Overview

HP ZBook x2 G4 Detachable Workstation
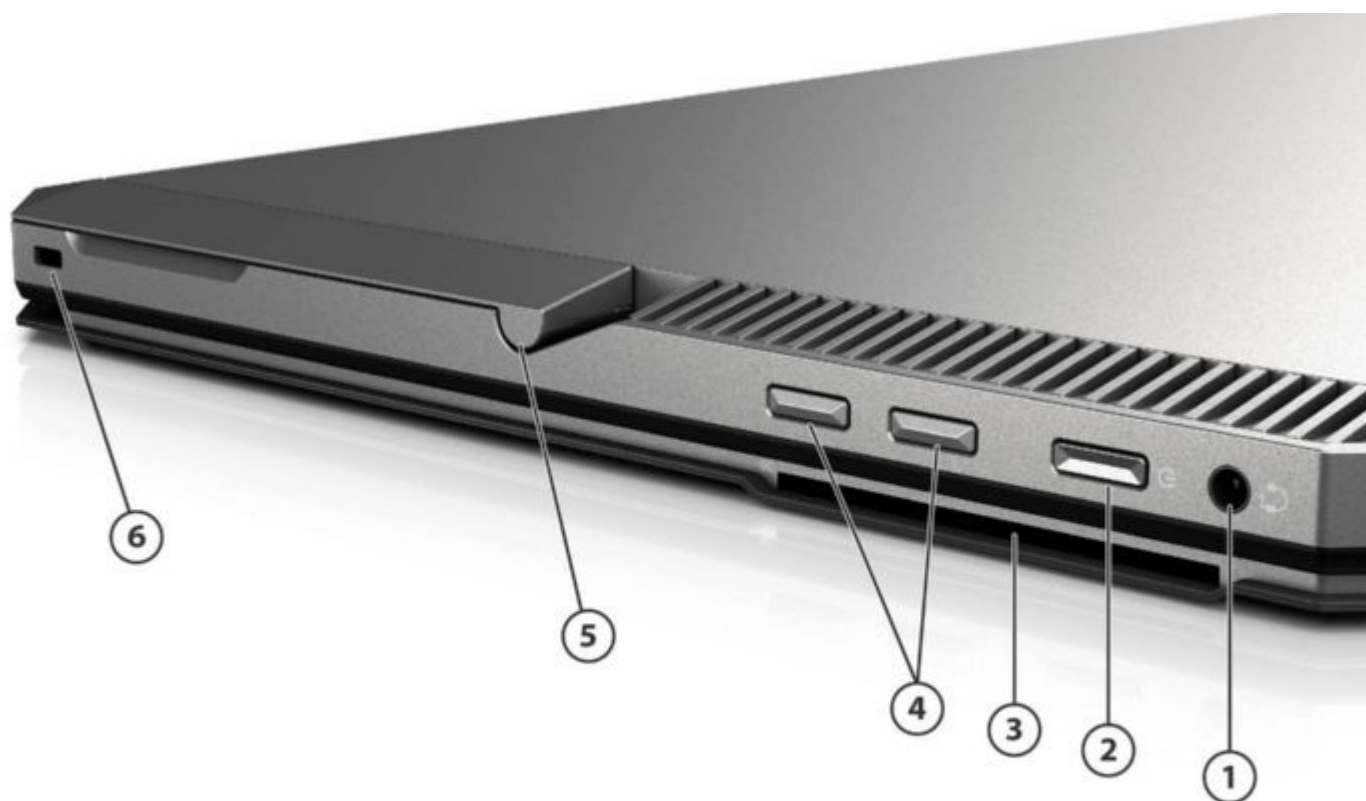
Overview

