

### Overview

### HP ZBook Studio 16 inch G11 Mobile Workstation PC



1. Ambient Color Sensor (Optional)
2. Top Facing Microphone (2)
3. IR Camera LEDs
4. IR Camera
5. HD Camera
6. Webcam LED
7. Ambient Light Sensor (Optional)
8. Clickpad

#### Right

9. Camera Privacy Key
10. Nano Security Lock slot
11. Super Speed USB Type-A 5Gbps signaling rate (charging)
12. SuperSpeed USB Type-C® 10Gbps signaling rate Delivery Out, Display Out)
13. Speakers
14. Woofer
15. Fingerprint Sensor (Optional)

### Overview



#### Left

- |   |                               |
|---|-------------------------------|
| 1. Power Charging indicator   | 4. headphone/microphone combo |
| 2. Power connector  | 5. Woofer                     |
| 3. 2 Thunderbolt™ 4 with USB4™ Type-C® 40Gbps signaling rate (USB Power Delivery, DisplayPort™ 1.4, HP Sleep and Charge) <sup>1</sup> |                               |

<sup>1</sup>SuperSpeed USB 20Gbps is not available with Thunderbolt™ 4.

### Overview

#### At A Glance

- Your multi-tasking and productivity with up to Intel Core Ultra 9 with vPro® Enterprise designed to handle complex, multithreaded apps.
- Tackle your biggest projects with a choice of up to NVIDIA RTX™ 3000 Ada Laptop GPU: certified for pro apps; or GeForce RTX™ 4070 Laptop GPU
- Used to working on a Mac? Now you can choose the Z Command Keyboard, which replicates a Mac layout, for a seamless switch.

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

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### Features

## OPERATING SYSTEM

<b>Preinstalled OS</b>	Windows 11 Pro - HP recommends Windows 11 Pro for business <sup>1</sup> Windows 11 Pro Education <sup>1</sup> Windows 11 Home <sup>1</sup> Windows 11 Home Single Language <sup>1</sup> FreeDOS 3.0
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<sup>1</sup> 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>.

**NOTE:** Your product does not support Windows 8 or Windows 7. In accordance with Microsoft's support policy, HP does not support the Windows® 8 or Windows 7 operating system on products configured with Intel® and AMD® 7th generation and forward processors or provide any Windows® 8 or Windows 7 drivers on <http://www.support.hp.com>. A full list of HP products and the Windows 10 versions tested is available on the HP support website. <https://support.hp.com/us-en/document/c05195282>

## PROCESSOR

Intel® Core™ Ultra5 135H (Up to 3.6 GHz E-core Max Turbo frequency, up to 4.6 GHz P-core Max Turbo frequency, 18 MB L3 cache, 4 P-cores and 8 E-cores, 18 threads), supports Intel® vPro® Technology; <sup>1,2,3,4,5,6</sup>

Intel® Core™ Ultra7 155H (Up to 3.8 GHz E-core Max Turbo frequency, up to 4.8 GHz P-core Max Turbo frequency, 24 MB L3 cache, 6 P-cores and 8 E-cores, 22 threads); <sup>1,2,5,6</sup>

Intel® Core™ Ultra7 165H (Up to 3.8 GHz E-core Max Turbo frequency, up to 5.0 GHz P-core Max Turbo frequency, 24 MB L3 cache, 6 P-cores and 8 E-cores, 22 threads), supports Intel® vPro® Technology; <sup>1,2,3,4,5,6</sup>

Intel® Core™ Ultra9 185H (Up to 3.8 GHz E-core Max Turbo frequency, up to 5.1 GHz P-core Max Turbo frequency, 24 MB L3 cache, 6 P-cores and 8 E-cores, 22 threads), supports Intel® vPro® Technology; <sup>1,2,3,4,5,6</sup>

<sup>1</sup> Multi-Core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering, branding and/or naming is not a measurement of higher performance. (AMD's numbering is not a measurement of clock speed.)

<sup>2</sup> Intel Turbo Boost performance varies depending on hardware, software and overall system configuration. See <http://www.intel.com/technology/turboboost> for more information.

<sup>3</sup> Intel vPro® requires Windows 10 Pro 64 bit or higher, a vPro supported processor, vPro enabled chipset, vPro enabled wired LAN and/or Wi-Fi 6E WLAN and TPM 2.0. Some functionality requires additional 3rd party software in order to run. Features of vPro® Essentials and Enterprise vary. See <http://intel.com/vpro>

<sup>4</sup> 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>.

<sup>5</sup> Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.

<sup>6</sup> Features and software that require a NPU may require software purchase, subscription or enablement by a software or platform provider, and third party software may have specific configuration or compatibility requirements. Performance varies by use, configuration, and other factors.

## CHIPSET

### Features

Chipset is integrated with processor

### INTEL® CORE™ I5 WITH VPRO®/CORE™ I7 WITH VPRO®/ CORE™ I9 WITH VPRO® TECHNOLOGY CAPABLE

Intel vPro® with Intel® Core™ Ultra 5, Intel vPro® with Intel® Core™ Ultra 7, Intel vPro® with Intel® Core™ Ultra 9 is a selectable feature that is available on units configured with select processors, a qualified Intel® WLAN module and a preinstalled Windows® operating system. It provides advances in remote manageability, security, energy efficient performance, and wireless connectivity. Intel® Active Management Technology (iAMT) offers built-in manageability and proactive security for networked mobile workstations, even when they are powered off or when the operating system is inoperable. It can help identify threats before they reach the network, isolate infected systems, and update regardless of their power state.<sup>1,2</sup>

<sup>1</sup> Requires a Windows operating system, network hardware and software, connection with a power source, and a direct (non-VPN) corporate network connection which is either cable or wireless LAN.

<sup>2</sup> Intel vPro® requires Windows 10 Pro 64 bit or higher, a vPro supported processor, vPro enabled chipset, vPro enabled wired LAN and/or Wi-Fi 6E WLAN and TPM 2.0. Some functionality requires additional 3rd party software in order to run. Features of vPro® Essentials and Enterprise vary. See <http://intel.com/vpro>

### GRAPHICS

#### Integrated

Intel® ARC Graphics<sup>1,3</sup>

#### Discrete<sup>1,2</sup>

NVIDIA GeForce RTX® 4070 Laptop GPU

NVIDIA RTX™ 1000 Ada 6GB Laptop GPU (6 GB DDR6 dedicated)

NVIDIA RTX™ 2000 Ada Generation Laptop GPU (8 GB DDR6 dedicated)

NVIDIA RTX™ 3000 Ada Generation Laptop GPU (8 GB DDR6 dedicated)

#### Supports

Support HD decode, DX12, HDMI 2.0b, HDCP 2.3

<sup>1</sup> Both UMA & Discrete configurations support 4 independent displays when on the HP Thunderbolt Dock G4 (120W) (sold separately) - Max. resolution = 2.5K @60Hz (DP1) & 2.5K @60Hz (DP2) & FHD (VGA) OR 4K @60Hz (one DP Port) & 4K @60Hz (Type-C output port using a Type C-to-DP adapter).

<sup>2</sup> HDMI cable Sold Separately

<sup>3</sup> Intel® Arc™ graphics only available on select Intel® Core™ Ultra H-series processor-powered systems with at least 16GB of system memory in dual channel configuration.

### DISPLAY

#### Non-touch

- 40.6 cm (16") diagonal, WUXGA (1920x1200) WLED+LBL AG UWVA sRGB 100 400 NB2Y eDP 1.4+PSR2 LP LCD bent Panel - SRP<sup>1,3</sup>
- 40.6 cm (16") diagonal, WUXGA (1920x1200) WLED+LBL AG UWVA sRGB 100 1000 NB2Y eDP 1.3+PSR PVCYG4 Plus LCD bent Panel - SRP<sup>1,3</sup>
- 40.6 cm (16") diagonal, WQUXGA DRM (3840x2400) AG LED UWVA DCI-P3 100 500 NB2Y eDP 1.4+PSR 120Hz LCD bent Panel - SRP<sup>1,3</sup>

### Features

#### Touch

- 40.6 cm (16") diagonal, WQUXGA (3840x2400) BV Low Blue Light UWVA DCI-P3 100 400 NBZ2 eDP 1.4+PSR TS OLED bent Panel - SRP <sup>1,3,5</sup>

#### Displays support

Supports up to 4 displays through the HP Thunderbolt 280W G4 Dock

For more information, please reference the following ZBook docking whitepaper:

<https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=4AA5-2657ENW>

#### Display Size

16"

40.64 cm (16")

<sup>1</sup>HD content required to view HD images.

<sup>3</sup>Resolutions are dependent upon monitor capability, and resolution and color depth settings.

<sup>4</sup>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.

<sup>5</sup>Actual brightness will be lower with touchscreen or Sure View.

