

### Overview

### HP ZBook Power G10 Mobile Workstation PC

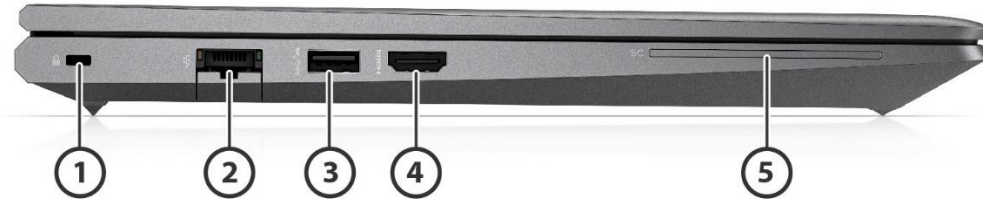


1. Webcam LED (Optional)
2. Internal Microphones (2)
3. Webcam
4. IR Camera (Optional)
5. Camera Shutter
6. IR Camera LEDs (Optional)
7. Glass Clickpad
8. Power Button Key
9. LED Indicator

#### Right

10. Power connector
11. USB Type-C® with Thunderbolt™ 4
12. USB 3.2 Gen 1
13. USB 3.2 Gen 1
14. Audio Combo Jack
15. Touch Fingerprint Sensor (Select models)
16. Speakers

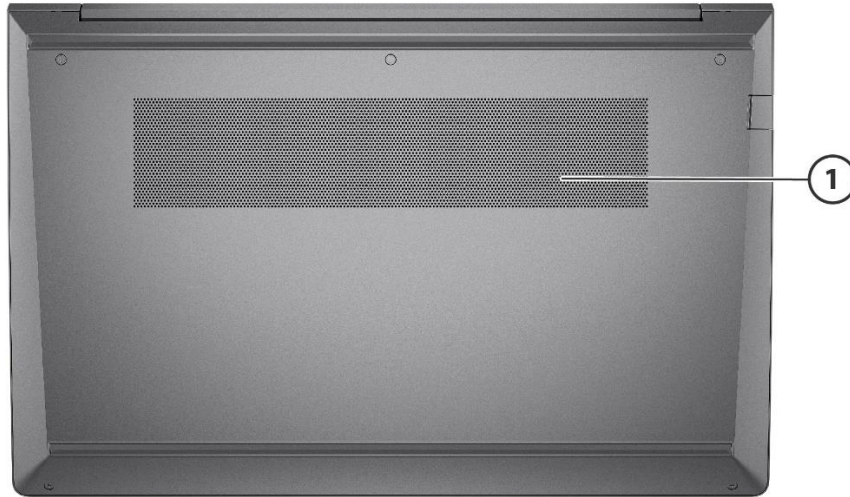
### Overview



#### Left

1. Nano Security Lock Slot (Lock sold separately)
2. RJ-45
3. SuperSpeed USB Type-A 5Gbps signaling rate (Charging)
4. HDMI 2.1 port
5. Smart Card Reader (optional)

### Overview



### Bottom

1. Fan Venting
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### Overview

#### At A Glance

- Ultraslim design with precision-crafted all-metal chassis for a premium look and feel
- 13th Generation Intel® Core™ i5, i7, i9 H series Processors up to fourteen-core
- Preinstalled with Windows 11 versions or FreeDOS
- 5MP camera (with 88 degree Field of View) with HP Auto Frame allows you to move around without losing viewers' attention during video calls
- New DDR5 5200 memory with up to 64GB capacity and PCI Gen4 SSDs provide fast access to your work
- Choice of displays:
  - 39.6 cm (15.6") diagonal FHD (1920x1080) Anti-Glare, UWVA, Touch on Panel (TOP), 45% CG, 250nits, eDP 1.2, bent type LCD panel
  - 39.6 cm (15.6") diagonal FHD (1920x1080) Anti-Glare, UWVA, 45% CG, 250nits, eDP 1.2, bent type LCD panel
  - 39.6 cm (15.6") diagonal FHD (1920 x 1080) Anti-Glare, UWVA, Low Blue Light, 100% CG, 400nits, eDP 1.4, Low-Power, bent type LCD panel
  - 39.6 cm (15.6") diagonal QHD (2560 x 1440) Anti-Glare, UWVA, Low Blue Light, 100% CG, 300nits, eDP 1.4, bent type LCD panel
- Premium keyboard layout to include easy use of discrete PgUp/Dn, End, and Home keys
- Optional NVIDIA RTX A500/A1000/2000 ada/3000 ada pro graphics for improved performance for heavier graphics workloads.
- HP Wolf Security for Business creates a hardware-enforced, always-on, resilient defense.
- Larger Clickpad surface for easier, more intuitive input
- Undergoes MIL-STD 810H 19 tests
- Supports fast charging (50% in 30 minutes) with no impact on battery recharge cycles
- Designed to support all HP docking options

**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 <sup>2</sup> Windows 11 Pro Education <sup>2</sup> Windows 11 Home - HP recommends Windows 11 Pro for business <sup>2</sup> Windows 11 Home Single Language - HP recommends Windows 11 Pro for business <sup>2</sup> Windows 11 Pro (Windows 11 Enterprise or Windows 10 Enterprise available with a Volume Licensing Agreement) <sup>2</sup> Windows 11 Pro (preinstalled with Windows 10 Pro Downgrade) <sup>2,3</sup> FreeDOS
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<sup>2</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>.

<sup>3</sup>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.

**NOTE:** Your product does not support Windows 8 or Windows 7. In accordance with Microsoft's support policy, HP does not support the Windows<sup>®</sup> 8 or Windows 7 operating system on products configured with Intel<sup>®</sup> and AMD<sup>®</sup> 7th generation and forward processors or provide any Windows<sup>®</sup> 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**

13<sup>th</sup> Generation Intel<sup>®</sup> Core™ i5-13500H with Intel<sup>®</sup> Iris<sup>®</sup> Xe Graphics (2.6 GHz base frequency, up to 4.7 GHz with Intel<sup>®</sup> Turbo Boost Technology, 18 MB L3 cache, 4 P-cores and 8 E-cores, 16 threads) <sup>1,2,3,4</sup>

13<sup>th</sup> Generation Intel<sup>®</sup> Core™ i5-13600H with Intel<sup>®</sup> Iris<sup>®</sup> Xe Graphics (2.8 GHz base frequency, up to 4.8 GHz with Intel<sup>®</sup> Turbo Boost Technology, 18 MB L3 cache, 4 P-cores and 8 E-cores, 16 threads), supports Intel<sup>®</sup> vPro<sup>®</sup> Technology <sup>1,2,3,4,5</sup>

13<sup>th</sup> Generation Intel<sup>®</sup> Core™ i7-13700H with Intel<sup>®</sup> Iris<sup>®</sup> Xe Graphics (2.4 GHz base frequency, up to 5.0 GHz with Intel<sup>®</sup> Turbo Boost Technology, 24 MB L3 cache, 6 P-cores and 8 E-cores, 20 threads); <sup>1,2,3,4</sup>

13<sup>th</sup> Generation Intel<sup>®</sup> Core™ i7-13800H with Intel<sup>®</sup> Iris<sup>®</sup> Xe Graphics (2.5 GHz base frequency, up to 5.2 GHz with Intel<sup>®</sup> Turbo Boost Technology, 24 MB L3 cache, 6 P-cores and 8 E-cores, 20 threads), supports Intel<sup>®</sup> vPro<sup>®</sup> Technology; <sup>1,2,3,4,5</sup>

13<sup>th</sup> Generation Intel<sup>®</sup> Core™ i9-13900HK with Intel<sup>®</sup> Iris<sup>®</sup> Xe Graphics (2.6 GHz base frequency, up to 5.4 GHz with Intel<sup>®</sup> Turbo Boost Technology, 24 MB L3 cache, 6 P-cores and 8 E-cores);<sup>1,2,3,4</sup>

13<sup>th</sup> Generation Intel<sup>®</sup> Core™ i9-13900H with Intel<sup>®</sup> Iris<sup>®</sup> Xe Graphics (2.6 GHz base frequency, up to 5.4 GHz with Intel<sup>®</sup> Turbo Boost Technology, 24 MB L3 cache, 6 P-cores and 8 E-cores, 20 threads), supports Intel<sup>®</sup> vPro<sup>®</sup> Technology <sup>1,2,3,4,5</sup>

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

<sup>2</sup> Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.

