li><li>• This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).</li><li>• This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold level, see <a href="http://www.epeat.net">www.epeat.net</a></li><li>• Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.</li><li>• This product is 95.1% recycle-able when properly disposed of at end of life.</li></ul>		
<b>Packaging Materials</b>	<b>External:</b>	PAPER/Corrugated	220 g
		PAPER/ Corrugated	41 g
		PAPER/Molded Pulp	50 g
		PAPER/Molded Pulp	49 g
		PAPER/Paper	3 g
	<b>Internal:</b>	PLASTIC/Polyethylene low density - LDPE	14 g
	The plastic packaging material contains at least 0.0% recycled content.		
	The corrugated paper packaging materials contains at least 54.0% recycled content.		
<b>RoHS Compliance</b>	<p>HP Inc. complies fully with materials regulations. We were among the first companies to extend the restrictions in the European Union (EU) Restriction of Hazardous Substances (RoHS) Directive to our products worldwide through the HP GSE. HP has contributed to the development of related legislation in Europe, as well as China, India, and Vietnam.</p> <p>We believe the RoHS directive and similar laws play an important role in promoting industry-wide elimination of substances of concern. We have supported the inclusion of additional substances—including PVC, BFRs, and certain phthalates—in future RoHS legislation that pertains to electrical and electronics products.</p> <p>We met our voluntary objective to achieve worldwide compliance with the new EU RoHS requirements for virtually all relevant products by July 2013, and we will continue to extend the</p>		



## Technical Specifications

	<p>scope of the commitment to include further restricted substances as regulations continue to evolve.</p> <p>To obtain a copy of the HP RoHS Compliance Statement, see <a href="#">HP RoHS position statement</a>.</p>
<b>Material Usage</b>	<p>This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at <a href="http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html">http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html</a>):</p> <ul style="list-style-type: none"> <li>• Asbestos</li> <li>• Certain Azo Colorants</li> <li>• Certain Brominated Flame Retardants – may not be used as flame retardants in plastics</li> <li>• Cadmium</li> <li>• Chlorinated Hydrocarbons</li> <li>• Chlorinated Paraffins</li> <li>• Bis(2-Ethylhexyl) phthalate (DEHP)</li> <li>• Benzyl butyl phthalate (BBP)</li> <li>• Dibutyl phthalate (DBP)</li> <li>• Diisobutyl phthalate (DIBP)</li> <li>• Formaldehyde</li> <li>• Halogenated Diphenyl Methanes</li> <li>• Lead carbonates and sulfates</li> <li>• Lead and Lead compounds</li> <li>• Mercuric Oxide Batteries</li> <li>• Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.</li> <li>• Ozone Depleting Substances</li> <li>• Polybrominated Biphenyls (PBBs)</li> <li>• Polybrominated Biphenyl Ethers (PBBEs)</li> <li>• Polybrominated Biphenyl Oxides (PBBOs)</li> <li>• Polychlorinated Biphenyl (PCB)</li> <li>• Polychlorinated Terphenyls (PCT)</li> <li>• Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.</li> <li>• Radioactive Substances</li> <li>• Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBT0)</li> </ul>
<b>Packaging Usage</b>	<p>HP follows these guidelines to decrease the environmental impact of product packaging:</p> <ul style="list-style-type: none"> <li>• Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.</li> <li>• Eliminate the use of ozone-depleting substances (ODS) in packaging materials.</li> <li>• Design packaging materials for ease of disassembly.</li> <li>• Maximize the use of post-consumer recycled content materials in packaging materials.</li> <li>• Use readily recyclable packaging materials such as paper and corrugated materials.</li> <li>• Reduce size and weight of packages to improve transportation fuel efficiency.</li> <li>• Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.</li> </ul>