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### Features

#### DOCKING

<b>Docking station model #1</b>	HP Thunderbolt 280W G4 Dock w/Combo Cable
<b>Total number of supported displays (incl.the notebook display)</b>	4
<b>Max.resolutions supported</b>	Dual 4K @30Hz or dual 4K UHD @ 60Hz is supported Single 8K @30Hz (multiple tiles) for Thunderbolt hosts Non-TBT hosts DP 1.4 in high-res mode (1) 8K video single cable @30Hz
<b>Dock Connectors</b>	2xDP, 1xHDMI, 1xTB, 1xUSB-C Alt Mode
<b>Technical limitations</b>	Thunderbolt Hosts: Maximum of (4) displays with maximum resolution of 5K@ 30Hz running Thunderbolt host. Max resolution possible is dual 8K displays @ 60Hz running Thunderbolt host or running a non-Thunderbolt host in High Resolution mode @30Hz

### Features

#### STORAGE AND DRIVES<sup>1</sup>

**Maximum Storage**

4 TB PCIe® Gen4x4 M.2

**Primary M.2 Storage**

4TB 2280 PCIe®-4x4 NVMe™ M.2 SSD TLC

2TB 2280 PCIe®-4x4 NVMe™ M.2 SSD TLC

1TB 2280 PCIe®-4x4 NVMe™ M.2 SSD TLC

1TB 2280 PCIe®-4x4 NVMe™ Self Encrypted OPAL2 SSD TLC

512 GB PCIe® Gen4x4 NVMe™ M.2 SSD TLC

512GB 2280 PCIe®-4x4 NVMe™ Self Encrypted OPAL2 SSD TLC

**DRIVE CONTROLLERS**

M.2 Storage Bay (PCIe NVMe) : PCIe® Gen4 x4 lanes NVMe™ Solid State Drive

<sup>1</sup> For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 35GB of disk is reserved for system recovery software.

#### MEMORY

**Maximum Memory**

64 GB DDR5-5600 non-ECC SODIMM

**Memory**

16GB (2x8GB) DDR5 5600

32GB (2x16GB) DDR5 5600

64GB (2x32GB) DDR5 5600

**Memory Slots**

2 SODIMM

1 DIMM per channel; support up to 5600MHz

DDR5 SODIMMS, system runs at 5200MT/s

Supports Dual Channel Memory

**NOTE:** 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.

### Features

#### NETWORKING/COMMUNICATIONS

##### WLAN

Intel® Wi-Fi 7 BE2230+Bluetooth® 5.4 wireless card vPro® WW WLAN<sup>1,2</sup>

Intel® Wi-Fi 7 BE2230+Bluetooth® 5.4 wireless card non-vPro® WW WLAN<sup>1</sup>

<sup>1</sup>Wi-Fi 7: Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 7 (802.11BE) functionality requires compatible Windows 11 OS, compatible processor, and separately purchased Wi-Fi 7 router to support backwards compatibility with prior 802.11 specs. Available in countries where Wi-Fi 7 is supported. The specification for 802.11BE is a draft specification and is not final. If the final specification differs from the draft specification, it may affect the ability of the device to communicate with other 802.11BE devices.

<sup>2</sup> Intel vPro® requires Windows 10 Pro 64 bit or higher, a vPro supported processor, vPro enabled chipset, vPro enabled wired LAN and/or Wi-Fi 6E WLAN and TPM 2.0. Some functionality requires additional 3rd party software in order to run. Features of vPro® Essentials and Enterprise vary. See <http://intel.com/vpro>

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#### AUDIO/MULTIMEDIA

##### Audio

Audio by Poly Studio, Quad-speaker audio (2 tweeters & 2 woofers), 2 Top Facing Microphone dual array digital microphones, functions keys for volume up and down, combo microphone/headphone jack, HD audio with 200Hz Bass Roll off

##### Camera<sup>1</sup>

720p HD IR camera

##### Sensors

ACS (ambient color sensor): non-PVCY panel

ACS +ALS: PVCY panel

HP Tamper Lock<sup>2</sup>

<sup>1</sup> Sold separately or as an optional feature.

<sup>2</sup> HP Tamper Lock must be enabled by the customer or your administrator.

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### Features

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

##### Keyboard<sup>1</sup>

HP Premium Quiet Keyboard – spill-resistant, full-size, backlit keyboard and DuraKeys

HP Premium RGB Keyboard – spill-resistant, full-size, per-key RGB backlit keyboard backlit keyboard and DuraKeys

HP Premium RGB Z Command Keyboard – spill-resistant, full-size, per-key RGB backlit keyboard backlit keyboard and DuraKeys

##### Pointing Devices

Clickpad with image sensor and glass surface supporting multi-touch gestures and taps

##### Function Keys

ESC: system information

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 Backlight Toggle (for backlit keyboard)

F10 - Insert

F11 - Airplane Mode

F12 - HP Command Center

Power Button (with LED)

##### Hidden Keys

home

end

Fn+R - Break

Fn+S - Sys Rq

Fn+C - Scroll Lock

Fn+left/right arrow

Privacy Key

<sup>1</sup> Backlit keyboard is an optional feature.

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#### SOFTWARE AND SECURITY

##### Software

Bing Search for IE11

Buy Microsoft Office (Sold separately)

HP Connection Optimizer<sup>1</sup>

HP Easy Clean<sup>2</sup>

HP Easy Clean Keyboard Driver

HP Hotkey Support

HP Mac Address Manager

HP Notifications

HP PC Hardware Diagnostics UEFI

HP PC Hardware Diagnostics Windows

HP Power Manager

HP Privacy Settings

HP Services Scan<sup>3</sup>

HP Smart Support<sup>4</sup>

HP Support Assistant<sup>5</sup>

### Features

HSA Fusion for Commercial  
Miro<sup>6</sup>  
myHP  
Poly Lens<sup>7</sup>  
Battery Health Manager<sup>26</sup>

#### Manageability Features

HP Wolf Security for Business which includes<sup>8</sup>

HP Client Catalog (download)  
HP Client Management Script Library (download)  
HP Cloud Recovery<sup>9</sup>  
HP Connect for Microsoft Endpoint Manager<sup>10</sup>  
HP Driver Packs (download)  
HP Image Assistant Gen5 (download)  
HP Manageability Integration Kit (download)<sup>11</sup>  
HP Patch Assistant (download)<sup>12</sup>

#### Security Management

HP Client Security Manager<sup>13</sup>  
HP Sure Admin<sup>14</sup>  
HP Sure Click<sup>15</sup>  
HP Sure Recover Gen6<sup>16</sup>  
HP Sure Run Gen5<sup>17</sup>  
HP Sure Sense<sup>18</sup>  
HP Sure Start Gen7<sup>19</sup>  
HP Tamper Lock<sup>20</sup>  
Secured-Core PC Enable<sup>21</sup>  
Windows Hello Enhanced Sign-In Security (ESS)  
Wolf Pro Security<sup>27</sup>

#### BIOS

Absolute Persistence Module<sup>22</sup>  
BIOS Update via Network  
HP BIOSphere Gen6<sup>23</sup>  
HP DriveLock & Automatic DriveLock  
HP Fingerprint Sensor<sup>24</sup>  
HP Secure Erase<sup>25</sup>  
HP Wake on WLAN

#### Security

##### TPM

Model:

- STMicroelectronics ST33HTPH2X32AHE4 (primary source)
- Nuvoton NPCT760HABYX (secondary source)

Version: 2.0

Revision: 1.38

FIPS 140-2 Compliant: Yes with Convert TPM to 2.0 (FIPS 140-2) option

- Zak: TPM component is FIPS 140-2 certified and already TPM 2.0 (TPM 1.2 is no longer supported).

<sup>1</sup> HP Connection Optimizer requires Windows 10 and Windows 11.

<sup>2</sup> HP Easy Clean requires Windows 10 RS3 and higher and will disable the keyboard, touchscreen, and clickpad only. Ports are not disabled. See user guide for cleaning instructions.

<sup>3</sup> HP Services Scan is preinstalled and/or provided thru Windows Update and checks for service entitlement on each hardware device and downloads the HP Insights agent automatically. To disable this feature, please follow the instructions at <http://www.hpdaas.com/requirements>. The HP Insights agent is a telemetry and analytics platform that provides critical data around devices and applications and is not sold as a standalone service. Select HP Workforce Solutions require an HP Insights agent for Windows,

### Features

Mac, & Android, available for download at <https://admin.hp.com/software>. For full system requirements and services that require the agent, please visit <https://admin.hp.com/requirements>. The agent collects telemetry and analytics around devices and applications that integrate into the Workforce Experience platform and is not sold as a standalone service. Internet access with connection to the Workforce Experience platform is required. HP follows stringent GDPR privacy regulations, and the platform is ISO27001, ISO27701, ISO27017 and SOC2 Type2 certified for Information Security. Not available in China.

<sup>4</sup> HP Smart Support requires the HP agent 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 agent-enabled service has been purchased, and will download applicable software automatically. The HP agent is a telemetry and analytics platform that provides critical data around devices and applications and is not sold as a standalone service. HP follows stringent GDPR privacy regulations and is ISO27001, ISO27701, ISO27017 and SOC2 Type2 certified for Information Security. Internet access is required. For full system requirements or to disable this feature, please visit <http://www.hpdaas.com/requirements>.

<sup>5</sup> HP Support Assistant - Requires Windows and Internet Access.

<sup>6</sup> HP customers qualify for a 90 day trail of Miro, this offer ends September 2025. Complete terms and conditions are provided by Miro when accepting the offer.

<sup>7</sup> Poly Lens Desktop requires a Windows OS.

<sup>8</sup> HP Wolf Security for Business requires Windows 10 or 11 Pro or higher, includes various HP security features and is available on HP Pro, Elite, RPOS and Workstation products. See product details for included security features and OS requirement.