<sup>3</sup> Intel<sup>®</sup> Turbo Boost performance varies depending on hardware, software and overall system configuration. See [www.intel.com/technology/turboboost](http://www.intel.com/technology/turboboost) for more information.

<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>.

### Features

<sup>5</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>

### Features

#### CHIPSET

Chipset is integrated with processor

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

Intel® Core™ i5 with vPro®, Core™ i7 with vPro®, Core™ i9 with vPro® technology 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>, see data sheet

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#### GRAPHICS

##### Integrated

Intel® Iris® Xe Graphics <sup>1, 3, 4, 5, 6</sup>

##### Discrete

NVIDIA RTX A500 (4GB) <sup>1,2,3,4,5</sup>

NVIDIA RTX A1000 (6 GB) <sup>1,2,3,4,5</sup>

NVIDIA RTX 2000 Ada (8GB) <sup>1,2,3,4,5</sup>

NVIDIA RTX 3000 Ada (8GB) <sup>1,2,3,4,5</sup>

##### Supports

Support HD decode, DX12, HDMI 2.1, HDCP 2.3

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

<sup>2</sup> Discrete configurations support 4 independent displays when on the HP Thunderbolt Dock G2 (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>3</sup> Support HD decode, DX12, HDMI 2.0b, HDCP 2.3 via DP up to 4K @ 60Hz and via HDMI up to 4096x2304 @ 60Hz

<sup>4</sup> HDMI cable Sold Separately

<sup>5</sup> Shared video memory (UMA) uses part of the total system memory for video performance. System memory dedicated to video performance is not available for other use by other programs.

<sup>6</sup> Intel® Iris® Xe Graphics capabilities require system to be configured with Intel® Core™ i5, i7, or i9 processors and dual channel memory. Intel® Iris® Xe Graphics with Intel® Core™ i5, i7, or i9 processors and single channel memory will only function as UHD graphics.

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### Features

#### DISPLAY

##### Non-touch

- 39.6 cm (15.6") diagonal FHD (1920x1080) Anti-Glare, UWVA, 45% CG, 250nits, eDP 1.2, bent type LCD panel
- 39.6 cm (15.6") diagonal FHD (1920 x 1080) Anti-Glare, UWVA, Low Blue Light, 100% CG, 400nits, eDP 1.4, Low-Power, bent type LCD panel
- 39.6 cm (15.6") diagonal QHD (2560 x 1440) Anti-Glare, UWVA, Low Blue Light, 100% CG, 300nits, , eDP 1.4, bent type LCD panel

##### Touch

- 39.6 cm (15.6") diagonal FHD (1920x1080) Anti-Glare, UWVA, Touch on Panel (TOP), 45% CG, 250nits, eDP 1.2, bent type LCD panel

##### Displays support

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

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

<sup>2</sup>Sold separately or as an optional feature.

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

<sup>4</sup>Actual brightness will be lower with touchscreen.

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### Features

#### DOCKING

<b>Docking station model #1</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 Thunderbolt™ hosts or USB-C® hosts DisplayPort™ 1.4 with DSC in high res mode
<b>Dock Connectors</b>	2x DisplayPort™, 1xVGA, 1xThunderbolt™, 1xUSB-C® alt-mode
<b>Technical limitations</b>	<p>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</p> <p>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 DisplayPort™ ports) +(1) 4K on USB-C® DisplayPort™ port Non-Thunderbolt™ hosts support (3) displays with a max 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.</p>

### Features

#### STORAGE AND DRIVES\*

##### Max Storage

8TB through two m.2 NVMe drivers

(Up to 2) m.2 storage (NVMe PCIe Gen4 SSDs)

##### Primary M.2 Storage

2 TB PCIe® Gen4x4 NVMe™ M.2 SSD TLC

1 TB PCIe® Gen4x4 NVMe™ M.2 SSD TLC

4 TB PCIe® Gen4x4 NVMe™ M.2 SSD TLC

512 GB PCIe® Gen4x4 NVMe™ M.2 SSD TLC

512 GB PCIe® Gen4x4 NVMe™ SED TLC OPAL2

512 GB PCIe® NVMe™ Value M.2 SSD

##### Secondary M.2 Storage

2 TB PCIe® Gen4x4 NVMe™ M.2 SSD TLC

1 TB PCIe® Gen4x4 NVMe™ M.2 SSD TLC

4 TB PCIe® Gen4x4 NVMe™ M.2 SSD TLC

512 GB PCIe® Gen4x4 NVMe™ M.2 SSD TLC

512 GB PCIe® Gen4x4 NVMe™ SED TLC OPAL2

\* 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.

#### DRIVE CONTROLLERS

M.2 Storage Bay (PCIe NVMe)

RAID:

PCIe® Gen4 x4 lanes NVMe™ Solid State Drive

RAID 0/1 is supported (and available from factory)

#### MEMORY

##### Maximum Memory

64GB DDR5-5200

##### Memory

64GB DDR5-5200 (2x32GB)

32GB DDR5-5200 (2x16GB)

32GB DDR5-5200 (1x32GB)

16GB DDR5-5200 (2x8GB)

16GB DDR5-5200 (1x16GB)

8GB DDR5-5200 (1x8GB)

##### Memory Slots

2 SODIMM

DDR5 SODIMMS, system runs at 5200

Supports Dual Channel Memory

<sup>1</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.

### Features

#### NETWORKING/COMMUNICATIONS

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

Intel® I219-LM GbE  
Intel® I219-LM GbE, vPro®  
Intel® I219-V GbE, non-vPro®

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

<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>

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

Intel® AX211 Wi-Fi 6E+Bluetooth® 5.3 M.2 1216 160MHz CNVi World-Wide WLAN vPro® wireless card  
Intel® AX211 Wi-Fi 6E+Bluetooth® 5.3 M.2 1216 160MHz CNVi World-Wide WLAN non-vPro® wireless card

<sup>1</sup> Wi-Fi 6E requires a Wi-Fi 6E router, sold separately, and Windows 10 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.

<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>

##### Near Field Communication (NFC) module

No Near Field Communication (NFC) module

NFC Mirage WNC XRAV-1

##### Miracast

Native Miracast Support

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

#### AUDIO/MULTIMEDIA

##### Audio

2 Integrated stereo speakers  
Discrete Amplifiers  
Integrated dual array microphone

##### Speaker Power

1W/8ohm Per speaker

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

HD camera  
5 MP+IR camera

##### Sensors

Adaptive Color Sensor  
Hall effect Sensor  
HP Sure Platform  
Motion AI LSM6DSL  
Thermal Sensor

### Features

HP Tamper Lock<sup>3</sup>

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

<sup>2</sup> Windows Hello face authentication utilizes a camera specially configured for near infrared (IR) imaging to authenticate and unlock Windows devices as well as unlock your Microsoft Passport.