## Technical Specifications

<b>End-of-life Management and Recycling</b>	<p>HP offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: <a href="http://www.hp.com/go/reuse-recycle">http://www.hp.com/go/reuse-recycle</a> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.</p> <p>The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: <a href="http://www.hp.com/go/recyclers">http://www.hp.com/go/recyclers</a>. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.</p>
<b>HP, Inc. Corporate Environmental Information</b>	<p>For more information about HP's commitment to the environment:</p> <p>Global Citizenship Report  <a href="http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html">http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html</a></p> <p>Eco-label certifications  <a href="http://www8.hp.com/us/en/hp-information/environment/ecolabels.html">http://www8.hp.com/us/en/hp-information/environment/ecolabels.html</a></p> <p>ISO 14001 certificates:  <a href="http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c04755842">http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c04755842</a>  and  <a href="http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf">http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf</a></p>
<b>footnotes</b>	<ul style="list-style-type: none"> <li>• Percentage of ocean-bound plastic contained in each component varies by product</li> <li>• Recycled plastic content percentage is based on the definition set in the IEEE 1680.1-2018 standard.</li> <li>• External power supplies, WWAN modules, power cords, cables and peripherals excluded.</li> <li>• 100% outer box packaging and corrugated cushions made from sustainably sourced certified and recycled fibers.</li> <li>• Fiber cushions made from 100% recycled wood fiber and organic materials.</li> <li>• Plastic cushions are made from &gt;90% recycled plastic.</li> <li>• Recycled metal is expressed as a percentage of the total weight of the metal according to ISO 14021 definitions for metal parts over 25 grams.</li> </ul>

## COUNTRY OF ORIGIN

China

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

#### DOCKING (Sold Separately)

<b>Docking station model #1</b>	HP Thunderbolt 120W G4 Dock
<b>Total number of supported displays (incl. the notebook display)</b>	4
<b>Max. resolutions supported</b>	Quad 4K @60Hz Dual 8K single cable@30 for TB hosts or USB-C hosts DP 1.4 with DSC in high res mode
<b>Dock Connectors</b>	2xDP, 1xHDMI, 1xTB, 1xUSB-C Alt Mode
<b>Technical limitations</b>	Maximum resolution and display support is dependent on the maximum capability of the notebook.  Thunderbolt Hosts: Maximum of (4) displays with maximum resolution of 5K@ 30Hz running Thunderbolt host. Maximum resolution possible is dual 8K displays @ 60Hz running Thunderbolt host or running a non-Thunderbolt host in high resolution mode @30Hz Non-Thunderbolt hosts: The highest resolution for dual displays running a non-Thunderbolt host in multi-function mode is (1) 5K dual cable (using both DP ports) +(1) 4K on USB-C DP port Non-Thunderbolt hosts support (3) displays with a maximum resolution of (2) 5K single cable + (1) 4K UHD @ 60 Hz in high resolution mode. In multi-function mode the maximum resolution for (3) displays is (2) 5K single cable @ 30Hz + (1) 4K UHD @ 30Hz.
<b>Docking station model #2</b>	HP Thunderbolt 280W G4 Dock
<b>Total number of supported displays (incl. the notebook display)</b>	4
<b>Max. resolutions supported</b>	Quad 4K @60Hz Dual 8K single cable@30 for TB hosts or USB-C hosts DP 1.4 with DSC in high res mode
<b>Dock Connectors</b>	2xDP, 1xHDMI, 1xTB, 1xUSB-C Alt Mode
<b>Technical limitations</b>	Maximum resolution and display support is dependent on the maximum capability of the notebook.  Thunderbolt Hosts: Maximum of (4) displays with maximum resolution of 5K@ 30Hz running Thunderbolt host. Maximum resolution possible is dual 8K displays @ 60Hz running Thunderbolt host or running a non-Thunderbolt host in high resolution mode @30Hz Non-Thunderbolt hosts: The highest resolution for dual displays running a non-Thunderbolt host in multi-function mode is (1) 5K dual cable (using both DP ports) +(1) 4K on USB-C DP port Non-Thunderbolt hosts support (3) displays with a maximum resolution of (2) 5K single cable + (1) 4K UHD @ 60 Hz in high resolution mode. In multi-function mode the maximum resolution for (3) displays is (2) 5K single cable @ 30Hz + (1) 4K UHD @ 30Hz.