Front

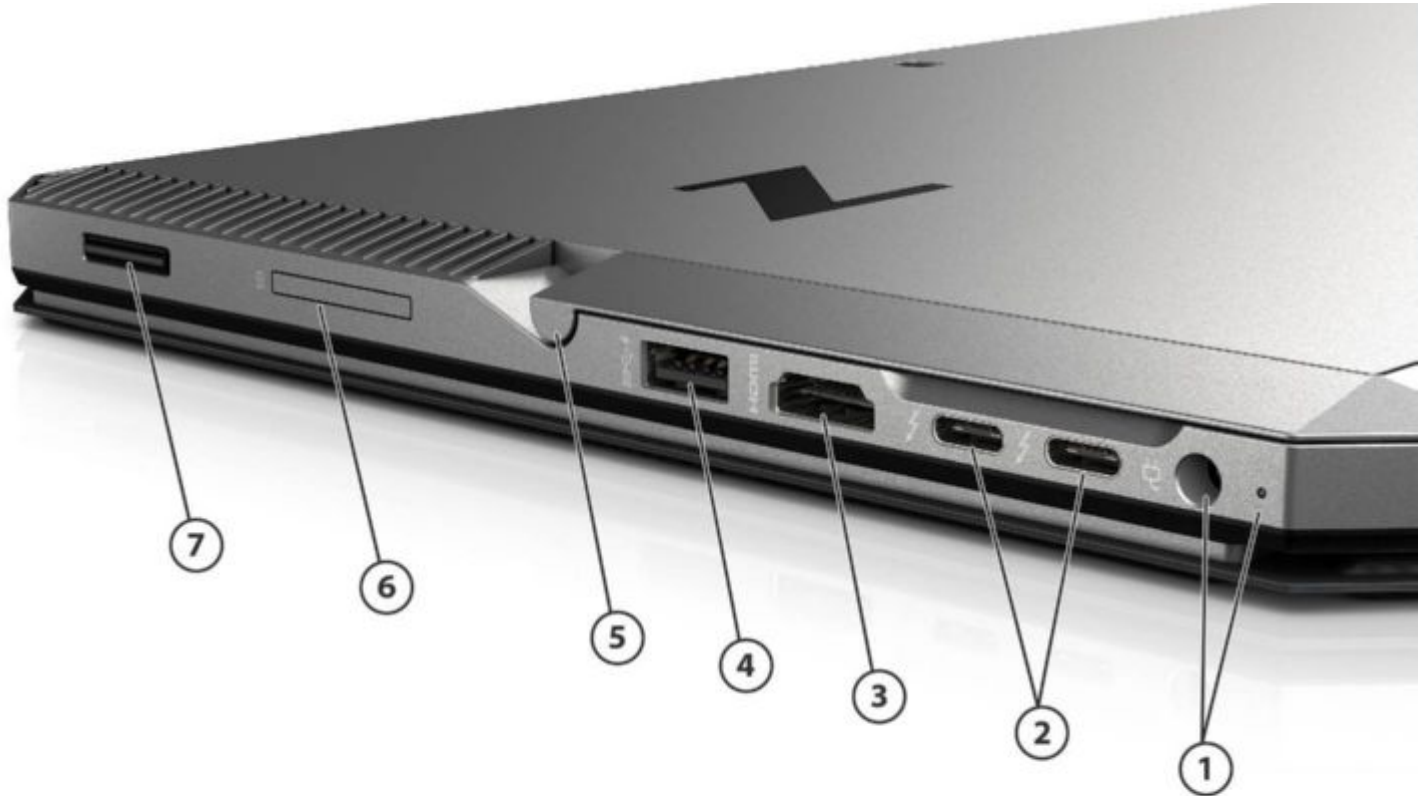|				
1.	IR LED	8.	HP Quick Key - Mode Select
2.	Microphones	9.	HP Quick Key
3.	RGB Camera	10.	HP Quick Key (Supports 1 Mode)
4.	IR Camera	11.	HP Quick Key (Supports 1 Mode)
5.	3 Mode LEDs	12.	Large Clickpad
6.	HP Quick Key (Supports 3 Modes)		
7.	HP Quick Key (Supports 3 Modes)		

Overview

Left

1.	Combo headset	4.	(2) Volume Up/Down
2.	Power	5.	Integrated Kickstand
3.	Smart card (on Detachable keyboard)	6.	Security lock slot