<sup>9</sup> 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. Detail please refer to: <https://support.hp.com/us-en/document/c05115630>.

<sup>10</sup> HP Connect for Microsoft Endpoint Manager 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.

<sup>11</sup> HP Manageability Integration Kit can be downloaded from <https://ftp.ext.hp.com/pub/caps-softpaq/cmit/HPMIK.html>.

<sup>12</sup> 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>.

<sup>13</sup> HP Client Security Manager Gen7 requires Windows and is available on select HP Pro, Elite and ZBook PCs. See product specifications for details.

<sup>14</sup> 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.

<sup>15</sup> 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.

<sup>16</sup> HP Sure Recover Gen6 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

<sup>17</sup> HP Sure Run Gen5 is available on select HP PCs and requires Windows 10 and higher.

<sup>18</sup> HP Sure Sense is available on select HP PCs with Windows 10 Pro, Windows 10 Enterprise, Windows 11 Pro, or Windows 11 Enterprise OS.

<sup>19</sup> HP Sure Start Gen7 is available on select HP PCs and requires Windows 10 and higher

<sup>20</sup> HP Tamper Lock must be enabled by the customer or your administrator.

<sup>21</sup> Secured-core PC requires an Intel® vPro® or AMD Ryzen™ Pro processor. Requires 8 GB or more system memory. Secured-core PC functionality can be enabled from the factory.

<sup>22</sup> 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.

<sup>23</sup> HP BIOSphere Gen6 is available on select HP Pro, Elite and ZBook PCs. See product specifications for details. Features may vary depending on the platform and configurations.

<sup>24</sup> HP Fingerprint Reader is an optional feature that requires Windows 10 IoT and must be configured at purchase.

<sup>25</sup> 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™.

<sup>26</sup> Depending on the version available for your device and the setting you select, HP Battery Health Manager (BHM) will use a proprietary set of algorithms to optimize battery health during the life of the battery. New Commercial Notebooks come equipped with BHM set to "Let HP Manage My Battery Health" as the default. This setting will reduce charge capacity over time to optimize battery health and mitigate factors that can accelerate battery degradation. As a result of this reduction, battery runtime will decrease over time as available charge capacity is reduced. HP may, at any time, update HP Battery Health Manager to improve available settings, functionality, and

### Features

performance. Refurbished products may have customized default settings to optimize user experience. For additional information on updating or modifying HP Battery Health Manager settings, please go to [HP.COM/SUPPORT/BATTERY](https://hp.com/support/battery).

<sup>27</sup> HP Wolf Pro Security Edition is available preloaded on select SKUs, and, depending on the HP product purchased, includes a license with a term length communicated to you at purchase and in your order confirmation email. The HP Wolf Pro Security Edition software is licensed under the license terms of the HP Wolf Security Software - End-User license Agreement (EULA) that can be found at: [https://support.hp.com/us-en/document/ish\\_3875769-3873014-16](https://support.hp.com/us-en/document/ish_3875769-3873014-16) as that EULA is modified by the following: 7. Term. Unless otherwise terminated earlier pursuant to the terms contained in this EULA, the license for the HP Wolf Pro Security Edition is effective upon 4 months after the date the HP Product was shipped by HP and will continue for the term communicated to you at purchase and in your order confirmation email (“Initial Term”). At the end of the Initial Term you may either (a) purchase a renewal license for the HP Wolf Pro Security Edition from HP.com, HP Sales or an HP Channel Partner, or (b) continue using the standard versions of HP Sure Click and HP Sure Sense at no additional cost with no future software updates or HP Support. Notwithstanding the foregoing, the license shall expire no later than one year after the fixed term of the subject license ends.

### Features

#### POWER

##### Power Supply

HP Slim Smart 150W External Right Angle AC Power Adapter <sup>1</sup>

Not Included AC Adapter

##### Battery

HP XL-Long Life 86Whr Polymer Fast Charge 6 cell<sup>2,3</sup>

##### Power Cord

1.0m Premium Power Cord Sticker

1.0m Conventional Straight HF Power Cord Sticker

1.0m Premium Straight HF Power Cord Sticker

Not Included Power Cord

##### Battery life

Up to TBD<sup>4</sup>

##### Discrete

TBD<sup>5</sup>

<sup>1</sup> Availability may vary by country.

<sup>2</sup> Battery is internal and not replaceable by customer. Serviceable by warranty.

<sup>3</sup> For new batteries, actual battery Watt-hours (Wh) may differ from the design capacity and may have a full charge capacity that differs by up to 10, which is typical for lithium-ion batteries. Battery capacity naturally decreases over time and with use, depending on several factors such as battery health management settings, shelf life, temperature, environment, loaded apps, features, system configuration, and power settings.

<sup>4</sup> Recharges up to 50% within 30 minutes when the system is off or in standby mode when used with the power adapter provided with the notebook. Power adapter minimum of 65 watts required for battery capacities 56Whr or less. Power adapter minimum of 100 watts required for battery capacities greater than 56Whr and less than 83Whr. Power adapter minimum of 120 watts required for battery capacities greater than 83Whr and less than 100Whr. After charging has reached 90% capacity, charging speed will return to normal. Charging time may vary +/-10% due to System tolerance.

<sup>5</sup> MM25 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.

### Features

#### WEIGHTS & DIMENSIONS

**Dimensions (w x d x h)**

35.6 x 24.2 x 1.8 cm (touch)

14.02 x 9.54 x 0.72 in (touch)

35.6 x 24.2 x 1.9 cm (non-touch)

14.02 x 9.54 x 0.76 in (non-touch)

**Weights<sup>1</sup>****Product Weight**

Starting at 3.83 lb

Starting at 1.74 kg

<sup>1</sup>Weight will vary by configuration. Does not include power adapter.

#### PORTS/SLOTS

**Left Side:**

1 power connector

2 Thunderbolt™ 4 with USB4™ Type-C® 40Gbps signaling rate (USB Power Delivery, DisplayPort™ 1.4, HP Sleep and Charge)<sup>1</sup>

1 headphone/microphone combo

**Right Side:**

1 SuperSpeed USB Type-A 5Gbps signaling rate (charging)

1 SuperSpeed USB Type-C® 5Gbps signaling rate (USB Power Delivery, DisplayPort™ 1.4)<sup>2</sup>

1 nano security lock slot

<sup>1</sup>SuperSpeed USB 20Gbps is not available with Thunderbolt™ 4.

<sup>2</sup>Multi-Function USB-C port works with Discrete Graphics and Intel® ARC Graphics.

#### COMPATIBILITY

HP Thunderbolt 280W G4 Dock w/Combo Cable

4JOG4AA

HP 975 USB+BT Dual-Mode Wireless Keyboard

3Z726AA

HP Wired 320M Mouse

9VA80AA

HP Creator 935 Black Wireless Mouse

1D0K8AA

HP Nano Keyed Cable Lock

1AJ39AA

#### SERVICE AND SUPPORT

1-year warranty and 90-day software limited warranty options depending on country. 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>1</sup>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.

### Features

#### Certification and Compliance

ENERGY STAR® certified

EPEAT® registered where applicable. EPEAT® registration varies by country. See [www.epeat.net](http://www.epeat.net) for registration status by country.

EPEAT® Gold with Climate+ registered in US <sup>1</sup>

TCO Certified

Low halogen<sup>2</sup>

#### Sustainable Impact Specifications

5% ocean-bound plastic in the speaker enclosure

100% sustainably sourced or recycled packaging

50% post-consumer recycled DVDs/CDs in the keycaps

<sup>1</sup>EPEAT® registered where applicable. EPEAT® registration varies by country. See [www.epeat.net](http://www.epeat.net) for registration status by country.

<sup>2</sup>External power supplies, power cords, cables and peripherals are not Low Halogen. Service parts obtained after purchase may not be Low Halogen.

#### SYSTEM UNIT

<b>Stand-Alone Power Requirements (AC Power)</b>	<b>Nominal Operating Voltage</b>	19V
	<b>Max Operating Power</b>	1000 Ada/2000 Ada/3000 Ada/RTX4070 <50W
<b>Temperature</b>	<b>Operating</b>	32° to 95° F (0° to 35° C), System performance may be reduced above 32°C (89.6°F). No sustained direct exposure to sunlight.
	<b>Non-operating</b>	-4-140°F (-20 - 60°C)
<b>Relative Humidity</b>	<b>Operating</b>	10% to 90%, non-condensing
	<b>Non-operating</b>	5% to 95% (38.7° C (101.6° F) maximum wet bulb temperature; non-condensing)
<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>	0.75grms
	<b>Non-operating</b>	1.50grms
<b>Maximum Altitude (unpressurized)</b>	<b>Operating</b>	10,000 ft (3,048 m)
	<b>Non-operating</b>	40,000 ft (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>	Selected models
	<b>EPEAT®</b>	EPEAT Gold in United States
	<b>ICES</b>	Yes
	<b>Australia /</b>	Yes
	<b>NZ A-Tick Compliance</b>	Yes
	<b>CCC</b>	Yes
	<b>Japan VCCI Compliance</b>	Yes
	<b>KC</b>	Yes
	<b>BSMI</b>	Yes
	<b>CE Marking Compliance</b>	Yes
	<b>BNCI or BELUS</b>	Yes

### Features

<b>CIT</b>	Yes
<b>GOST</b>	Yes
<b>Saudi Arabian Compliance (ICCP)</b>	Yes
<b>SABS</b>	Yes

<sup>1</sup>Configurations of the HP ZBook Studio 16 inch G11 Mobile Workstation PC that are ENERGY STAR® qualified are identified as HP ZBook Studio 16 inch G11 Mobile Workstation PC ENERGY STAR on HP websites and on <http://www.energystar.gov>.