<sup>3</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\*

HP Premium Keyboard, spill resistant, Backlit keyboard and DuraKeys

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

##### Pointing Devices

Clickpad with multi-touch gesture support, taps enabled as default

Microsoft Precision Touchpad Default Gestures Support

##### Function Keys

ESC: system information

F1 - Display Switching

F2 - Blank

F3 - Brightness Down

F4 - Brightness Up

F5 - Audio Mute

F6 - Volume Down

F7 - Volume Up

F8 - Mic Mute

F9 - Blank or Backlit Toggle

F10 - Insert

F11 - Airplane Mode

F12 - HP Command Center

home

end

Power Button (with LED)

delete

##### Hidden Keys

Fn+R - Break

Fn+S - Sys Rq

Fn+C - Scroll Lock

\*Backlit keyboard is an optional feature.

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#### SOFTWARE AND SECURITY

##### Software

HP PC Hardware Diagnostics Windows

Touchpoint Customizer for Commercial

myHP

HP Smart Support<sup>24</sup>

HP Connection Optimizer<sup>10</sup>

HP Mac Address Manager

HP Hotkey Support

HP Support Assistant<sup>1</sup>

HP Notifications

HP Privacy Settings

HP Power Manager<sup>3</sup>

Buy Microsoft Office (Microsoft Office sold separately and requires Internet access for activation.)

HP Performance Advisor<sup>5</sup>

HP Services Scan<sup>33</sup>

##### Manageability Features

HP Connect for Microsoft Endpoint Manager<sup>26</sup>

HP Image Assistant Gen5 (download)

### Features

HP Manageability Integration Kit (download)<sup>12</sup>  
HP Client Management Script Library (download)  
HP Patch Assistant (download)<sup>27</sup>  
HP Driver Packs (download)  
HP Cloud Recovery <sup>28</sup>  
HP Client Catalog (download)

#### Security Management

##### HP Wolf Security for Business <sup>29</sup> includes:

HP Sure Click <sup>30</sup>  
HP Sure Sense<sup>19</sup>  
HP Sure Run Gen5<sup>31</sup>  
HP Sure Recover Gen5<sup>14</sup>  
HP Sure Start Gen7<sup>16</sup>  
HP Sure Admin<sup>23</sup>  
HP Client Security Manager Gen7<sup>18</sup>  
HP Device Access Manager  
HP Power On Authentication  
Master Boot Record security  
Pre-boot authentication  
Windows Defender  
MS BitLocker Encryption  
Nano Security Lock Slot  
HP Tamper Lock<sup>4</sup>

#### BIOS

HP BIOSphere Gen6<sup>6</sup>  
HP Secure Erase<sup>17</sup>  
Absolute Persistence Module<sup>7</sup>  
HP DriveLock & Automatic DriveLock  
BIOS Update via Network  
HP Wake on WLAN  
HP Fingerprint Sensor<sup>32</sup>  
Secured-Core PC Enable<sup>20</sup>  
TPM 2.0 Embedded Security Chip (Common Criteria EAL4+ Certified) (FIPS 140-2 Level 2 Certified)

<sup>1</sup> HP Support Assistant - Requires Windows and Internet Access.

<sup>3</sup>HP Power Manager requires Windows 10 and higher and can be downloaded from the Microsoft Store.

<sup>4</sup>HP Tamper Lock must be enabled by the customer or your administrator.

<sup>5</sup> HP Performance Advisor is ready and waiting to help you get the most out of your HP Workstation from day one—and every day after. Learn more or download at: <https://www.hp.com/us-en/workstations/performanceadvisor.html>

<sup>6</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>7</sup> Absolute Persistence Module: 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>10</sup> HP Connection Optimizer requires Windows 10 and beyond version.

<sup>12</sup> HP Manageability Integration Kit can be downloaded from <https://ftp.ext.hp.com/pub/caps-softpaq/cmit/HPMIK.html>.

<sup>14</sup> 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

### Features

- <sup>15</sup> HP Sure Recover with Embedded Reimaging Gen3 is an optional feature which must be configured at purchase with a base unit that has the On System Recovery (OSR) module. See product specifications for availability. You must back up important files, data, photos, videos, etc. before use to avoid loss of data. HP Sure Recover with Embedded Reimaging (Gen1) does not support platforms with Intel® Optane™.
- <sup>16</sup> HP Sure Start Gen7 is available on select HP PCs and requires Windows 10 and higher.
- <sup>17</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>18</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>19</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>20</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>23</sup> HP Sure Admin requires Windows 10, HP BIOS, HP Manageability Integration Kit from <http://www.hp.com/go/clientmanagement> and HP Sure Admin Local Access Authenticator smartphone app from the Android or Apple store.
- <sup>24</sup> 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>.
- <sup>26</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>27</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>28</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>29</sup> HP Wolf Security for Business requires Windows 10 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>30</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>31</sup> HP Sure Run Gen5 is available on select HP PCs and requires Windows 10 and higher.
- <sup>32</sup> HP Fingerprint Reader is an optional feature that requires Windows 10 IoT and must be configured at purchase.
- <sup>33</sup> 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. For full system requirements or to disable this feature, please visit <http://www.hpdaas.com/requirements>. Not applicable in China.

### Features

#### POWER

**Power Supply**

HP Smart 150 W External AC power adapter

**Battery**

HP Long Life 6-cell, 83 Wh Polymer

**Power Cord**

3-wire plug - 1m

**Battery life**

Up to 14 hours 30 minutes

<sup>1</sup> MobileMark18 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.

<sup>2</sup> Supports HP Fast Charge Technology

<sup>5</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.

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#### ENVIRONMENTAL

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<sup>1</sup>

TCO 8.0 Certified

RCTA DO-160G

Medical EMC: IEC 60601-1-2:2014 EN60601-1-2: 2015

SEPA

GS Mark

Eyesafe Certification - Worldwide

**Sustainable Impact Specifications**

Recycled Aluminum and Magnesium, 75% PCR w/30% ITE plastics

<sup>1</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.



### Features

#### WEIGHTS & DIMENSIONS

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

35.94 x 23.39 x 2.29 cm

14.15 x 9.21 x 0.9 in

**Weights\***

Starting at 2.00kg (4.43 lb)

\*Weight will vary by configuration. Does not include power adapter.

#### PORTS/SLOTS

1 RJ-45

1 Thunderbolt™ 4 with USB4 Type-C® 40Gbps signaling rate (USB Power Delivery, DisplayPort™ 1.4)

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

1 HDMI 2.1

1 Headphone/microphone combo jack

1 Nano Security Lock Slot (Lock sold separately)

1 Smartcard reader (Optional)

1 nano SIM card slot

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

\*HDMI cable sold separately.

#### COMPATIBILITY

HP Wired USB-A Stereo Headset	428K6AA
HP Renew Business 17.3 Laptop Backpack	3E2U5AA
HP Universal USB-C Multiport Hub	50H55AA
HP Multi-Device 635 Black Wireless Mouse	1D0K2AA
HP 975 USB+Bluetooth® Dual-Mode Wireless Keyboard	3Z726AA

#### SERVICE AND SUPPORT

1-year warranty and 90 day software limited warranty options depending on country. Batteries have a default one year limited warranty except for HP Long Life batteries which will follow the one or three year warranty of the platform. Refer to <http://www.hp.com/support/batterywarranty/> for additional battery information. On-site service and extended coverage is also available. HP Care Pack Services are optional extended service contracts that go beyond the standard limited warranties. To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at:

<http://www.hp.com/go/cpc>.

<sup>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.

