

Overview

HP ZBook Studio 16 inch G11 Mobile Workstation PC



Right

- | | |
|------------------------------------|--|
| 1. Ambient Color Sensor (Optional) | 9. Camera Privacy Key |
| 2. Top Facing Microphone (2) | 10. Nano Security Lock slot |
| 3. IR Camera LEDs | 11. Super Speed USB Type-A 5Gbps signaling rate (charging) |
| 4. IR Camera | 12. SuperSpeed USB Type-C® 5Gbps signaling rate Delivery Out, Display Out) |
| 5. HD Camera | 13. microSD 7.1 media card reader (Optional) |
| 6. Webcam LED | 14. Speakers |
| 7. Ambient Light Sensor (Optional) | 15. Woofer |
| 8. Clickpad | 16. 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) ¹ | |

¹SuperSpeed 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.

Features

OPERATING SYSTEM

Preinstalled OS	Windows 11 Pro - HP recommends Windows 11 Pro for business ¹
	Windows 11 Pro Education ¹
	Windows 11 Home ¹
	Windows 11 Home Single Language ¹
	FreeDOS 3.0

¹ Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows is automatically updated and enabled. High speed internet and Microsoft account required. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com>.

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; ^{1,2,3,4,5,6}

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); ^{1,2,5,6}

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; ^{1,2,3,4,5,6}

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; ^{1,2,3,4,5,6}

¹ 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).

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

³ 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>

⁴ 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>.

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

⁶ 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.^{1,2}

¹ 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.

² 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 ^{1,3}

Discrete^{1,2}

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

¹ 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).

² HDMI cable Sold Separately

³ 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^{1,3}
- 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^{1,3}
- 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^{1,3}

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 ^{1,3,5}

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")

¹HD content required to view HD images.

³Resolutions are dependent upon monitor capability, and resolution and color depth settings.

⁴HP Sure View Reflect integrated privacy screen is an optional feature that must be configured at purchase and is designed to function in landscape orientation.

⁵Actual brightness will be lower with touchscreen or Sure View.

Features

DOCKING

Docking station model #1	HP Thunderbolt 280W G4 Dock w/Combo Cable
Total number of supported displays (incl.the notebook display)	4
Max.resolutions supported	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
Dock Connectors	2xDP, 1xHDMI, 1xTB, 1xUSB-C Alt Mode
Technical limitations	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 DRIVES¹

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

¹ 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^{1,2}

Intel® Wi-Fi 7 BE2230+Bluetooth® 5.4 wireless card non-vPro® WW WLAN¹

¹Wi-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.

² 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>

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

Camera¹

720p HD IR camera

Sensors

ACS (ambient color sensor): non-PVCY panel

ACS +ALS: PVCY panel

HP Tamper Lock²

¹ Sold separately or as an optional feature.

² HP Tamper Lock must be enabled by the customer or your administrator.

Features

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Keyboard¹

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

¹ Backlit keyboard is an optional feature.

SOFTWARE AND SECURITY

Software

Bing Search for IE11

Buy Microsoft Office (Sold separately)

HP Connection Optimizer¹

HP Easy Clean²

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 Scan³

HP Smart Support⁴

HP Support Assistant⁵

Features

HSA Fusion for Commercial
Miro⁶
myHP
Poly Lens⁷

Manageability Features

HP Wolf Security for Business which includes⁸

HP Client Catalog (download)
HP Client Management Script Library (download)
HP Cloud Recovery⁹
HP Connect for Microsoft Endpoint Manager¹⁰
HP Driver Packs (download)
HP Image Assistant Gen5 (download)
HP Manageability Integration Kit (download)¹¹
HP Patch Assistant (download)¹²

Security Management

HP Client Security Manager¹³
HP Sure Admin¹⁴
HP Sure Click¹⁵
HP Sure Recover Gen6¹⁶
HP Sure Run Gen5¹⁷
HP Sure Sense¹⁸
HP Sure Start Gen7¹⁹
HP Tamper Lock²⁰
Secured-Core PC Enable²¹
Windows Hello Enhanced Sign-In Security (ESS)