<sup>2</sup>Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. Status varies by country. Visit [www.epeat.net](http://www.epeat.net) for more information.

### Technical Specifications – Displays

#### DISPLAYS

<sup>1</sup>Actual brightness will be lower with touchscreen or Sure View.

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

<b>16 in WQUXGA (3840 x 2400) BrightView UWVA DCI-P3 NB22 400 eDP 1.4+PSR 100 bent OLED Panel<sup>1</sup></b>	<b>Outline Dimensions (W x H)</b>	348.578 x 224.310 (max)		
	<b>Active Area</b>	344.448 x 215.280 (typ)		
	<b>Weight</b>	230 (max)		
	<b>Diagonal Size</b>	16		
	<b>Thickness (body/PCB, mm)</b>	1.242 / 3.143 (max)		
	<b>Interface</b>	eDP1.4		
	<b>Surface Treatment</b>	Bright View		
	<b>Touch Enabled</b>	Yes		
	<b>Contrast Ratio</b>	100,000:1 (typ)		
	<b>Refresh Rate</b>	60 (typ)		
	<b>Brightness</b>	400 (typ)		
	<b>P.P.I.</b>	283		
	<b>Pixel Resolution</b>	<b>Pitch</b>	3840 x 2400 (WQUXGA)	
		<b>Format</b>	RGB	
	<b>Backlight</b>	OLED		
	<b>Color Gamut Coverage</b>	DCI-P3 100%		
	<b>Color Depth</b>	8		
	<b>Viewing Angle</b>	UWVA 85/85/85/85		
	<b>Power Consumption (W, EBL@ 150nits max /200nits max)</b>	6.10 (max) / 7.40 (max)		
<b>Low Blue Light</b>	Yes			
<b>Touch Point Supported</b>	10-point multi-touch			
<b>Pen Enabled</b>	No			

<b>16 in WQUXGA DRM (3840 x 2400) Anti-Glare UWVA LED DCI-P3 NB2Y 500 eDP1.4 w/o PSR 100 120Hz bent LCD Panel</b>	<b>Outline Dimensions (W x H)</b>	349.980 x 225.420 (max)		
	<b>Active Area</b>	344.680 x 215.420 (typ)		
	<b>Weight</b>	300 (max)		
	<b>Diagonal Size</b>	16		
	<b>Thickness (body/PCB, mm)</b>	2.3 / 4.1(max)		
	<b>Interface</b>	eDP1.4		
	<b>Surface Treatment</b>	Anti-Glare		
	<b>Touch Enabled</b>	No		
	<b>Contrast Ratio</b>	1200:1 (typ)		
	<b>Refresh Rate</b>	120 (typ)		
	<b>Brightness</b>	500 (typ)		
	<b>P.P.I.</b>	283		
	<b>Pixel Resolution</b>	<b>Pitch</b>	3840 x 2400 (WQUXGA)	

### Technical Specifications – Displays

		<b>Format</b>	RGB	
	<b>Backlight</b>	WLED		
	<b>Color Gamut Coverage</b>	DCI-P3 100%		
	<b>Color Depth</b>	8		
	<b>Viewing Angle</b>	UWVA 89/89/89/89		
	<b>Power Consumption (W, EBL@ 150nits max /200nits max)</b>	4.98 (max)/ 5.84 (max)		
	<b>Low Blue Light</b>	No		
	<b>Touch Point Supported</b>	No		
	<b>Pen Enabled</b>	No		
<b>16 in WUXGA (1920 x 1200) Anti-Glare UWVA WLED+LBL sRGB NB2Y 1000 eDP 1.3+PSR 100 PrivacyG4 Plus bent LCD Panel</b>	<b>Outline Dimensions (W x H)</b>	349.980 x 225.420 (max)		
	<b>Active Area</b>	344.680 x 215.420 (typ)		
	<b>Weight</b>	310 (max)		
	<b>Diagonal Size</b>	16		
	<b>Thickness (body/PCB, mm)</b>	2.2 / 3.9 (max)		
	<b>Interface</b>	eDP1.3		
	<b>Surface Treatment</b>	Anti-Glare		
	<b>Touch Enabled</b>	No		
	<b>Contrast Ratio</b>	1500:1 (typ)		
	<b>Refresh Rate</b>	60 (typ)		
	<b>Brightness</b>	1000 (typ)		
	<b>P.P.I.</b>	142		
	<b>Pixel Resolution</b>	<b>Pitch</b>	1920 x1200 (WUXGA)	
		<b>Format</b>	RGB	
		<b>Backlight</b>	WLED	
		<b>Color Gamut Coverage</b>	sRGB 100%	
		<b>Color Depth</b>	8	
	<b>Viewing Angle</b>	UWVA 85/85/85/85		
	<b>Power Consumption (W, EBL@ 150nits max /200nits max)</b>	N/A		
	<b>Low Blue Light</b>	Yes		
	<b>Touch Point Supported</b>	No		
	<b>Pen Enabled</b>	No		
<b>16 in WUXGA (1920 x 1200) Anti-Glare UWVA WLED+LBL sRGB NB2Y 400 eDP 1.4+PSR2 Low-Power 100 bent LCD Panel</b>	<b>Outline Dimensions (W x H)</b>	350.680 x 226.470 (max)		
	<b>Active Area</b>	344.678 x 215.424 (typ)		
	<b>Weight</b>	330 (max)		
	<b>Diagonal Size</b>	16		
	<b>Thickness (body/PCB, mm)</b>	2.6 / 4.6 (max)		
	<b>Interface</b>	eDP1.4		

### Technical Specifications – Displays

<b>Surface Treatment</b>	Anti-Glare
<b>Touch Enabled</b>	No
<b>Contrast Ratio</b>	1000:1 (typ)
<b>Refresh Rate</b>	60 (typ)
<b>Brightness</b>	400 (typ)
<b>P.P.I.</b>	142
<b>Pixel Resolution</b>	<b>Pitch</b> 1920 x1200 (WUXGA)
	<b>Format</b> RGB
<b>Backlight</b>	WLED
<b>Color Gamut Coverage</b>	sRGB 100%
<b>Color Depth</b>	8
<b>Viewing Angle</b>	UWVA 89/89/89/89
<b>Power Consumption (W, EBL@ 150nits max /200nits max)</b>	1.60 (max)/ 1.95 (max)
<b>Low Blue Light</b>	Yes
<b>Touch Point Supported</b>	No
<b>Pen Enabled</b>	No

### Technical Specifications – Storage

#### STORAGE AND DRIVES

<b>4TB PCIe-4x4 2280 NVMe Three Layer Cell double-sided M.2 Solid State Drive</b>	<b>Form Factor</b>	M.2 2280	
	<b>Capacity</b>	4TB	
	<b>NAND Type</b>	TLC	
	<b>Height</b>	0.09 in (2.3 mm)	
	<b>Width</b>	0.87 in (22 mm)	
	<b>Weight</b>	15g	
	<b>Interface</b>	PCIe NVMe Gen4X4	
	<b>Performance</b>	<b>Minimum Sequential Read</b>	<b>Minimum Sequential Write</b>
		6400 MB/s ±20%	5000 MB/s ±20%
	<b>Logical Blocks</b>	8,001,594,720	
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]	
<b>Features</b>	Pyrite 2.0; TRIM; L1.2		
	<b>NOTE:</b> For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 35 GB (for Windows) is reserved for system recovery software.		
<b>SSD 2TB 2280 PCIe-4x4 NVMe Three Layer Cell</b>	<b>Form Factor</b>	M.2 2280	
	<b>Capacity</b>	2 TB	
	<b>NAND Type</b>	TLC	
	<b>Height</b>	0.09 in (2.3 mm)	
	<b>Width</b>	0.87 in (22 mm)	
	<b>Weight</b>	0.02 lb (10 g)	
	<b>Interface</b>	PCIe NVMe Gen4X4	
	<b>Performance</b>	<b>Minimum Sequential Read</b>	<b>Minimum Sequential Write</b>
		6400 MB/s ±20%	5000 MB/s ±20%
	<b>Logical Blocks</b>	4,000,797,360	
	<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]	
<b>Features</b>	Pyrite 2.0; TRIM; L1.2		
	<b>NOTE:</b> For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 35 GB (for Windows) is reserved for system recovery software.		
<b>SSD 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>Height</b>	0.09 in (2.3 mm)	
	<b>Width</b>	0.87 in (22 mm)	
	<b>Weight</b>	0.02 lb (10 g)	
	<b>Interface</b>	PCIe NVMe Gen4X4	
	<b>Performance</b>	<b>Minimum Sequential Read</b>	<b>Minimum Sequential Write</b>
		6400 MB/s ±20%	5000 MB/s ±20%
	<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>	Pyrite 2.0; TRIM; L1.2		

### Technical Specifications – Storage

**NOTE:** For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 35 GB (for Windows) is reserved for system recovery software.