#### SYSTEM UNIT

### Features

<b>Stand-Alone Power Requirements (AC Power)</b>	<b>Nominal Operating Voltage</b>	19.5V
	<b>System in idle mode + max panel brightness</b>	6.36W
	<b>Integrated graphics</b>	Yes
	<b>Discrete Graphics</b>	Yes
	<b>Max Operating Power</b>	<150W
<b>Temperature</b>	<b>Operating</b>	32° to 95° F (0° to 35° C)
	<b>Non-operating</b>	-4° to 140° F (-20° to 60° C)
<b>Relative Humidity</b>	<b>Operating</b>	10% to 90%, non-condensing
	<b>Non-operating</b>	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
<b>Shock</b>	<b>Operating</b>	40G, 2ms
	<b>Non-operating</b>	240G, 2ms
<b>Random Vibration</b>	<b>Operating</b>	1.043 grms
	<b>Non-operating</b>	3.5 grms
<b>Maximum Altitude (unpressurized)</b>	<b>Operating</b>	-50 to 10,000 ft (-15.24 to 3,048 m)
	<b>Non-operating</b>	-50 to 40,000 ft (-15.24 to 12,192 m)
<b>Temperature Derating with Altitude</b>	<b>Operating</b>	1.8°F / 1000 ft (1°C / 304.8 m)
<b>Planned Industry Standard Certifications</b>	<b>Regulatory Model Number</b>	HSN-Q36C
	<b>CSA/UL 62368-1</b>	Yes
	<b>CSA</b>	Yes
	<b>FCC/ICES/CISPR/VCCI</b>	Yes
	<b>ENERGY STAR®</b>	Select models <sup>1</sup>
	<b>EPEAT Gold</b>	EPEAT Gold in United States <sup>2</sup>
	<b>TCO</b>	Yes
	<b>China CCC/SRRC</b>	Yes
	<b>Korea KCC/KC/KES</b>	Yes
	<b>Taiwan BSMI/NCC</b>	Yes
	<b>CE MARKING</b>	Yes
	<b>EAEU compliance</b>	Yes
	<b>CITC</b>	Yes
	<b>WW RoHS</b>	Yes
	<b>EAEU compliance</b>	Yes
<b>Saudi Arabian Compliance</b>	Yes	
<b>Ukraine NSoC/TEC</b>	Yes	
<b>Low Bluw Light</b>	Yes	

<sup>1</sup>Configurations of the HP ZBook Power G10 Mobile Workstation PC that are ENERGY STAR® qualified are identified as HP ZBook Power G10 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

<b>Panel LCD 15.6 inch FHD (1920x1080) Anti-Glare WLED UWVA 45percent cg 250nits eDP 1.2 w/o PSR bent Touch on Panel NWBZ</b>	<b>Outline Dimensions (W x H)</b>	350.96 x 205.54 mm (max)		
	<b>Active Area</b>	344.16 x 193.59 mm (typ.)		
	<b>Weight</b>	380 g (max)		
	<b>Diagonal Size</b>	15.6 inch		
	<b>Thickness</b>	3.2 mm / 5.2 mm (max)		
	<b>Interface</b>	eDP 1.2		
	<b>Surface Treatment</b>	Anti-Glare On-cell		
	<b>Touch enabled</b>	Yes		
	<b>Contrast Ratio</b>	600:1 (typ)		
	<b>Refresh Rate</b>	60 Hz		
	<b>Brightness</b>	250 nits (typ)		
	<b>Pixel Resolution</b>	<b>Pitch</b>	1920 x 1080 (FHD)	
		<b>Format</b>	RGB Stripe	
		<b>Backlight</b>	LED	
		<b>Color Gamut Coverage</b>	NTSC 45%	
		<b>Color Depth</b>	6	
		<b>Viewing Angle</b>	UWVA 85/85/85/85	
	<b>Low Blue Light</b>	No		
	<b>Power Consumption (W, EBL@ 150nits max/ 200nits max)</b>	2.54 (Max) / 3.12 (Max)		

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

<b>15.6 in FHD (1920 x 1080) Anti-Glare UWVA Low Blue Light sRGB NB2X 400 eDP 1.4+PSR2 Low-Power 100 bent LCD Panel</b>	<b>Outline Dimensions (W x H)</b>	349.460 x 204.790 (max)		
	<b>Active Area</b>	344.160 x 193.590 mm (typ)		
	<b>Weight</b>	310 g (max)		
	<b>Diagonal Size</b>	15.6 (inch)		
	<b>Thickness</b>	2.6 mm / 4.8 mm (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>	60 Hz		
	<b>Brightness</b>	400 nits (typ)		
	<b>Pixel Resolution</b>	<b>Pitch</b>	1920 x 1080 (FHD)	
		<b>Format</b>	RGB Stripe	
		<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>Low Blue Light</b>	Yes		

### Technical Specifications – Displays

**Power Consumption (W, EBL@ 150nits max/ 200nits max)** 1.27 (max) / 1.5 (max)

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

**15.6 inch FHD (1920x1080) Anti-Glare WLED UWVA 45percent cg 250nits eDP 1.2 w/o PSR bent NWBZ**

**Outline Dimensions (W x H)** 350.960 x 205.540 (max)  
**Active Area** 344.160 x 193.590 mm (typ)  
**Weight** 370 g (max)  
**Diagonal Size** 15.6  
**Thickness** 3.0 mm / 5.0 mm (max)  
**Interface** eDP 1.2  
**Surface Treatment** Anti-Glare  
**Touch enabled** No  
**Contrast Ratio** 600:1 (typ)  
**Refresh Rate** 60 Hz  
**Brightness** 250 nits (typ)  
**Pixel Resolution** **Pitch** 1920 x 1080 (FHD)  
**Format** RGB Stripe  
**Backlight** LED  
**Color Gamut Coverage** NTSC 45%  
**Color Depth** 6 (Hi FRC w/ condition to enable)  
**Viewing Angle** UWVA 85/85/85/85  
**Low Blue Light** No  
**Power Consumption (W, EBL@ 150nits max/ 200nits max)** 2.62 (Max) / 3.27 (Max)

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

**15.6 in QHD (2560 x 1440) Anti-Glare UWVA Low Blue Light sRGB NWBZ 300 eDP 1.4+PSR2 100 120Hz bent LCD Panel**

**Outline Dimensions (W x H)** 350.960 x 205.550 (max)  
**Active Area** 344.2176 x 193.6224 mm  
**Weight** 300 g (max)  
**Diagonal Size** 15.6  
**Thickness** 2.6mm /4.6 mm (Max)  
**Interface** eDP 1.4  
**Surface Treatment** Anti-Glare  
**Touch Enabled** No  
**Contrast Ratio** 1000:1(typ)  
**Refresh Rate** 120 Hz  
**Brightness** 300 nits (typ)  
**Pixel Resolution** **Pitch** 2560x1440 (QHD)  
**Format** RGB Stripe

### Technical Specifications – Displays

<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>Low Blue Light</b>	Yes
<b>Power Consumption (W, EBL@ 150nits max/ 200nits max)</b>	3.41 (max) / 4.06 (max)

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

### Technical Specifications – Storage

#### STORAGE AND DRIVES

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

<b>Form Factor</b>	M.2 2280
<b>Capacity</b>	512GB
<b>NAND Type</b>	TLC
<b>Height</b>	0.09 in (2.3 mm)
<b>Width</b>	0.87 in (22 mm)
<b>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 ±10%                      3500 MB/s ±10%
<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 10) is reserved for system recovery software.

##### SSD 1TB 2280 PCIe-4x4 NVMe Three Layer Cell

<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 ±10%                      5000 MB/s ±10%
<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

**NOTE:** For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 35 GB (for Windows 10) is reserved for system recovery software.

##### SSD 2TB 2280 PCIe-4x4 NVMe Three Layer Cell

<b>Form Factor</b>	M.2 2280
<b>Capacity</b>	2TB
<b>NAND Type</b>	TLC
<b>Height</b>	0.09 in (2.3 mm)
<b>Width</b>	0.87 in (22 mm)
<b>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 ±10%                      5000 MB/s ±10%
<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

### 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 10) is reserved for system recovery software.

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

<b>Form Factor</b>	M.2 2280
<b>Capacity</b>	512GB
<b>NAND Type</b>	Opal2 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 ±10%                      3500 MB/s ±10%
<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

**NOTE:** For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 35 GB (for Windows 10) is reserved for system recovery software.