Security- TPM

Trusted Platform Module TPM 2.0 Embedded Security Chip

BIOS

Absolute Persistence Module²²
BIOS Update via Network
HP BIOSphere Gen6²³
HP DriveLock & Automatic DriveLock
HP Fingerprint Sensor²⁴
HP Secure Erase²⁵
HP Wake on WLAN

¹ HP Connection Optimizer requires Windows 10 and Windows 11.

² 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.

³ 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, 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.

⁴ 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.

Features

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>.

⁵ HP Support Assistant - Requires Windows and Internet Access.

⁶ 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.

⁷ Poly Lens Desktop requires a Windows OS.

⁸ 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.

⁹ 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>.

¹⁰ 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.

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

¹² 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>.

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

¹⁴ 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.

¹⁵ HP Sure Click requires Windows 10 Pro or higher or Enterprise. See https://bit.ly/2PrLT6A_SureClick for complete details.

¹⁶ 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

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

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

¹⁹ HP Sure Start Gen7 is available on select HP PCs and requires Windows 10 and higher

²⁰ HP Tamper Lock must be enabled by the customer or your administrator.

²¹ 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.

²² 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.

²³ 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.

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

²⁵ 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™.

Features

POWER

Power Supply

HP Slim Smart 150W External Right Angle AC Power Adapter ¹

Not Included AC Adapter

Battery

HP XL-Long Life 86Whr Polymer Fast Charge 6 cell^{2,3}

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 TBD⁴

Discrete

TBD⁵

¹ Availability may vary by country.

² Battery is internal and not replaceable by customer. Serviceable by warranty.

³ 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.

⁴ 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.

⁵ 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 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)

Weights¹

Product Weight

- Starting at 3.83 lb
- Starting at 1.74 kg

¹Weight 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)¹
- 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) ²
- 1 nano security lock slot

Expansion Slots

MicroSD SD7.1 supports next generation secure digital and is compatible to SD, SDHC, SDXC, SDUC media

¹ SuperSpeed USB 20Gbps is not available with Thunderbolt™ 4.
² Multi-Function USB-C port works with Discrete Graphics and Intel® ARC Graphics.

COMPATIBILITY

HP Thunderbolt 280W G4 Dock w/Combo Cable	4J0G4AA
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>.

¹HP 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

Features

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.

Certification and Compliance

ENERGY STAR® certified
EPEAT® registered where applicable. EPEAT ® registration varies by country. See www.epeat.net for registration status by country.
EPEAT® Gold with Climate+ registered in US ¹
TCO Certified
Low halogen²

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

¹EPEAT® registered where applicable. EPEAT ® registration varies by country. See www.epeat.net for registration status by country.
²External power supplies, power cords, cables and peripherals are not Low Halogen. Service parts obtained after purchase may not be Low Halogen.

SYSTEM UNIT

Stand-Alone Power Requirements (AC Power)	Nominal Operating Voltage	19V
	Max Operating Power	1000 Ada/2000 Ada/3000 Ada/RTX4070 <50W
Temperature	Operating	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.
	Non-operating	-4-140°F (-20 - 60°C)
Relative Humidity	Operating	10% to 90%, non-condensing
	Non-operating	5% to 95% (38.7° C (101.6° F) maximum wet bulb tempera-ture; non-condensing)
Shock	Operating	40 G, 2 ms, half-sine
	Non-operating	200 G, 2 ms, half-sine
Random Vibration	Operating	0.75grms
	Non-operating	1.50grms
Maximum Altitude (unpressurized)	Operating	10,000 ft (3,048 m)
	Non-operating	40,000 ft (12,192 m)
Planned Industry Standard Certifications	UL	Yes
	CSA	Yes
	FCC Compliance	Yes
	ENERGY STAR®	Selected models
	EPEAT®	EPEAT Gold in United States
	ICES	Yes
	Australia /	Yes
	NZ A-Tick Compliance	Yes
	CCC	Yes
	Japan VCCI Compliance	Yes
	KC	Yes