#### SSD 512GB 2280 PCIe-4x4 NVMe Three Layer Cell

Form Factor	M.2 2280	
Capacity	512GB	
NAND Type	TLC	
Height	0.09 in (2.3 mm)	
Width	0.87 in (22 mm)	
Weight	0.02 lb (10 g)	
Interface	PCIe NVMe Gen4X4	
<b>Performance</b>	<b>Minimum Sequential Read</b>	<b>Minimum Sequential Write</b>
	6400 MB/s ±20%	3500 MB/s ±20%
<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>	Pyrite 2.0; TRIM; L1.2	

**NOTE:** For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 35 GB (for Windows) is reserved for system recovery software.

#### 1TB PCIe-4x4 2280 NVMe Self Encrypted OPAL2 Three Layer Cell Solid State Drive

Form Factor	M.2 2280	
Capacity	1TB	
NAND Type	TLC	
Height	0.09 in (2.3 mm)	
Width	0.87 in (22 mm)	
Weight	0.02 lb (10 g)	
Interface	PCIe NVMe Gen4X4	
<b>Performance</b>	<b>Minimum Sequential Read</b>	<b>Minimum Sequential Write</b>
	6400 MB/s ±20%	5000 MB/s ±20%
<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>	TCG Opal 2.0; TRIM; L1.2	

**NOTE:** For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 35 GB (for Windows) is reserved for system recovery software.

#### 512GB PCIe-4x4 2280 NVMe Self Encrypted OPAL2 Three Layer Cell Solid State Drive

Form Factor	M.2 2280	
Capacity	512GB	
NAND Type	TLC	
Height	0.09 in (2.3 mm)	
Width	0.87 in (22 mm)	
Weight	0.02 lb (10 g)	
Interface	PCIe NVMe Gen4X4	
<b>Performance</b>	<b>Minimum Sequential Read</b>	<b>Minimum Sequential Write</b>
	6400 MB/s ±20%	3500 MB/s ±20%
<b>Logical Blocks</b>	1,000,215,215	
<b>Operating Temperature</b>	32° to 158°F (0° to 70°C) [ambient temp]	
<b>Features</b>	TCG Opal 2.0; TRIM; L1.2	

### Technical Specifications – Storage

**NOTE:** For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 35 GB (for Windows) is reserved for system recovery software.

### Technical Specifications – Networking

#### NETWORKING/COMMUNICATION

<p><b>Intel BE200 Wi-Fi 7 Bluetooth® 5.4 wireless card M.2 320MHz PCIe WLAN vPro®<sup>1</sup></b></p>	<p><b>Wireless LAN Standards</b></p>	<p>IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac IEEE 802.11ax IEEE 802.11be IEEE 802.11d IEEE 802.11e IEEE 802.11h IEEE 802.11i IEEE 802.11k IEEE 802.11r IEEE 802.11v</p>
	<p><b>Interoperability</b></p>	<p>Wi-Fi certified</p>
	<p><b>Frequency Band</b></p>	<p>802.11b/g/n/ax/be • 2.402 – 2.482 GHz 802.11a/n/ac/ax/be • 4.9 – 4.95 GHz (Japan) • 5.15 – 5.25 GHz • 5.25 – 5.35 GHz • 5.47 – 5.725 GHz • 5.825 – 5.850 GHz • 5.955 – 6.415 GHz • 6.435 – 6.515 GHz • 6.535 – 6.875 GHz • 6.895 – 7.115 GHz</p>
	<p><b>Data Rates</b></p>	<p>• 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: max 300Mbps • 802.11ac : 1733Mbps • 802.11ax : max 2.4Gbps • 802.11be : max 5.76Gbps</p>
	<p><b>Modulation</b></p>	<p>Direct Sequence Spread Spectrum OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM, 4096QAM</p>
	<p><b>Security<sup>1</sup></b></p>	<p>• IEEE and WiFi compliant 64 / 128 bit WEP encryption for a/b/g mode only • AES-CCMP: 128 bit in hardware • 802.1x authentication • WPA, WPA2: 802.1x. WPA-PSK, WPA2-PSK, TKIP, and AES. • WPA2 certification • WPA3 certification • IEEE 802.11i • WAPI</p>
	<p><b>Network Architecture Models</b></p>	<p>Ad-hoc (Peer to Peer)</p> <p>Infrastructure (Access Point Required)</p>
	<p><b>Roaming</b></p>	<p>IEEE 802.11 compliant roaming between access points</p>

### Technical Specifications – Networking

#### Output Power<sup>2</sup>

- 802.11b, 1Mbps : +17dBm minimum
- 802.11g, 6Mbps : +16dBm minimum
- 802.11a, 6Mbps : +17dBm minimum
- 802.11n, MCS7(HT20) : +14dBm minimum
- 802.11n, MCS7(HT40) : +13.5dBm minimum
- 802.11ac MCS9(VHT20) : 13.5dBm minimum
- 802.11ac MCS9(VHT40) : +13.5dBm minimum
- 802.11ac MCS9(VHT80) : +12.5dBm minimum
- 802.11ac MCS9(VHT160) : +10.5dBm minimum
- 802.11ax MCS11(HE20)(6GHz) : +11.5dBm minimum
- 802.11ax MCS11(HE40)(6GHz) : +7.5dBm minimum
- 802.11ax MCS11(HE80)(6GHz) : +7.5dBm minimum
- 802.11ax MCS11(HE160)(6GHz) : +7.5dBm minimum
- 802.11be MCS13(EHT20)(6GHz) : 11.5dBm
- 802.11be MCS13(EHT40)(6GHz) : 7.5dBm
- 802.11be MCS13(EHT80)(6GHz) : 7.5dBm
- 802.11be MCS13(EHT160)(6GHz) : 6.5dBm
- 802.11be MCS13(EHT320)(6GHz) : 4.5dBm

#### Power Consumption

- Transmit mode 3.4 W
- Receive mode 1.8 W
- Idle mode (PSP) 180 mW (WLAN Associated)
- Idle mode 50 mW (WLAN unassociated)
- Connected Standby 10mW
- Radio disabled 8 mW

#### Receiver Sensitivity<sup>3</sup>

- 802.11b, 1Mbps : -93.5dBm maximum
- 802.11b, 11Mbps : -85dBm maximum
- 802.11a/g, 6Mbps : -90.5dBm maximum
- 802.11a/g, 54Mbps : -72.5dBm maximum
- 802.11n, MCS0(HT20) : -90dBm maximum
- 802.11n, MCS7(HT20) : -71.5dBm maximum
- 802.11n, MCS0(HT40) : -88.5dBm maximum
- 802.11n, MCS7(HT40) : -68.5dBm maximum
- 802.11ac, MCS9(VHT20) : -88.5dBm maximum
- 802.11ac, MCS9(VHT40) : -65.5dBm maximum
- 802.11ac, MCS9(VHT80) : -60.5dBm maximum
- 802.11ac, MCS9(VHT160) : -58.5dBm maximum
- 802.11ax, MCS11(HE20)(6GHz) : -59.5dBm maximum
- 802.11ax, MCS11(HE40)(6GHz) : -56.5dBm maximum
- 802.11ax, MCS11(HE80)(6GHz) : -53.5dBm maximum
- 802.11ax, MCS11(HE160)(6GHz) : -51.5dBm maximum
- 802.11be, MCS13(EHT20)(6GHz) : -55.5dBm maximum
- 802.11be, MCS13(EHT40)(6GHz) : -53.5dBm maximum
- 802.11be, MCS13(EHT80)(6GHz) : -51.5dBm maximum
- 802.11be, MCS13(EHT160)(6GHz) : -48.5dBm maximum
- 802.11be, MCS13(EHT320)(6GHz) : -45.5dBm maximum

#### Antenna Type

High efficiency antenna with spatial diversity  
Two embedded tri-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 : 3.07g
2. Type 1216: 0.75g

### Technical Specifications – Networking

<b>Operating Voltage</b>	3.3v +/- 5%
<b>Temperature</b>	Operating 14° to 158° F (-10° to 70° C) Non-operating -40° to 176° F (-40° to 80° C)
<b>Humidity</b>	Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing)
<b>Altitude</b>	Operating Non- 0 to 10,000 ft (3,048 m) operating 0 to 50,000 ft (15,240 m)
<b>LED Activity</b>	LED Amber – Radio Off; LED Off – Radio ON
<b>HP Integrated Module with Bluetooth® 4.0/4.1/4.2/5.0/5.1/5.2/5.3/5.4 Wireless Card Technology</b>	
<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 I Bluetooth device with a maximum transmit power of +15.5 dBm for BR and +13dBm for EDR.
<b>Power Consumption</b>	Peak (Tx): 330 mW  Peak (Rx): 230 mW  Selective Suspend: 17 mW
<b>Bluetooth Software Supported</b>	1. Microsoft Windows Bluetooth Software 2. Linux/Chrome OS Bluetooth Software.
<b>Link Topology</b>	
<b>Power Management</b>	ACPI and PCI Express compliant power management 802.11 compliant power saving mode FCC (47 CFR) Part 15C/E, Section 15.247, 15.249, 15.407
<b>Certifications</b>	ETSI 300 328, ETSI 301 893, ETSI 303 687
<b>Bluetooth Profiles Supported</b>	Bluetooth® 4.1-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 Bluetooth® 4.2 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) Bluetooth® 5.2

### Technical Specifications – Networking

ESR9/10 Compliance  
 LE Advertisement Extensions  
 Channel Selection Algo  
 Limited High Duty Cycle Non-Connectable Advertising  
 2Mbps LE  
 LE Long Range  
 Bluetooth® 5.3  
 Host to Controller Encryption Key Control Enhancements  
 Compliance to the latest Errata Section 12.3 of Bluetooth® 5.3 wireless card specification

<sup>1</sup> Wi-Fi 7: Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 7 (802.11BE) functionality requires compatible Windows 11 OS, compatible processor, and separately purchased Wi-Fi 7 router to support backwards compatibility with prior 802.11 specs. Available in countries where Wi-Fi 7 is supported. The specification for 802.11BE is a draft specification and is not final. If the final specification differs from the draft specification, it may affect the ability of the device to communicate with other 802.11BE devices.