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

<b>Docking station model #3</b>	HP USB-C Dock G5
<b>Total number of supported displays (incl. the notebook display)</b>	3
<b>Max. resolutions supported</b>	Dual 5K@ 30Hz + (1) 4K UHD (multi-function mode)
<b>Dock Connectors</b>	1xHDMI, 2xDP
<b>Technical limitations</b>	<p>Maximum resolution and display support is dependent on the maximum capability of the notebook.</p> <p>Highest resolution with dual displays is two 8K@ 60Hz host in High Resolution mode.</p> <p>Three maximum displays supported are two 5K@ 30 Hz on DP ports plus one 4K UHD@ 30 Hz on HDMI in Multi-function mode</p> <p>The highest resolution for a non-Thunderbolt host in Multi-function mode is a single 5K dual cable (using both DP ports) + (1) 4K on HDMI port.</p>
<b>Docking station model #4</b>	HP USB-C/A Universal Dock G2
<b>Total number of supported displays (incl. the notebook display)</b>	3
<b>Max. resolutions supported</b>	<p>Dual 4K @ 60Hz</p> <p>Single 5K @ 60Hz</p>
<b>Dock Connectors</b>	1xHDMI, 2xDP
<b>Technical limitations</b>	<p>Maximum resolution and display support is dependent on the maximum capability of the notebook.</p> <p>The best resolution for dual or triple displays is 4K UHD@ 60Hz.</p> <p>For use with the USB-A adapter that comes in the box the maximum number of displays supported is (2) 4k x 60 Hz on the Type-A Gen 1 connection from the host.</p>
<b>Docking station model #5</b>	HP USB-C G5 Essential Dock
<b>Total number of supported displays (incl. the notebook display)</b>	3
<b>Max. resolutions supported</b>	<p>For hosts that support DisplayPort 1.4 with Display Stream Compression:</p> <p>3x FHD @ 60 Hz</p> <p>3x QHD @ 60 Hz</p> <p>3x 4K @ 60 Hz</p> <p>For hosts that support DisplayPort 1.3/1.4:</p> <p>3x FHD @ 60 Hz</p> <p>3x QHD @ 60 Hz</p> <p>2x 4K @ 60 Hz</p>
<b>Dock Connectors</b>	1 x HDMI, 2 x DP
<b>Technical limitations</b>	Video resolution depends on the capability of the host machine. This dock provides up to 65W of power delivery to the host machine.

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

Type	Description	Part Number
Audio	HP Wired USB-A Stereo Headset	428K6AA
	HP Wired 3.5mm Stereo Headset	428K7AA
	HP 365 BT Speaker	567D3AA#ACJ
Video	HP 325 FHD USB-A Webcam	53X27AA
	HP 965 4K USB-A STR Webcam	695J5AA
Cases	HP Prelude G2 15.6 Backpack	1E7D6AA
	HP Prelude G2 15.6 Top Load	1E7D7AA
	HP Prelude Pro Recycled 15.6 Backpack	1X644AA
	HP Prelude Pro Recycled 15.6 Top Load	1X645AA
	HP Renew 14 Laptop Sleeve	2E6U9AA
	HP Renew Business 14.1 Laptop Bag	3E5F9AA
	HP Renew Business 14.1 Laptop Sleeve	3E2U7AA
	HP Renew Business 15.6 Laptop Bag	3E5F8AA
	HP Renew Business 17.3 Laptop Backpack	3E2U5AA
	HP Renew Business 17.3 Laptop Bag	3E2U6AA
	HP Renew Executive 14.1 Laptop Sleeve	6B8Y3AA
	HP Renew Executive 16 Laptop Backpack	6B8Y1AA
	HP Renew Executive 16 Laptop Bag	6B8Y2AA
Digital Pen	HP Slim RECHBL Pen	630W7AA
Pen Accessory	HP Rechargeable Slim Pen Charger	4X491AA#AC3
Docking	HP USB-C 120W G5 Dock	5TW10AA
	HP USB-C/A 120W G2 Universal Dock	5TW13AA
	HP Thunderbolt 120W G4 Dock	4J0A2AA
	HP Thunderbolt 280W G4 Dock	4J0G4AA
Hub	HP 4K USB-C Multiport Hub	6G842AA
	HP Universal USB-C Multiport Hub	50H55AA
	HP USB-C Travel Dock G2	7PJ38AA
	HP USB-C to USB-A Hub	Z6A00AA
Adapter	HP USB-C to RJ45 Adapter G2	4Z527AA
	HP USB 3.0 to Gigabit RJ45 Adapter G2	4Z7Z7AA
	HP HDMI to VGA Adapter	H4F02AA
	HP USB-C to DisplayPort Adapter	N9K78AA