#### 4TB PCIe-4x4 2280 NVMe Three Layer Cell double-sided M.2 Solid State Drive

<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 ±10%                      5000 MB/s ±10%
<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

**NOTE:** For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 35 GB (for Windows 10) is reserved for system recovery software.

#### SSD 512GB 2280 PCIe NVMe Value

<b>Form Factor</b>	M.2 2280
<b>Capacity</b>	512GB
<b>NAND Type</b>	TLC
<b>Height</b>	0.09 in (2.3 mm)
<b>Width</b>	0.87 in (22 mm)
<b>Weight</b>	0.02 lb (10 g)
<b>Interface</b>	PCIe NVMe
<b>Performance</b>	<b>Minimum Sequential Read</b> <b>Minimum Sequential Write</b>
	2200 MB/s ±10%                      1000 MB/s ±10%
<b>Logical Blocks</b>	1000215216
<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 10) is reserved for system recovery software.



### Technical Specifications – Networking

#### NETWORKING/COMMUNICATION

<b>Intel® I219v 1 Gigabit Network Connection LOM (non-vPro)</b>	<b>Connector</b>	RJ-45
	<b>System Interface</b>	PCI(Intel proprietary) + SMBus
	<b>Data Rates Supported</b>	<ol style="list-style-type: none"> <li>1. 10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14)</li> <li>2. 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30)</li> <li>3. 1000 Mbit/s operation (1000BASE-T; IEEE 802.3ab; IEEE 802.3 clauses 40)</li> <li>4. Auto-Negotiation (Automatic Speed Selection)</li> </ol> Full Duplex Operation at all Speeds, Half Duplex operation at 10, 100 & 1000 Mbit/s
	<b>IEEE Compliance</b>	IEEE 802.1p QoS (Quality of Service) Support IEEE 802.1q VLAN support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable) IEEE 802.3az EEE (Energy Efficient Ethernet) IEEE 802.3i 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3ab 1000BASE-T IEEE 802.3bz 2.5GBASE-T
	<b>Performance</b>	TCP/IP/UDP Checksum Offload (configurable) Protocol Offload (ARP & NS) Large send offload and Giant send offload Receiving Side Scaling(Hash Mode only) Jumbo Frame 9K
	<b>Power consumption</b>	Cable Disconnection: 25mW 100Mbps Full Run: 450mW 1000bps Full Run: 1000mW WoL Enable(S3/S4/S5): 50mW WoL Disable(S3/S4/S5): 25mW
	<b>Power Management</b>	ACPI compliant – multiple power modes Situation-sensitive features reduce power consumption Advanced link down power saving for reducing link down power consumption
	<b>Management Interface</b>	Auto MDI/MDIX Crossover cable detection
	<b>IT Manageability</b>	Wake-on-LAN from modern standby or sleep state (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite Virtual Cable Doctor for Ethernet cable status
	<b>Security &amp; Manageability</b>	Intel® non-vPro™ support with appropriate Intel® chipset components

<b>Intel® AX211 Wi-Fi 6E +Bluetooth® 5.3 M.2 160MHz CNVi WLAN vPro® wireless card</b>	<b>Wireless LAN Standards</b>	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11ac
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### Technical Specifications – Networking

	IEEE 802.11ax IEEE 802.11d IEEE 802.11e IEEE 802.11h IEEE 802.11i IEEE 802.11k IEEE 802.11r IEEE 802.11v
<b>Interoperability</b>	Wi-Fi certified
<b>Frequency Band</b>	802.11b/g/n/ax • 2.402 – 2.482 GHz 802.11a/n/ac/ax • 4.9 – 4.95 GHz (Japan) • 5.15 – 5.25 GHz • 5.25 – 5.35 GHz • 5.47 – 5.725 GHz • 5.825 – 5.850 GHz • 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: max 300Mbps • 802.11ac : 1733Mbps • 802.11ax : max 2.4Gbps
<b>Modulation</b>	Direct Sequence Spread Spectrum
<b>Security<sup>1</sup></b>	OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM , 1024QAM • 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
<b>Network Architecture Models</b>	Ad-hoc (Peer to Peer)  Infrastructure (Access Point Required)
<b>Roaming</b>	IEEE 802.11 compliant roaming between access points
<b>Output Power<sup>2</sup></b>	• 802.11b : +17dBm minimum • 802.11g : +16dBm minimum • 802.11a : +17dBm minimum • 802.11n HT20(2.4GHz) : +14dBm minimum • 802.11n HT40(2.4GHz) : +13dBm minimum • 802.11n HT20(5GHz) : +14dBm minimum • 802.11n HT40(5GHz) : +13dBm minimum • 802.11ac VHT80(5GHz) : +10dBm minimum • 802.11ac VHT160(5GHz) : +10dBm minimum • 802.11ax HE40(2.4GHz) : +12dBm minimum

### Technical Specifications – Networking

	<ul style="list-style-type: none"> <li>• 802.11ax HE80(5GHz) : +10dBm minimum</li> <li>• 802.11ax HE160(5GHz) : +10dBm minimum</li> </ul>				
<b>Power Consumption</b>	<ul style="list-style-type: none"> <li>• Transmit mode 2.0 W</li> <li>• Receive mode 1.6 W</li> <li>• Idle mode (PSP) 180 mW (WLAN Associated)</li> <li>• Idle mode 50 mW (WLAN unassociated)</li> <li>• Connected Standby 10mW</li> <li>• Radio disabled 8 mW</li> </ul>				
<b>Power Management</b>	ACPI and PCI Express compliant power management 802.11 compliant power saving mode				
<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 : -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>				
<b>Antenna Type</b>	High efficiency antenna with spatial diversity, mounted in the display enclosure				
	Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications				
<b>Form Factor</b>	PCI-Express M.2 MiniCard				
<b>Dimensions</b>	<ol 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> </ol>				
<b>Weight</b>	<ol style="list-style-type: none"> <li>1. Type 2230 : 2.8g</li> <li>2. Type 1216: 1.3g</li> </ol>				
<b>Operating Voltage</b>	3.3v +/- 9%				
<b>Temperature</b>	<table border="0"> <tr> <td>Operating</td> <td>14° to 158° F (-10° to 70° C)</td> </tr> <tr> <td>Non-operating</td> <td>-40° to 176° F (-40° to 80° C)</td> </tr> </table>	Operating	14° to 158° F (-10° to 70° C)	Non-operating	-40° to 176° F (-40° to 80° C)
Operating	14° to 158° F (-10° to 70° C)				
Non-operating	-40° to 176° F (-40° to 80° C)				
<b>Humidity</b>	<table border="0"> <tr> <td>Operating</td> <td>10% to 90% (non-condensing)</td> </tr> <tr> <td>Non-operating</td> <td>5% to 95% (non-condensing)</td> </tr> </table>	Operating	10% to 90% (non-condensing)	Non-operating	5% to 95% (non-condensing)
Operating	10% to 90% (non-condensing)				
Non-operating	5% to 95% (non-condensing)				
<b>Altitude</b>	<table border="0"> <tr> <td>Operating</td> <td>0 to 10,000 ft (3,048 m)</td> </tr> <tr> <td>Non-operating</td> <td>0 to 50,000 ft (15,240 m)</td> </tr> </table>	Operating	0 to 10,000 ft (3,048 m)	Non-operating	0 to 50,000 ft (15,240 m)
Operating	0 to 10,000 ft (3,048 m)				
Non-operating	0 to 50,000 ft (15,240 m)				
<b>LED Activity</b>	LED Amber – Radio Off; LED Off – Radio ON				
<b>HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0/5.1/5.2/5.3 Wireless 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				