<sup>2</sup> Check latest software/driver release for updates on supported security features.

<sup>3</sup> 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.

<sup>4</sup> 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).

**Intel BE200 Wi-Fi 7  
 Bluetooth®5.4 wireless  
 card M.2 320MHz PCIe  
 WLAN non-vPro®<sup>1</sup>**

**Wireless LAN Standards**

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

**Interoperability**

Wi-Fi certified

**Frequency Band**

802.11b/g/n/ax/be  
 • 2.402 – 2.482 GHz  
 802.11a/n/ac/ax/be  
 • 4.9 – 4.95 GHz (Japan)  
 • 5.15 – 5.25 GHz  
 • 5.25 – 5.35 GHz  
 • 5.47 – 5.725 GHz  
 • 5.825 – 5.850 GHz  
 • 5.955 – 6.415 GHz  
 • 6.435 – 6.515 GHz  
 • 6.535 – 6.875 GHz  
 • 6.895 – 7.115 GHz

### Technical Specifications – Networking

<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: max 300Mbps</li><li>• 802.11ac : 1733Mbps</li><li>• 802.11ax : max 2.4Gbps</li><li>• 802.11be : max 5.76Gbps</li></ul>
<b>Modulation</b>	Direct Sequence Spread Spectrum OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM, 4096QAM
<b>Security<sup>1</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>• WPA3 certification</li><li>• IEEE 802.11i</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, 1Mbps : +17dBm minimum</li><li>• 802.11g, 6Mbps : +16dBm minimum</li><li>• 802.11a, 6Mbps : +17dBm minimum</li><li>• 802.11n, MCS7(HT20) : +14dBm minimum</li><li>• 802.11n, MCS7(HT40) : +13.5dBm minimum</li><li>• 802.11ac MCS9(VHT20) : 13.5dBm minimum</li><li>• 802.11ac MCS9(VHT40) : +13.5dBm minimum</li><li>• 802.11ac MCS9(VHT80) : +12.5dBm minimum</li><li>• 802.11ac MCS9(VHT160) : +10.5dBm minimum</li><li>• 802.11ax MCS11(HE20)(6GHz) : +11.5dBm minimum</li><li>• 802.11ax MCS11(HE40)(6GHz) : +7.5dBm minimum</li><li>• 802.11ax MCS11(HE80)(6GHz) : +7.5dBm minimum</li><li>• 802.11ax MCS11(HE160)(6GHz) : +7.5dBm minimum</li><li>• 802.11be MCS13(EHT20)(6GHz) : 11.5dBm</li><li>• 802.11be MCS13(EHT40)(6GHz) : 7.5dBm</li><li>• 802.11be MCS13(EHT80)(6GHz) : 7.5dBm</li><li>• 802.11be MCS13(EHT160)(6GHz) : 6.5dBm</li><li>• 802.11be MCS13(EHT320)(6GHz) : 4.5dBm</li></ul>
<b>Power Consumption</b>	<ul style="list-style-type: none"><li>• Transmit mode 3.4 W</li><li>• Receive mode 1.8 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>Receiver Sensitivity<sup>3</sup></b>	<ul style="list-style-type: none"><li>• 802.11b, 1Mbps : -93.5dBm maximum</li><li>• 802.11b, 11Mbps : -85dBm maximum</li><li>• 802.11a/g, 6Mbps : -90.5dBm maximum</li><li>• 802.11a/g, 54Mbps : -72.5dBm maximum</li><li>• 802.11n, MCS0(HT20) : -90dBm maximum</li><li>• 802.11n, MCS7(HT20) : -71.5dBm maximum</li><li>• 802.11n, MCS0(HT40) : -88.5dBm maximum</li></ul>

### Technical Specifications – Networking

	<ul style="list-style-type: none"> <li>• 802.11n, MCS7(HT40) : -68.5dBm maximum</li> <li>• 802.11ac, MCS9(VHT20) : -88.5dBm maximum</li> <li>• 802.11ac, MCS9(VHT40) : -65.5dBm maximum</li> <li>• 802.11ac, MCS9(VHT80) : -60.5dBm maximum</li> <li>• 802.11ac, MCS9(VHT160) : -58.5dBm maximum</li> <li>• 802.11ax, MCS11(HE20)(6GHz) : -59.5dBm maximum</li> <li>• 802.11ax, MCS11(HE40)(6GHz) : -56.5dBm maximum</li> <li>• 802.11ax, MCS11(HE80)(6GHz) : -53.5dBm maximum</li> <li>• 802.11ax, MCS11(HE160)(6GHz) : -51.5dBm maximum</li> <li>• 802.11be, MCS13(EHT20)(6GHz) : -55.5dBm maximum</li> <li>• 802.11be, MCS13(EHT40)(6GHz) : -53.5dBm maximum</li> <li>• 802.11be, MCS13(EHT80)(6GHz) : -51.5dBm maximum</li> <li>• 802.11be, MCS13(EHT160)(6GHz) : -48.5dBm maximum</li> <li>• 802.11be, MCS13(EHT320)(6GHz) : -45.5dBm maximum</li> </ul>
<b>Antenna Type</b>	High efficiency antenna with spatial diversity Two embedded tri-band 2.4/5/6 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications
<b>Form Factor</b>	PCI-Express M.2 MiniCard
<b>Dimensions</b>	1. Type 2230 : 2.3 x 22.0 x 30.0 mm 2. Type 1216: 1.67 x 12.0 x 16.0 mm
<b>Weight</b>	1. Type 2230 : 3.07g 2. Type 1216: 0.75g
<b>Operating Voltage</b>	3.3v +/- 5%
<b>Temperature</b>	Operating 14° to 158° F (-10° to 70° C) Non-operating -40° to 176° F (-40° to 80° C)
<b>Humidity</b>	Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing)
<b>Altitude</b>	Operating Non-operating 0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)
<b>LED Activity</b>	LED Amber – Radio Off; LED Off – Radio ON
<b>HP Integrated Module with Bluetooth® 4.0/4.1/4.2/5.0/5.1/5.2/5.3/5.4 Wireless Card Technology</b>	
<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 I Bluetooth device with a maximum transmit power of +15.5 dBm for BR and +13dBm for EDR.
<b>Power Consumption</b>	Peak (Tx): 330 mW  Peak (Rx): 230 mW  Selective Suspend: 17 mW

### Technical Specifications – Networking

<b>Bluetooth Software Supported</b>	1. Microsoft Windows Bluetooth Software 2. Linux/Chrome OS Bluetooth Software.
<b>Link Topology</b>	
<b>Power Management</b>	ACPI and PCI Express compliant power management 802.11 compliant power saving mode FCC (47 CFR) Part 15C/E, Section 15.247, 15.249, 15.407
<b>Certifications</b>	ETSI 300 328, ETSI 301 893, ETSI 303 687
<b>Bluetooth Profiles Supported</b>	Bluetooth® 4.1-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 Bluetooth® 4.2 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) Bluetooth® 5.2 ESR9/10 Compliance LE Advertisement Extensions Channel Selection Algo Limited High Duty Cycle Non-Connectable Advertising 2Mbps LE LE Long Range Bluetooth® 5.3 Host to Controller Encryption Key Control Enhancements Compliance to the latest Errata Section 12.3 of Bluetooth® 5.3 wireless card specification

<sup>1</sup> Wi-Fi 7: Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 7 (802.11BE) functionality requires compatible Windows 11 OS, compatible processor, and separately purchased Wi-Fi 7 router to support backwards compatibility with prior 802.11 specs. Available in countries where Wi-Fi 7 is supported. The specification for 802.11BE is a draft specification and is not final. If the final specification differs from the draft specification, it may affect the ability of the device to communicate with other 802.11BE devices.

<sup>2</sup> Check latest software/driver release for updates on supported security features.

<sup>3</sup> 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.