Features

BSMI	Yes
CE Marking Compliance	Yes
BNCI or BELUS	Yes
CIT	Yes
GOST	Yes
Saudi Arabian Compliance (ICCP)	Yes
SABS	Yes

¹Configurations 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>.
²Based on US EPEAT® registration according to IEEE 1680.1-2018 EPEAT®. Status varies by country. Visit www.epeat.net for more information.

Technical Specifications – Displays

DISPLAYS

¹Actual 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.

16 in WQUXGA (3840 x 2400) BrightView UWVA DCI-P3 NBZ2 400 eDP 1.4+PSR 100 bent OLED Panel¹	Outline Dimensions (W x H)	348.578 x 224.310 (max)
	Active Area	344.448 x 215.280 (typ)
	Weight	230 (max)
	Diagonal Size	16
	Thickness (body/PCB, mm)	1.242 / 3.143 (max)
	Interface	eDP1.4
	Surface Treatment	Bright View
	Touch Enabled	Yes
	Contrast Ratio	100,000:1 (typ)
	Refresh Rate	60 (typ)
	Brightness	400 (typ)
	P.P.I.	283
	Pixel Resolution	Pitch 3840 x 2400 (WQUXGA)
		Format RGB
	Backlight	OLED
	Color Gamut Coverage	DCI-P3 100%
	Color Depth	8
	Viewing Angle	UWVA 85/85/85/85
	Power Consumption (W, EBL@ 150nits max /200nits max)	6.10 (max) / 7.40 (max)
	Low Blue Light	Yes
	Touch Point Supported	10-point multi-touch
	Pen Enabled	No

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	Outline Dimensions (W x H)	349.980 x 225.420 (max)
	Active Area	344.680 x 215.420 (typ)
	Weight	300 (max)
	Diagonal Size	16
	Thickness (body/PCB, mm)	2.3 / 4.1(max)
	Interface	eDP1.4
	Surface Treatment	Anti-Glare
	Touch Enabled	No
	Contrast Ratio	1200:1 (typ)
	Refresh Rate	120 (typ)
	Brightness	500 (typ)
	P.P.I.	283
	Pixel Resolution	Pitch 3840 x 2400 (WQUXGA)

Technical Specifications – Displays

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

Technical Specifications – Displays

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

Technical Specifications – Storage

STORAGE AND DRIVES

4TB PCIe-4x4 2280 NVMe Three Layer Cell double-sided M.2 Solid State Drive	Form Factor	M.2 2280	
	Capacity	4TB	
	NAND Type	TLC	
	Height	0.09 in (2.3 mm)	
	Width	0.87 in (22 mm)	
	Weight	15g	
	Interface	PCIe NVMe Gen4X4	
	Performance	Minimum Sequential Read	Minimum Sequential Write
		6400 MB/s ±20%	5000 MB/s ±20%
	Logical Blocks	8,001,594,720	
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]	
SSD 2TB 2280 PCIe-4x4 NVMe Three Layer Cell	Form Factor	M.2 2280	
	Capacity	2 TB	
	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	
	Performance	Minimum Sequential Read	Minimum Sequential Write
		6400 MB/s ±20%	5000 MB/s ±20%
	Logical Blocks	4,000,797,360	
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]	
SSD 1TB 2280 PCIe-4x4 NVMe Three Layer Cell	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	
	Performance	Minimum Sequential Read	Minimum Sequential Write
		6400 MB/s ±20%	5000 MB/s ±20%
	Logical Blocks	2,000,409,264	
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]	

Features
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.

Features
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.