### Technical Specifications – Networking

<b>Transmit Power</b>	Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5) The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 9.5 dBm for BR and EDR.
<b>Power Consumption</b>	Peak (Tx): 330 mW Peak (Rx): 230 mW Selective Suspend: 17 mW
<b>Bluetooth Software Supported</b>	Microsoft Windows Bluetooth Software
<b>Link Topology</b>	
<b>Power Management</b>	Microsoft Windows ACPI, and USB Bus Support
<b>Certifications</b>	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
<b>Power Management</b>	ETS 300 328, ETS 300 826
<b>Certifications</b>	Low Voltage Directive IEC950 UL, CSA, and CE Mark
<b>Bluetooth Profiles Supported</b>	BT4.1-ESR 5/6/7 Compliance LE Link Layer Ping LE Dual Mode LE Link Layer LE Low Duty Cycle Directed Advertising LE L2CAP Connection Oriented Channels Train Nudging & Interlaced Scan BT4.2 ESR08 Compliance LE Secure Connection- Basic/Full LE Privacy 1.2 –Link Layer Privacy LE Privacy 1.2 –Extended Scanner Filter Policies LE Data Packet Length Extension FAX Profile (FAX) Basic Imaging Profile (BIP)2 Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP) BT5.2 ESR9/10 Compliance LE Advertisement Extensions Channel Selection Algo Limited High Duty Cycle Non-Connectable Advertising 2Mbps LE LE Long Range BT5.3 Host to Controller Encryption Key Control Enhancements Compliance to the latest Errata Section 12.3 of BT 5.3 specification

\*Wi-Fi 6E requires a Wi-Fi 6E router, sold separately, 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.

<b>Intel® AX211 Wi-Fi 6E</b>	<b>Wireless LAN Standards</b>	IEEE 802.11a
<b>+Bluetooth® 5.3 M.2</b>		IEEE 802.11b
<b>160MHz CNVi WLAN non-</b>		IEEE 802.11g
<b>vPro® wireless card</b>		IEEE 802.11n
		IEEE 802.11ac

### Technical Specifications – Networking

	IEEE 802.11ax IEEE 802.11d IEEE 802.11e IEEE 802.11h IEEE 802.11i IEEE 802.11k IEEE 802.11r IEEE 802.11v
<b>Interoperability</b>	Wi-Fi certified
<b>Frequency Band</b>	802.11b/g/n/ax • 2.402 – 2.482 GHz 802.11a/n/ac/ax • 4.9 – 4.95 GHz (Japan) • 5.15 – 5.25 GHz • 5.25 – 5.35 GHz • 5.47 – 5.725 GHz • 5.825 – 5.850 GHz • 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: max 300Mbps • 802.11ac : 1733Mbps • 802.11ax : max 2.4Gbps
<b>Modulation</b>	Direct Sequence Spread Spectrum
<b>Security<sup>1</sup></b>	OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM , 1024QAM • 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
<b>Network Architecture Models</b>	Ad-hoc (Peer to Peer)  Infrastructure (Access Point Required)
<b>Roaming</b>	IEEE 802.11 compliant roaming between access points
<b>Output Power<sup>2</sup></b>	• 802.11b : +17dBm minimum • 802.11g : +16dBm minimum • 802.11a : +17dBm minimum • 802.11n HT20(2.4GHz) : +14dBm minimum • 802.11n HT40(2.4GHz) : +13dBm minimum • 802.11n HT20(5GHz) : +14dBm minimum • 802.11n HT40(5GHz) : +13dBm minimum • 802.11ac VHT80(5GHz) : +10dBm minimum • 802.11ac VHT160(5GHz) : +10dBm minimum • 802.11ax HE40(2.4GHz) : +12dBm minimum

### Technical Specifications – Networking

	<ul style="list-style-type: none"> <li>• 802.11ax HE80(5GHz) : +10dBm minimum</li> <li>• 802.11ax HE160(5GHz) : +10dBm minimum</li> </ul>				
<b>Power Consumption</b>	<ul style="list-style-type: none"> <li>• Transmit mode 2.0 W</li> <li>• Receive mode 1.6 W</li> <li>• Idle mode (PSP) 180 mW (WLAN Associated)</li> <li>• Idle mode 50 mW (WLAN unassociated)</li> <li>• Connected Standby 10mW</li> <li>• Radio disabled 8 mW</li> </ul>				
<b>Power Management</b>	ACPI and PCI Express compliant power management 802.11 compliant power saving mode				
<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 : -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>				
<b>Antenna Type</b>	High efficiency antenna with spatial diversity, mounted in the display enclosure				
	Two embedded dual band 2.4/5 GHz antennas are provided to the card to support WLAN MIMO communications and Bluetooth communications				
<b>Form Factor</b>	PCI-Express M.2 MiniCard				
<b>Dimensions</b>	<ol 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> </ol>				
<b>Weight</b>	<ol style="list-style-type: none"> <li>1. Type 2230 : 2.8g</li> <li>2. Type 1216: 1.3g</li> </ol>				
<b>Operating Voltage</b>	3.3v +/- 9%				
<b>Temperature</b>	<table border="0"> <tr> <td>Operating</td> <td>14° to 158° F (-10° to 70° C)</td> </tr> <tr> <td>Non-operating</td> <td>-40° to 176° F (-40° to 80° C)</td> </tr> </table>	Operating	14° to 158° F (-10° to 70° C)	Non-operating	-40° to 176° F (-40° to 80° C)
Operating	14° to 158° F (-10° to 70° C)				
Non-operating	-40° to 176° F (-40° to 80° C)				
<b>Humidity</b>	<table border="0"> <tr> <td>Operating</td> <td>10% to 90% (non-condensing)</td> </tr> <tr> <td>Non-operating</td> <td>5% to 95% (non-condensing)</td> </tr> </table>	Operating	10% to 90% (non-condensing)	Non-operating	5% to 95% (non-condensing)
Operating	10% to 90% (non-condensing)				
Non-operating	5% to 95% (non-condensing)				
<b>Altitude</b>	<table border="0"> <tr> <td>Operating</td> <td>0 to 10,000 ft (3,048 m)</td> </tr> <tr> <td>Non-operating</td> <td>0 to 50,000 ft (15,240 m)</td> </tr> </table>	Operating	0 to 10,000 ft (3,048 m)	Non-operating	0 to 50,000 ft (15,240 m)
Operating	0 to 10,000 ft (3,048 m)				
Non-operating	0 to 50,000 ft (15,240 m)				
<b>LED Activity</b>	LED Amber – Radio OFF; LED OFF – Radio ON				
<b>HP Integrated Module with Bluetooth 4.0/4.1/4.2/5.0/5.1/5.2/5.3 Wireless 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				

### Technical Specifications – Networking

<b>Transmit Power</b>	Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5) The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of + 9.5 dBm for BR and EDR.
<b>Power Consumption</b>	Peak (Tx): 330 mW Peak (Rx): 230 mW Selective Suspend: 17 mW
<b>Bluetooth Software Supported</b>	Microsoft Windows Bluetooth Software
<b>Link Topology</b>	
<b>Power Management</b>	Microsoft Windows ACPI, and USB Bus Support
<b>Certifications</b>	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
<b>Power Management Certifications</b>	ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark
<b>Bluetooth Profiles Supported</b>	BT4.1-ESR 5/6/7 Compliance LE Link Layer Ping LE Dual Mode LE Link Layer LE Low Duty Cycle Directed Advertising LE L2CAP Connection Oriented Channels Train Nudging & Interlaced Scan BT4.2 ESR08 Compliance LE Secure Connection- Basic/Full LE Privacy 1.2 –Link Layer Privacy LE Privacy 1.2 –Extended Scanner Filter Policies LE Data Packet Length Extension FAX Profile (FAX) Basic Imaging Profile (BIP)2 Headset Profile (HSP) Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP) BT5.2 ESR9/10 Compliance LE Advertisement Extensions Channel Selection Algo Limited High Duty Cycle Non-Connectable Advertising 2Mbps LE LE Long Range BT5.3 Host to Controller Encryption Key Control Enhancements Compliance to the latest Errata Section 12.3 of BT 5.3 specification
<b>Security &amp; Manageability</b>	Intel® vPro® support with appropriate Intel® chipset components
	*Wi-Fi 6E requires a Wi-Fi 6E router, sold separately, 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.