<sup>4</sup> 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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## AUDIO

**HD Stereo Codec**

Realtek ALC3315



### Technical Specifications – Networking

<b>Audio I/O Ports</b>	Headset : CTIA only and Headphone-out
<b>Internal Speaker Amplifier</b>	Cirrus Logic High-Efficiency Boosted Class D Amplifier
<b>Multi-streaming Capable</b>	Playback multi-streaming can be enabled in the audio control panel to allow independent audio. Following MSFT Behaviour
<b>Sampling</b>	DAC:44.1k/48kHz ADC:48kHz
<b>Wavetable Syntheses</b>	NO
<b>Analog Audio</b>	Support 3.5mm Headset : CTIA only and Headphone-out
<b># of Channels on Line-Out</b>	NO
<b>Internal Speaker</b>	YES

### FINGERPRINT READER

<b>Sensor vendor</b>	Synaptics FS7604
<b>Sensor type</b>	Capacitive
<b>DPI resolution</b>	363 DPI
<b>Scan area</b>	104 x 86 pixels
<b>False Rejection Rate</b>	RR= $\leq$ 3% @ 1:100K
<b>False Acceptance Rate</b>	
<b>Mobile Voltage Operation</b>	3.0V to 3.6V
<b>Operating Temperature</b>	14° – 167°F (-10°-75°C)
<b>Current Consumption Image</b>	36mA peak
<b>Low Latency Wait For Finger</b>	950 uA
<b>Capture Rate</b>	Capture Rate: 30 cm/sec
<b>ESD Resistance</b>	IEC 61000-4-2 4B (+15KV)
<b>Detection Matrix</b>	200*1 (Plus another secondary line) / 508 dpi / 10mm sensor area

### POWER

<b>HP 150W Slim 4.5 mm PFC Right Angle Smart (3-pin) AC Power Adapter</b>	<b>Dimensions</b>	138x66x22mm	
	<b>Weight</b>	unit: 330g +/- 10g	
	<b>Input</b>	<b>Input Efficiency</b>	88% at 115 Vac and 89% at 230Vac
		<b>Input frequency range</b>	47 ~ 63 Hz
	<b>Output</b>	<b>Input AC current</b>	2.7 A at 90 Vac and Maximum Load
		<b>Output power</b>	150W
	<b>Connector</b>	<b>DC output</b>	19.5V
		<b>Hold-up time</b>	5ms at 115 Vac input
		<b>Output current limit</b>	< 16.0A
		<b>AC Inlet Type</b>	C6
		<b>DC Cable Connector</b>	4.5mm Barrel Type
			C6

### Technical Specifications – Networking

#### Environmental Design

#### Operating temperature

32° to 95° F (0° to 35° C)

#### Non-operating (storage) temperature

-4° to 185° F (-20° to 85° C)

#### Altitude

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

#### Humidity

20% to 95%

#### Storage Humidity

10% to 95%

#### EMI and Safety Certifications

CE Mark - full compliance with LVD and EMC directives

Worldwide safety standards - IEC60950-1 and IEC62368-1 : 2018, EN62368-1:2014+A11, UL62368-1

Agency approvals - C-UL-US, TUV/GS, TUV/PSE, EN55032 Class B, FCC Class B, CISPR32 Class B, CCC and CECP, CU(EAC), EAEU, KCC(Safety+EMC), NOM-001 and 029 NYCE, NRcan, NRCS, ISC, SEC, PSB, Argentina S-mark, Australia GEMS and RCM, BIS, BSMI, UAE, UKCA DoC

### Technical Specifications – Power

<b>86Whr XL-Long Life Polymer Fast Charge 6 cell Battery</b> <sup>1,2</sup>	<b>Dimensions (H x W x L)</b>	299.15*81.2*8.14 mm(11.7*3.2*0.32 inch)	
	<b>Weight</b>	0.339kg+/-0.010kg (0.75lb+/-0.02lb)	
	<b>Cells/Type</b>	6-cell Lithium-Ion Polymer cell / 684467	
	<b>Energy</b>	Voltage	11.58V
		Amp-hour capacity	7.130Ah / 7.428Ah
		Watt-hour capacity	86Wh
	<b>Temperature</b>	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 140° F (-10° to 60° C)
	<b>Fuel Gauge LED</b>	NA	
	<b>Warranty</b>	Refer to product warranty	
<b>Optional Travel Battery Available</b>	No		

<sup>1</sup> 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.

<sup>2</sup> Recharges up to 50% within 30 minutes when the system is off or in standby mode when used with the power adapter provided with the notebook. Power adapter minimum of 65 watts required for battery capacities 56Whr or less. Power adapter minimum of 100 watts required for battery capacities greater than 56Whr and less than 83Whr. Power adapter minimum of 120 watts required for battery capacities greater than 83Whr and less than 100Whr. After charging has reached 90% capacity, charging speed will return to normal. Charging time may vary +/-10% due to System tolerance.

### Technical Specifications – Environmental

#### ENVIRONMENTAL DATA

##### Eco-Label Certifications & declarations

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:

- IT ECO declaration
- US ENERGY STAR®
- US Federal Energy Management Program (FEMP)
- EPEAT<sup>®</sup> Gold registered in the United States. See <http://www.epeat.net> for registration status in your country.
- TCO Certified
- China Energy Conservation Program (CECP)
- China State Environmental Protection Administration (SEPA)
- Taiwan Green Mark
- Korea Eco-label
- Japan PC Green label\*

##### Sustainable Impact Specifications

- [Product Carbon Footprint](#)
- Ocean-bound plastic in Speaker, CPU fan
- 23% post-consumer recycled plastic
- 80% recycled metal
- Low halogen
- Outside Box and corrugated cushions are 100% sustainably sourced and recyclable
- Molded Paper Pulp Cushion inside box is 100% sustainably sourced and recyclable.
- Bulk packaging available

##### System Configuration

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a “Typically Configured Notebook”.

##### Energy Consumption (in accordance with US ENERGY STAR® test method)

	115VAC, 60Hz	230VAC, 50Hz	100VAC, 50Hz
Normal Operation (Short idle)	5.74 W	5.89 W	5.79 W
Normal Operation (Long idle)	0.80 W	0.90 W	0.79 W
Sleep	0.80 W	0.90 W	0.79 W
Off	0.33 W	0.36 W	0.34 W

##### NOTE:

Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family. HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.

##### Heat Dissipation\*

	115VAC, 60Hz	230VAC, 50Hz	100VAC, 50Hz
Normal Operation (Short idle)	19.57 BTU/hr	20.08 BTU/hr	19.74 BTU/hr
Normal Operation (Long idle)	2.73 BTU/hr	3.07 BTU/hr	2.69 BTU/hr
Sleep	2.73 BTU/hr	3.07 BTU/hr	2.69 BTU/hr
Off	1.13 BTU/hr	1.23 BTU/hr	1.16 BTU/hr

### Technical Specifications – Environmental

**\*NOTE:** Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

#### Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)

	Sound Power (L <sub>Wad</sub> , bels)	Sound Pressure (L <sub>pAm</sub> , decibels)
Typically Configured – Idle	3.2	24.4
Fixed Disk – Random writes	3.4	27.0
Optical Drive – Sequential reads	4.1	33.9

#### Longevity and Upgrading

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.

#### Additional Information

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive – 2011/65/EC.
- This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.
- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
- This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold level, see [www.epeat.net](http://www.epeat.net)
- Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.
- This product is 97.3% recycle-able when properly disposed of at end of life.

#### Packaging Materials

External:		
	PAPER/Corrugated	358 g
	PAPER/Paper	28 g
	PAPER/Molded Pulp	79 g

The plastic packaging material contains at least 0.0% recycled content.

The corrugated paper packaging materials contains at least 53.2% recycled content.

#### RoHS Compliance

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.

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.

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 scope of the commitment to include further restricted substances as regulations continue to evolve.

To obtain a copy of the HP RoHS Compliance Statement, see [HP RoHS position statement](#).

### Technical Specifications – Environmental

#### Material Usage

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 <https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c05998906>):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants – may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons
- Chlorinated Paraffins
- Bis(2-Ethylhexyl) phthalate (DEHP)
- Benzyl butyl phthalate (BBP)
- Dibutyl phthalate (DBP)
- Diisobutyl phthalate (DIBP)
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

#### Packaging Usage

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

#### End-of-life Management and Recycling

HP offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: <https://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c05403198> or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

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: [HP Product Disassembly Instruction](#)

### Technical Specifications – Environmental

**Website.** 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.

#### HP Inc. Corporate Environmental Information

For more information about HP's commitment to the environment:

Sustainable Impact Report

<https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c06040843>

Eco-label certifications

[https://www.hp.com/us-en/sustainable-impact/document-reports.html#filters\\_documents\\_reports-=document\\_type-type\\_energy\\_star,type\\_epeat,type\\_tcoISO](https://www.hp.com/us-en/sustainable-impact/document-reports.html#filters_documents_reports-=document_type-type_energy_star,type_epeat,type_tcoISO)

ISO 14001 certificates:

<https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c04777932>

#### Footnotes

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

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

Type	Description	Part #
<b>Audio/Video</b>	TBD	
<b>Cases</b>	HP Renew Business 17.3 Laptop Backpack	3E2U5AA
	HP Renew Business 17.3 Laptop Backpack	3E2U5ET
	HP Renew Business 17.3 Laptop Backpack	3E2U5UT
	HP Renew Business 17.3 Laptop Bag	3E2U6AA
	HP Renew Business 17.3 Laptop Bag	3E2U6UT
	HP Renew Business 17.3 Laptop Backpack (Bulk Qty. 6)	3E2U5A6
	HP Renew Executive 16 Laptop Backpack	6B8Y1AA
	HP Renew Executive 16 Laptop Bag	6B8Y2AA
<b>Docking station</b>	HP Thunderbolt 280W G4 Dock w/Combo Cable	4J0G4AA
<b>Hub</b>	HP USB-C to USB-A Hub	Z6A00AA
<b>Adapter</b>	HP USB-C to USB 3.0 Adapter	N2Z63AA
	HP USB-C to USB 3.0 Adapter	N2Z63UT
	HP USB-C to VGA Adapter	N9K76AA
	HP USB-C to VGA Adapter	N9K76UT
	HP USB-C to VGA Adapter	P7Z54AA
	HP USB-C to HDMI 2.0 Adapter	1WC36AA
	HP USB-C to HDMI 2.0 Adapter	2PC54AA
	HP USB-C to RJ45 Adapter G2	4Z527AA
	HP USB-C to RJ45 Adapter G2	4Z527UT
	HP USB-C to RJ45 Adapter G2	4Z534AA
	HP USB 3.0 to Gig RJ45 Adapter G2	4Z7Z7AA
	HP USB 3.0 to Gig RJ45 Adapter G2	4Z7Z7UT
	HP USB-C to DisplayPort Adapter G2	8Y8Y1AA
<b>Keyboard/Combo</b>	HP 975 USB+BT Dual-Mode Wireless Keyboard	3Z726AA
	HP 975 USB+BT Dual-Mode Wireless Keyboard	3Z726UT
	HP 455 Programmable Wireless Keyboard	4R177AA
	HP 455 Programmable Wireless Keyboard	4R177ET
	HP 455 Programmable Wireless Keyboard	4R177UT
	HP Wireless Rechargeable 950MK Mouse and Keyboard	3M165AA
	HP Wireless Rechargeable 950MK Mouse and Keyboard	3M165UT
	HP 655 Wireless Keyboard and Mouse Combo	4R009AA
	HP 655 Wireless Keyboard and Mouse Combo	4R009ET
	HP 655 Wireless Keyboard and Mouse Combo	4R009UT
<b>Mouse</b>	HP Wired 320M Mouse	9VA80AA
	HP Wired 320M Mouse	9VA80ET
	HP Wired 320M Mouse	9VA80UT

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

	HP Multi-Device 635 Black Wireless Mouse	1D0K2AA
	HP Multi-Device 635 Black Wireless Mouse	1D0K2UT
	HP Creator 935 Black Wireless Mouse	1D0K8AA
	HP Creator 935 Black Wireless Mouse	1D0K8UT
	HP 435 Multi-Device Wireless Mouse	3B4Q5AA
	HP 715 Rechargeable Multi-Device Bluetooth Mouse	6E6FOAA
	HP 925 Ergonomic Vertical Wireless Mouse	6H1A5AA
	HP 425 Programmable Wireless Mouse	7M1D5AA
	HP 685 Comfort Dual-Mode Mouse	8T6M0AA
<b>Power</b>	HP 150W Slim Smart 4.5mm AC Adapter	4SC18AA
	HP ZBook 230W Slim Smart 4.5mm AC Adapter	6E6M1AA
<b>Commodity</b>	HP 2TB PCIe-4x4 NVMe TLC M.2 Solid State Drive	6D8L6AA
	HP USB External DVDRW Drive	F2B56AA
	HP USB External DVDRW Drive	Y3T76AA
<b>Monitor</b>	HP Z27k G3 4K USB-C Display	1B9T0A7
	HP Z27k G3 4K USB-C Display	1B9T0AA
	HP Z27k G3 4K USB-C Display	1B9T0AT
	HP Z27u G3 QHD USB-C Display	1B9X2A7
	HP Z27u G3 QHD USB-C Display	1B9X2AA
	HP Z27u G3 QHD USB-C Display	1B9X2AT
	HP Series 7 Pro 27 inch QHD Monitor - 727pq	8J4D8A5
	HP Series 7 Pro 27 inch QHD Monitor - 727pq	8J4D8AA
	HP Series 7 Pro 27 inch QHD Monitor - 727pq	8J4D8AT
	HP Series 7 Pro 27 inch QHD Monitor - 727pq	8J4D8E9
	HP Series 7 Pro 34 inch WQHD Conferencing Monitor - 734pm	8K157A5
	HP Series 7 Pro 34 inch WQHD Conferencing Monitor - 734pm	8K157AA
	HP Series 7 Pro 34 inch WQHD Conferencing Monitor - 734pm	8K157AT
	HP Series 7 Pro 34 inch WQHD Conferencing Monitor - 734pm	8K157E9
	HP Series 7 Pro 27 inch QHD Thunderbolt 4 Monitor - 727pu	8J9E6A5
	HP Series 7 Pro 27 inch QHD Thunderbolt 4 Monitor - 727pu	8J9E6AA
	HP Series 7 Pro 27 inch QHD Thunderbolt 4 Monitor - 727pu	8J9E6AT
	HP Series 7 Pro 27 inch QHD Thunderbolt 4 Monitor - 727pu	8J9E6E9
	HP Series 7 Pro 37.5 inch WQHD+ Thunderbolt 4 Monitor - 738pu	8K167A5
	HP Series 7 Pro 37.5 inch WQHD+ Thunderbolt 4 Monitor - 738pu	8K167AA
	HP Series 7 Pro 37.5 inch WQHD+ Thunderbolt 4 Monitor - 738pu	8K167AT
	HP Series 7 Pro 37.5 inch WQHD+ Thunderbolt 4 Monitor - 738pu	8K167E9
	HP Series 7 Pro 27 inch 4K Thunderbolt 4 Monitor - 727pk	8J9G2A5
	HP Series 7 Pro 27 inch 4K Thunderbolt 4 Monitor - 727pk	8J9G2AA
	HP Series 7 Pro 27 inch 4K Thunderbolt 4 Monitor - 727pk	8J9G2AT
	HP Series 7 Pro 27 inch 4K Thunderbolt 4 Monitor - 727pk	8J9G2E9
	HP Series 7 Pro 27 inch 4K Conferencing Monitor - 727pm	8K135A5

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

HP Series 7 Pro 27 inch 4K Conferencing Monitor - 727pm	8K135AA
HP Series 7 Pro 27 inch 4K Conferencing Monitor - 727pm	8K135AT
HP Series 7 Pro 27 inch 4K Conferencing Monitor - 727pm	8K135E9
HP Series 7 Pro 23.8 inch FHD Monitor - 724pf	8X530A5
HP Series 7 Pro 23.8 inch FHD Monitor - 724pf	8X530AA
HP Series 7 Pro 23.8 inch FHD Monitor - 724pf	8X530AT
HP Series 7 Pro 23.8 inch FHD Monitor - 724pf	8X530E9
HP Series 7 Pro 24 inch WUXGA Monitor - 724pn	8X534A5
HP Series 7 Pro 24 inch WUXGA Monitor - 724pn	8X534AA
HP Series 7 Pro 24 inch WUXGA Monitor - 724pn	8X534AT
HP Series 7 Pro 24 inch WUXGA Monitor - 724pn	8X534E9
HP Series 7 Pro 24 inch WUXGA USB-C Monitor - 724pu	8Y2F7A5
HP Series 7 Pro 24 inch WUXGA USB-C Monitor - 724pu	8Y2F7AA
HP Series 7 Pro 24 inch WUXGA USB-C Monitor - 724pu	8Y2F7AT
HP Series 7 Pro 24 inch WUXGA USB-C Monitor - 724pu	8Y2F7E9
HP Series 7 Pro 31.5 inch 4K Thunderbolt 4 Monitor - 732pk	8Y2K9A5
HP Series 7 Pro 31.5 inch 4K Thunderbolt 4 Monitor - 732pk	8Y2K9AA
HP Series 7 Pro 31.5 inch 4K Thunderbolt 4 Monitor - 732pk	8Y2K9AT
HP Series 7 Pro 31.5 inch 4K Thunderbolt 4 Monitor - 732pk	8Y2K9E9
HP Series 7 Pro 39.7 inch 5K2K Conferencing Monitor - 740pm	8Y2R2A5
HP Series 7 Pro 39.7 inch 5K2K Conferencing Monitor - 740pm	8Y2R2AA
HP Series 7 Pro 39.7 inch 5K2K Conferencing Monitor - 740pm	8Y2R2AT
HP Series 7 Pro 39.7 inch 5K2K Conferencing Monitor - 740pm	8Y2R2E9

### Security

HP Nano Keyed Cable Lock	1AJ39AA
HP Nano Keyed Cable Lock	1AJ39UT
HP Nano Master Keyed Cable Lock	1AJ40AA
HP Sure Key Cable Lock	6UW42AA
HP Sure Key Cable Lock	6UW42UT
HP Nano Combination Cable Lock	63B28AA
HP Essential Nano Combination Cable Lock	63B31AA

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<b>Date of change:</b>	<b>Version History:</b>		<b>Description of change:</b>
July 18, 2024	From v1 to v2	Added	ENVIRONMENTAL DATA, SOFTWARE AND SECURITY sections
August 1, 2024	From v2 to v3	Removed	microSD
August 29, 2024	From v3 to v4	Changed	SOFTWARE AND SECURITY section
September 24, 2024	From v4 to v5	Changed	Format