Features
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	
	Performance	Minimum Sequential Read	Minimum Sequential Write
		6400 MB/s ±20%	3500 MB/s ±20%
	Logical Blocks	1,000,215,215	
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]		
Features	Pvrite 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	
	Performance	Minimum Sequential Read	Minimum Sequential Write
		6400 MB/s ±20%	5000 MB/s ±20%
	Logical Blocks	2,000,409,264	
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]		
Features	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	
	Performance	Minimum Sequential Read	Minimum Sequential Write
		6400 MB/s ±20%	3500 MB/s ±20%
	Logical Blocks	1,000,215,215	
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]		
Features	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

Intel BE200 Wi-Fi 7 Bluetooth® 5.4 wireless card M.2 320MHz PCIe WLAN vPro®¹	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 Frequency Band	Wi-Fi certified 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
	Data Rates	• 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: max 300Mbps • 802.11ac : 1733Mbps • 802.11ax : max 2.4Gbps • 802.11be : max 5.76Gbps
	Modulation	Direct Sequence Spread Spectrum OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM, 4096QAM
	Security¹	• 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
	Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
	Roaming	IEEE 802.11 compliant roaming between access points

Technical Specifications – Networking

Output Power²

- 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 Sensitivity³

- 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

Operating Voltage	3.3v +/- 5%
Temperature	Operating 14° to 158° F (-10° to 70° C) Non-operating -40° to 176° F (-40° to 80° C)
Humidity	Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing)
Altitude	Operating Non-operating 0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)
LED Activity	LED Amber – Radio Off; LED Off – Radio ON
HP Integrated Module with Bluetooth® 4.0/4.1/4.2/5.0/5.1/5.2/5.3/5.4 Wireless Card Technology	
Frequency Band	2402 to 2480 MHz
Number of Available Channels	Legacy : 0~79 (1 MHz/CH) BLE : 0~39 (2 MHz/CH)
Data Rates and Throughput	Legacy : 3 Mbps data rate; throughput up to 2.17 Mbps BLE : 1 Mbps data rate; throughput up to 0.2 Mbps Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)
Transmit Power	The Bluetooth component shall operate as a Class I Bluetooth device with a maximum transmit power of +15.5 dBm for BR and +13dBm for EDR.
Power Consumption	Peak (Tx): 330 mW Peak (Rx): 230 mW Selective Suspend: 17 mW
Bluetooth Software Supported	1. Microsoft Windows Bluetooth Software
Link Topology	2. Linux/Chrome OS Bluetooth Software.
Power Management	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
Certifications	ETSI 300 328, ETSI 301 893, ETSI 303 687
Bluetooth Profiles Supported	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

¹ 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.

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

³ The FCC has declared as of September 1, 2014 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.

⁴ Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

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

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 Frequency Band

Wi-Fi certified
 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

Data Rates

- 802.11b: 1, 2, 5.5, 11 Mbps
- 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
- 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
- 802.11n: max 300Mbps
- 802.11ac : 1733Mbps
- 802.11ax : max 2.4Gbps
- 802.11be : max 5.76Gbps

Modulation

Direct Sequence Spread Spectrum
OFDM, BPSK, QPSK, CCK, 16-QAM, 64-QAM, 256-QAM, 1024QAM, 4096QAM

Security¹

- 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

Network Architecture Models

Ad-hoc (Peer to Peer)

Infrastructure (Access Point Required)