### NFC NXP NPC300

**Dimensions (L x W x H)** 17 x 10 x 2.0 mm



### Technical Specifications – Networking

<b>Chipset</b>	NPC300	
<b>System interface</b>	I2C	
<b>NFC RF standards</b>	ISO/IEC 14443 A ISO/IEC 14443 B ISO/IEC 15693 ISO/IEC 18092 ECMA-340 NFCIP-1 Target and Initiator ECMA-320 NFCIP-2	
<b>NFC Forum Support</b>	Tag Type 1, Type 2, Type3 and Type 4, NFCIP-1 and NFCIP-2	
<b>Reader (PCD-VCD) Mode</b>	ISO/IEC 14443 A ISO/IEC 14443 B ISO/IEC 15693 MIFARE 1K MIFARE 4K MIFARE DESFire FeliCa Jewel and Topaz cards	
<b>Card Emulation (PICC-VICC) Mode</b>	ISO/IEC 14443 A ISO/IEC 14443 B and B' MIFARE FeliCa	
<b>Frequency</b>	13.56 MHz	
<b>NFC Modes Supported</b>	Reader/Writer, Peer-to-Peer	
<b>Raw RF Data Rates</b>	106, 212, 424, 848 kbps	
<b>Operating temperature</b>	0°C to 70°C	
<b>Storage temperature</b>	-20°C to 125°C	
<b>Humidity</b>	10-90% operating 5-95% non-operating	
<b>Supply Operating voltage</b>	4.35 to 5.25 Volts	
<b>I/O Voltage</b>	1.8V or 3.3V	
<b>Power Consumption</b>	<b>Booster enable, VCC_BOOST = 5V) Mode Power Consumption, Typical</b>	VBAT= 3.3V, <b>Polling</b> 7.3 mA <b>Detected Test Tag Type 1</b> Total 283.8 mA Net Module 236.8 mA <b>Detected Test Tag Type 2</b> Total 288.8 mA Net Module 241.8 mA <b>Detected Test Tag Type 3</b> Total 287.7 mA Net Module 240.7 mA <b>Detected Test Tag Type 4</b> Total 282.3 mA Net Module 235.3 mA
<b>Antenna</b>	Antenna connector, 0.5mm pitch, 7 connector FPC. Antenna matching is external to module.	

### AUDIO

<b>HD Stereo Codec</b>	Realtek ALC3247
<b>Audio I/O Ports</b>	Headset : CTIA only and Headphone-out
<b>Internal Speaker Amplifier</b>	Realtek ALC3247 Class D



### Technical Specifications – Networking

<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>	streams to be sent to/from the front and rear jacks or integrated speaker.
<b>Wavetable Syntheses</b>	DAC: 48000Hz  ADC: 48000Hz
<b>Analog Audio</b>	Support 3.5mm Headset : CTIA only and Headphone-out
<b># of Channels on Line-Out</b>	No line out
<b>Internal Speaker</b>	Yes

### FINGERPRINT READER

<b>Sensor vendor</b>	ELAN 80SW
<b>Sensor type</b>	Capacitive
<b>DPI resolution</b>	508 DPI
<b>Scan area</b>	80x80 pixels
<b>False Rejection Rate</b>	<3%
<b>False Acceptance Rate</b>	< 0.001%
<b>Mobile Voltage Operation</b>	2.7~3.6V
<b>Operating Temperature</b>	-20°C - +80°C
<b>Current Consumption</b>	35mA peak
<b>Image</b>	
<b>Low Latency Wait For Finger</b>	300uA
<b>Capture Rate</b>	Capture Rate: 50 frame/sec
<b>ESD Resistance</b>	IEC 61000-4-2 4B (+15KV)
<b>Detection Matrix</b>	508 dpi / 4x4mm sensor area

### POWER

<b>AC Adapter 150 Watt Smart PFC Slim Barrel 4.5mm Right Angle</b>	<b>Dimensions</b>	5.43 x 2.59 x 0.39 in (13.8x6.6x2.2cm)	
	<b>Weight</b>	0.716 lb (325 g) max (Not including power cord. Power cord varies by country.)	
	<b>Input</b>	<b>Input Efficiency</b>	88% at 115 Vac and 89% at 230Vac
		<b>Input frequency range</b>	47 ~ 63 Hz
		<b>Input AC current</b>	2.7 A at 90 Vac
	<b>Output</b>	<b>Output power</b>	150W
		<b>DC output</b>	19.5V
		<b>Hold-up time</b>	100% load 5ms at 115 Vac input
		<b>Output current limit</b>	<16.0A
	<b>Connector</b>	C6	
		<b>DC Plug</b>	4.5mm Barrel Type

### Technical Specifications – Networking

<b>Environmental Design</b>	<b>Operating temperature</b>	32° to 95° F (0° to 35° C)
	<b>Non-operating (storage) temperature</b>	-4° to 185° F (-20° to 85° C)
	<b>Altitude</b>	0 to 16,400 ft (0 to 5000m)
	<b>Humidity</b>	20% to 95
	<b>Storage Humidity</b>	10% to 95%
<b>EMI and Safety Certifications</b>	*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>Battery 6 Cell WHr 83 Long Life -PL Fast Charge</b>	<b>Dimensions (H x W x L)</b>	7.78 x 316.1 x 70.2mm ( 0.306 x 12.44 x 2.763 inch)
	<b>Weight</b>	0.31kg (0.683lb)
	<b>Cells/Type</b>	6cell Lithium-Ion Polymer cell / 685257
	<b>Energy</b>	Voltage 11.58V Amp-hour capacity 7.170Ah Watt-hour capacity 83Wh
	<b>Temperature</b>	Operating (Charging) 32° to 113° F (0° to 45° C) Operating (Discharging) 14° to 122° F (-10° to 60° C)
	<b>Fuel Gauge LED</b>	NA
	<b>Warranty</b>	Refer to <a href="http://www.hp.com/support/batterywarranty/">http://www.hp.com/support/batterywarranty/</a> for battery warranty information.
	<b>Optional Travel Battery Available</b>	N/A

\*Batteries have a default one year limited warranty except for Long Life batteries which will have same 1-year or 3-year limited warranty as the platform.

### 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 (hp.com)
- Ocean-bound plastic in Speaker
- 14.3% post-consumer recycled plastic
- 50% 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)	6.25 W	6.11 W	6.13 W
Normal Operation (Long idle)	1.42 W	1.5 W	1.4 W
Sleep	1.42 W	1.5 W	1.4 W
Off	0.4 W	0.42 W	0.4 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)	21.4 BTU/hr	20.9 BTU/hr	21.0 BTU/hr
Normal Operation (Long idle)	4.9 BTU/hr	5.1 BTU/hr	4.8 BTU/hr
Sleep	4.9 BTU/hr	5.1 BTU/hr	4.8 BTU/hr

### Technical Specifications – Environmental

Off	1.4 BTU/hr	1.4 BTU/hr	1.4 BTU/hr
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**\*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	2.6	13.9
Fixed Disk – Random writes	2.6	14.5
Optical Drive – Sequential reads	3.4	32.3

#### 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 94.3% recycle-able when properly disposed of at end of life.

#### Packaging Materials

<b>External:</b>	PAPER/Corrugated	245g
	PAPER/Corrugated	50g
	PAPER/Molded pulp	170g
<b>Internal:</b>	PLASTIC/Polyethylene low density-LDPE	10g

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

The corrugated paper packaging materials contains at least 58.8% 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.