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

	HP USB-C to HDMI 2.0 Adapter	1WC36AA
	HP USB-C to USB 3.0 Adapter	N2Z63AA
	HP USB-C to VGA Adapter	N9K76AA
<b>Keyboard/Combo</b>	HP 125 WD USB Keyboard	266C9AA
	HP 320K WD USB Keyboard	9SR37AA
	HP 355 Compact Multi-Device BT Keyboard	692S9AA
	HP 455 Programmable Wireless Keyboard	4R177AA
	HP 975 USB+BT Dual-Mode Wireless Keyboard	3Z726AA
	HP 155 Wired Mouse and Keyboard Combo	5B8C0AA#ACJ
	HP 225 Antimicrobial Wired Mouse and Keyboard Combo	286K3AA#AB2
	HP 225 Wired Mouse and Keyboard Combo	286J4AA
	HP 235 Wireless Mouse and Keyboard Combo	1Y4D0AA
	HP 655 Wireless Keyboard and Mouse Combo	4R009AA
	HP Wired Desktop 320MK Mouse and Keyboard	9SR36AA
	HP Wireless Rechargeable 950MK Mouse and Keyboard	3M165AA
<b>Mouse</b>	HP 125 USB-A Wired Mouse	265A9AA
	HP 128 USB Laser Wired Mouse	265D9AA
	HP 155 USB-A Wired Mouse	5B8B7AA#ACJ
	HP 320M USB-A Wired Mouse	9VA80AA
	HP 435 Bluetooth 5.0 + Wireless 2.4GHz Multi-Device Wireless Mouse	3B4Q5AA
	HP 715 Rechargeable Multi-Device Bluetooth 5.0 + Wireless 2.4GHz Bluetooth Mouse	6E6F0AA
	HP 925 Ergonomic Vertical Bluetooth 5.0 + Wireless 2.4GHz Wireless Mouse	6H1A5AA
	HP Creator USB-A+Bluetooth 935 Wireless Mouse Black	1D0K8AA
	HP USB Premium Wireless Mouse	1JR31AA
	HP USB-A+Bluetooth Multi-Device 635 Wireless Mouse Black	1D0K2AA
	HP USB-A+Bluetooth Travel Bluetooth Mouse	6SP30AA
<b>Power</b>	HP 45W USB-C LC Dali AC Power Adapter	1MZ01AA
	HP 65W 4.5 mm Smart AC Power Adapter	H6Y89AA
	HP 65W GaN USB-C Laptop Charger	600Q7AA
	HP 65W USB-C Laptop Charger	671R3AA
	HP 65W USB-C LC AC Power Adapter	1P3K6AA
	HP 90W 4.5 mm Smart AC Power Adapter	H6Y90AA
<b>Commodity</b>	HP USB DVD-Writer EXT ODD	F2B56AA
	HP Nano Keyed Cable Lock	1AJ39AA
	HP Nano Master Keyed Cable Lock	1AJ40AA
	HP SureKey Standard/Nano/Wedge Cable Lock	6UW42AA

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

HP Combination Nano Cable Lock	63B28AA
HP Essential Combination Nano Cable Lock	63B31AA

Change Log

Date of change:	Version History:		Description of change:
March 2, 2023	V1 to V2	Updated	Weight and dimensions section
March 9, 2023	V2 to V3	Added	Docking station
March 21, 2023	V3 to V4	Added	Environmental Data
March 30, 2023	V4 to V5	Updated	At a Glance section
April 19, 2023	V5 to V6	Added	Miracast in Networking and Communications section
May 31, 2023	V6 to V7	Updated	Audio and Multimedia section
June 5, 2023	V7 to V8	Updated	Storage and Drives section
June 21, 2023	V8 to V9	Updated	Processors section
July 12, 2023	V9 to V10	Added	WLAN in Networking section
August 1, 2023	V10 to V11	Updated	Environmental Data
September 22, 2023	V11 to V12	Added	Camera description in Camera section
October 3, 2023	V12 to V13	Updated	Frequency bands for Realtek 8852CE in Networking section
February 6, 2024	V13 to V14	Updated	Digital Pen
February 18, 2025	V14 to V15	Removed	Display Section

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