Overview

Right

1.	Power connector with LED	5.	Integrated Kickstand
2.	(2) Thunderbolt™ 3 Ports	6.	SD Card slot
3.	HDMI 1.4	7.	Fingerprint reader
4.	USB 3.0 (Charging) port		

At A Glance

- Windows 10 editions, or FreeDOS
- Versatile performance workstation category and thin & light detachable industrial design
- Weights starting at 4.78 lb (2.17kg) (laptop mode) and 3.64 lb (1.65 kg) (Tablet mode)
- Height starting at 20.3 mm (Laptop mode) and 14.6 mm (Tablet mode)
- Designed to pass military MIL-STD-810G testing*.
- Discrete Graphics: Workstation-caliber NVIDIA® Quadro® discrete graphics, NVIDIA® Quadro® M620 (with 2GB dedicated GDDR5 graphics memory); NVIDIA® Optimus®.
- Integrated Graphics:

  o Intel® Integrated graphics: Intel® UHD 620 graphics integrated on 8th gen Core™ i5 and i7 (available as a standalone option on Core i5)

  o Intel® Integrated graphics: Intel® HD 620 graphics integrated on 7th gen Core™ i7

- ISV certified to provide fast and reliable performance with workstation applications, including manipulation of 3D textures

Overview

- Choice of 8th generation Intel® Core™ i7 and i5 processors and 7th generation Intel® Core™ i7[1]
- Intel® Core™ i7 with vPro™ 7th generation technology (optional)
- Memory: Up to two SODIMM channels, for system memory up to 32GB DDR4
- Displays supported: 14.0-inch diagonal 4K UHD UWVA display w/ multi-touch & anti-glare treatment; 14.0-inch diagonal 4K UHD HP DreamColor UWVA display w/ multi-touch and anti-glare treatment (10 bit supporting up to 1 billion colors)
- Supports multi-display, including up to three displays without the use of a docking solution, with hybrid graphics enabled. Supports up to five with HP ZBook Dock with Thunderbolt™ 3 (sold separately), with hybrid graphics enabled. Supports up to four with HP ZBook Dock with Thunderbolt™ 3 (sold separately), with HP DreamColor configurations.
- Bang and Olufsen audio optimized for high fidelity audio experience
- Full size premium backlight Bluetooth Keyboard with large clickpad with gestures support; 1.5mm of keyboard travel and 18.7mm pitch; integrated smart card reader
- Stay productive with 2 x Thunderbolt™ 3 ports at max supported bandwidth (PCIe Gen 3x4) One dedicated drive slots. (1) M.2 slot; Up to 2TB HP Z Turbo Drive G2[2]
- Professional high performance pen experience[3] with ergonomic pen design enabling precise creative control through low starting pressure, low latency, tilt support, 4,096 pressure sensitive levels and seamlessly works requiring no power source - (no battery or Bluetooth® pairing required). Creative professional design includes customizable button, dedicated pressure sensitive eraser and starter set of both POM & Felt Nibs for maximum expressiveness on anti-glare texturized screen surface. The creative experience is enhanced further by strategically located HP Quick Key buttons on both sides of the ZBook x2's industrial design for easy access to application specific functions that are user customizable to maximize overall workflow for a wide variety of professional applications including Adobe Photoshop, Lightroom, and Illustrator HP Create Control panel software enables full control & customization of all HP Quick Keys and Pen settings for both professional applications and Windows 10.
- Preinstalled with Adobe Creative Cloud Desktop Application for easy access to commonly used Adobe CC applications. Adobe Creative Cloud Suite (sold separately)
- Security features including an IR camera for face authentication with Windows Hello, TPM 2.0, HP SureStart Gen3, and hardware security options like Smart Card Reader integrated into the keyboard, Fingerprint Reader, Optional vPro™ 7th generation, Security lock slot
- 4-cell (70 WHr) HP Long Life Battery with HP Fast Charge Technology
- Wireless connectivity options:
  - Intel® Dual band wireless-AC 8265 802.11AC 2x2 WiFi + BT 4.2 Combo Adapter (vPro™ 7th generation)
- HP Performance Advisor for optimal configuration, compatibility and performance
- HP BIOS self-healing technology including HP Sure Start Gen 3 to prevent, detect, and remedy known and unknown BIOS attacks.
- Low halogen, ENERGY STAR® certified and EPEAT® TBD registered in the U.S. EPEAT® status varies by country- please see epeat.net for registration status by country. Search keyword generator on HP's 3rd party option store for solar generator accessories at www.hp.com/go/options