### Technical Specifications – Environmental

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

#### 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 [http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen\\_specifications.html](http://www.hp.com/hpinfo/globalcitizenship/environment/supplychain/gen_specifications.html)):

- 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: <http://www.hp.com/go/reuse-recycle> 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: <http://www.hp.com/go/recyclers>.

### Technical Specifications – Environmental

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:

Global Citizenship Report

<http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html>

Eco-label certifications

<http://www8.hp.com/us/en/hp-information/environment/ecolabels.html>

ISO 14001 certificates:

<http://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c04755842>

and

<http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/cert.pdf>

#### 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.
- Plastic cushions are made from >90% recycled plastic.
- 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>Cases</b>	HP Prelude Pro Recycle Backpack	1X644AA
	HP Prelude Pro Recycle Top Load	1X645AA
	HP Prelude 15.6 Top Load	1E7D7AA
	HP Prelude 15.6 Top Load	2Z8P4AA
	HP Prelude 15.6 Top Load	50P31AA
	HP Prelude 15.6 Backpack	1E7D6AA
	HP Prelude 15.6 Backpack	2Z8P3AA
	HP Prelude 15.6 Backpack	50P32AA
	HP Renew Business 17.3 Laptop Backpack	3E2U5AA
	HP Renew Business 17.3 Laptop Bag	3E2U6AA
	HP Renew Business 15.6 Laptop Bag	3E5F8AA
	HP Renew Executive 16 Laptop Backpack	6B8Y1AA
	HP Renew Executive 16 Laptop Bag	6B8Y2AA
	HP Travel 25 Liter 15.6 Iron Gray Laptop Backpack	6B8U4AA
	HP Travel 25 Liter 15.6 Iron Gray Laptop Backpack	6H2D8AA
	HP Travel 18 Liter 15.6 Iron Gray Laptop Backpack	6B8U6AA
	HP Travel 18 Liter 15.6 Iron Gray Laptop Backpack	6H2D9AA
<b>Docking Station</b>	HP USB-C Dock G5	26D32AA
	HP USB-C Dock G5	5TW10AA
	HP USB-C/A Universal Dock G2	5TW13AA
	HP USB-C/A Universal Dock G2 TAA	7UP88AA
	HP Thunderbolt 120W G4 Dock	4JOA2AA
	HP Thunderbolt 280W G4 Dock w/Combo Cable	4JOG4AA
<b>Adapter/Dongle</b>	HP HDMI to VGA Adapter	H4F02AA
	HP USB-C to USB 3.0 Adapter	N2Z63AA
	HP USB-C to DisplayPort Adapter	N9K78AA
	HP USB-C to VGA Adapter	N9K76AA
	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 7.4 mm to 4.5 DC dongle	K0Q39AA
	HP USB-C to RJ45 Adapter G2	4Z527AA
	HP USB-C to RJ45 Adapter G2	4Z534AA
	HP USB 3.0 to Gig RJ45 Adapter G2	4Z7Z7AA
HP USB-C to USB-C 100W Cable	5AR72AA	
<b>Audio/Video</b>	HP USB G2 Stereo Headset	428H5AA
	HP USB G2 Stereo Headset	428K6AA
	HP 3.5mm G2 Stereo Headset	428H6AA
	HP 3.5mm G2 Stereo Headset	428K7AA
	HP 365 BT Speaker	567D3AA



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

	HP 325 FHD USB-A Webcam	53X27AA
	HP 965 4K Streaming Webcam	695J5AA
	HP 620 FHD Webcam	6Y7L2AA
<b>Hub</b>	HP USB-C to USB-A Hub	Z6A00AA
<b>Storage</b>	HP 512GB PCIe-4x4 NVMe M.2 Solid State Drive	5R8X9AA
	HP 1TB PCIe-4x4 NVMe M.2 Solid State Drive	5R8Y0AA
	HP 2TB PCIe-4x4 NVMe TLC M.2 Solid State Drive	6D8L6AA
	HP USB External DVDRW Drive	F2B56AA,Y3T76AA
<b>Keyboard/Combo</b>	HP 320K Wired Keyboard	9SR37AA
	HP 125 Wired Keyboard	266C9AA
	HP 975 USB+BT Dual-Mode Wireless Keyboard	3Z726AA
	HP 455 Programmable Wireless Keyboard	4R177AA
	HP 355 Compact Multi-Device Keyboard	692S9AA
	HP Wireless Rechargeable 950MK Mouse and Keyboard	3M165AA
	HP Wired Desktop 320MK Mouse and Keyboard	9SR36AA
	HP 235 Wireless Mouse and Keyboard Combo	1Y4D0AA
	HP 225 Wired Mouse and Keyboard Combo	286J4AA
	HP 225 Antimicrobial Wired Mouse and Keyboard Combo	286K3AA
	HP 655 Wireless Keyboard and Mouse Combo	4R009AA
	HP 155 Wired Mouse and Keyboard Combo	5B8C0AA
<b>Display</b>	HP Z24f G3 FHD Display	3G828AA
	HP Z27q G3 QHD Display	1C4Z7AA
	HP Z24n G3 WUXGA Display	1C4Z5AA
	HP Z34c G3 WQHD Curved Display	30A19AA
	HP Z24q G3 QHD Display	4Q8N4AA
	HP Z24m G3 QHD Conferencing Display	4Q8N9AA
	HP Z32k G3 4K USB-C Display	50U19AA
<b>Mouse</b>	HP Wired 320M Mouse	9VA80AA
	HP Travel USB Mouse	G1K28AA
	HP Premium Wireless Mouse	1JR31AA
	HP Travel Bluetooth Mouse	6SP30AA
	HP Multi-Device 635 Black Wireless Mouse	1D0K2AA
	HP Creator 935 Black Wireless Mouse	1D0K8AA
	HP 235 Slim Wireless Mouse	4E407AA
	HP 128 LSR Wired Mouse	265D9AA
	HP 125 Wired Mouse	265A9AA
	HP 435 Multi-Device Wireless Mouse	3B4Q5AA
	HP 155 Wired Mouse	5B8B7AA
	HP 715 Rechargeable Multi-Device Bluetooth Mouse	6E6F0AA

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

	HP 925 Ergonomic Vertical Wireless Mouse	6H1A5AA
<b>Power Adapter</b>	HP 150W Slim Smart 4.5mm AC Adapter	4SC18AA
	HP ZBook 200W Slim Smart 4.5mm AC Adapter	491C7AA
	HP ZBook 230W Slim Smart 4.5mm AC Adapter	6E6M1AA
<b>Security</b>	HP Nano Keyed Cable Lock	1AJ39AA
	HP Nano Master Keyed Cable Lock	1AJ40AA
	HP Sure Key Cable Lock	6UW42AA
	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>
June 6, 2023	From v1 to v2	Changed	STORAGE AND DRIVES section
June 28, 2023	From v2 to v3	Changed	PROCESSOR section
July 5, 2023	From v3 to v4	Changed	ENVIRONMENTAL DATA section
July 19, 2023	From v4 to v5	Changed	WEIGHTS & DIMENSIONS section
August 1, 2023	From v5 to v6	Changed	ENVIRONMENTAL DATA section
August 24, 2023	From v6 to v7	Changed	SOFTWARE AND SECURITY section
September 25, 2023	From v7 to v8	Changed	SOFTWARE AND SECURITY section
October 19, 2023	From v8 to v9	Changed	NETWORKING/COMMUNICATION section