Roaming

IEEE 802.11 compliant roaming between access points

Output Power²

- 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 Sensitivity³

- 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

Technical Specifications – Networking

	<ul style="list-style-type: none">• 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	
Operating Voltage	3.3v +/- 5%	
Temperature	Operating	14° to 158° F (-10° to 70° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90% (non-condensing)
	Non-operating	5% to 95% (non-condensing)
Altitude	Operating	0 to 10,000 ft (3,048 m)
	Non-operating	0 to 50,000 ft (15,240 m)
LED Activity	LED Amber – Radio Off; LED Off – Radio ON	
HP Integrated Module with Bluetooth® 4.0/4.1/4.2/5.0/5.1/5.2/5.3/5.4 Wireless Card Technology		
Frequency Band	2402 to 2480 MHz	
Number of Available Channels	Legacy : 0~79 (1 MHz/CH) BLE : 0~39 (2 MHz/CH)	
Data Rates and Throughput	Legacy : 3 Mbps data rate; throughput up to 2.17 Mbps BLE : 1 Mbps data rate; throughput up to 0.2 Mbps Legacy : Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Legacy : Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric (3-DH5) or 864 kbps symmetric (3-EV5)	
Transmit Power	The Bluetooth component shall operate as a Class I Bluetooth device with a maximum transmit power of +15.5 dBm for BR and +13dBm for EDR.	
Power Consumption	Peak (Tx): 330 mW Peak (Rx): 230 mW Selective Suspend: 17 mW	

Technical Specifications – Networking

Bluetooth Software Supported	1. Microsoft Windows Bluetooth Software
Link Topology	2. Linux/Chrome OS Bluetooth Software.
Power Management	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
Certifications	ETSI 300 328, ETSI 301 893, ETSI 303 687
Bluetooth Profiles Supported	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

¹ 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.

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

³ The FCC has declared as of September 1, 2014 products that utilize passive scanning on channel 12/13 and are capable of transmitting must fully comply with requirements of 15.247 or otherwise disable those channels.

⁴ Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

AUDIO

HD Stereo Codec

Realtek ALC3315

Technical Specifications – Networking

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

FINGERPRINT READER

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

POWER

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

86Whr XL-Long Life Polymer Fast Charge 6 cell Battery ^{1,2}

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

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

² 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.

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

Type	Description	Part #
Audio/Video	TBD	
Cases	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
Docking station	HP Thunderbolt 280W G4 Dock w/Combo Cable	4J0G4AA
Hub	HP USB-C to USB-A Hub	Z6A00AA
Adapter	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
Keyboard/Combo	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
Mouse	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	6E6F0AA
	HP 925 Ergonomic Vertical Wireless Mouse	6H1A5AA
	HP 425 Programmable Wireless Mouse	7M1D5AA
	HP 685 Comfort Dual-Mode Mouse	8T6M0AA
Power	HP 150W Slim Smart 4.5mm AC Adapter	4SC18AA
	HP ZBook 230W Slim Smart 4.5mm AC Adapter	6E6M1AA
Commodity	HP 2TB PCIe-4x4 NVMe TLC M.2 Solid State Drive	6D8L6AA
	HP USB External DVDRW Drive	F2B56AA
	HP USB External DVDRW Drive	Y3T76AA
Monitor	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

Copyright © 2024 HP Development Company, L.P. The information contained herein is subject to change without notice. The only warranties for HP products are set forth in the express limited warranty statements accompanying such products. Nothing herein should be construed as constituting an additional warranty. HP shall not be liable for technical or editorial errors or omissions contained herein.

Intel, Core, and Celeron, Thunderbolt and vPro are registered trademarks or trademarks of Intel Corporation or its subsidiaries in the U.S. and/or other countries. Bluetooth is a registered trademark of its proprietor used by HP Inc. under license. AMD, FirePro, and Enduro are trademarks of Advanced Micro Devices, Inc. Adobe is a trademark of Adobe Systems Incorporated. Microsoft and Windows are U.S. registered trademarks of Microsoft Corporation in the United States and/or other countries. Qualcomm and Snapdragon are trademarks of Qualcomm, Inc. SD, SDHC, and SDXC are trademarks or registered trademarks of SD-3C in the United States, other countries or both. USB Type-C and USB-C are trademarks of USB Implementers Forum. ENERGY STAR® is a registered trademark mark of the U.S. Environmental Protection Agency.

Date of change:	Version History:		Description of change:
	From v1 to v2		