* MIL STD 810G testing is pending and is not intended to demonstrate fitness for U.S. Department of Defense contract requirements or for military use. Test results are not a guarantee of future performance under these test conditions. Damage under the MIL STD test conditions or any accidental damage requires an optional HP Accidental Damage Protection Care Pack.

NOTE 1: Intel® Core™ 8th gen is planned to be available in early 2018
NOTE 2: 2TB HP Z Turbo Drive G2 is planned to be available in early 2018

NOTE 3: HP Zbook x2 Pen sold separately, it is available as an After Market Option TBD

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

Features

OPERATING SYSTEM

Preinstalled OS
Windows® 10 Pro 64[1]
Windows® 10 Home 64[1]
Windows 10 Home Single Language 64[1]
FreeDOS 2.0

Supported OS
Windows® 10 Enterprise 64*

* Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See http://www.windows.com

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 produc 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

PROCESSOR*,**

Intel® Core™ i7-8650U with Intel® UHD Graphics 620 (1.9 GHz base frequency, up to 4.2 GHz with Intel® Turbo Boost Technology 8 MB, 4 cores)

Intel® Core™ i7-8550U with Intel® UHD Graphics 620 (1.8 GHz base frequency, up to 4.0 GHz with Intel® Turbo Boost Technology, 8 MB cache, 4 cores)

Intel® Core™ i5-8250U with Intel® UHD Graphics 620 (1.6 GHz base frequency, up to 3.4 GHz with Intel® Turbo Boost Technology, 6 MB cache, 4 cores)

Intel® Core™ i7-7600U with Intel® HD Graphics 620 (2.8 GHz base frequency, up to 3.9 GHz with Intel® Turbo Boost Technology, 4 MB cache, 2 cores)

Intel® Core™ i7-7500U with Intel® HD Graphics 620 (2.7 GHz base frequency, up to 3.5 GHz with Intel® Turbo Boost Technology, 4 MB cache, 2 cores)

*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 workloa and your hardware and software configurations. Intel's numbering, branding and/or naming is not a measurement of higher performance.
**HP ZBook x2 G4 detachable pc is planned to be available for shipment with the above Intel® 7th generation processors in December 2017 and Intel 8th Gen processors in early 2018.

Also note that the Intel® Turbo Boost is based on max GHz for a single core.

Features

CHIPSET

Non-applicable, processor specific

INTEL® CORE™ I5/CORE I7 WITH vPro™ TECHNOLOGY CAPABLE

7th generation Intel® Core™ i5 with vPro™ and Core™ i7 with vPro™ technology is a selectable feature that is available on units configured with select processors, a qualified Intel® Centrino® 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 mobile workstations regardless of their power state.

* 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.

NOTE: Some functionality of 7th generation Intel® Core™ i5 with vPro™/Core™ i7 with vPro™ technology, such as Intel® Active Management technology and Intel® Virtualization technology, requires additional third- party software in order to run. Availability of future "virtual appliances" applications for Intel® Core™ i5 with vPro™/Core™ i7 with vPro™ technology is dependent on third- party software providers. Compatibility with future "virtual appliances" is yet to be determined.

GRAPHICS

Intel® HD 620 Graphics*

NVIDIA® Quadro® M620 with 2GB dedicated GDDR5 graphics memory[1,2]

Microsoft DirectX® 12 (Shader Model 5.0) and OpenGL® 4.4 capable

* HD content required to view HD images

NOTE 1: NVIDIA® Optimus® Technology supported

NOTE 2: Supports up to 5 independent displays, These five displays are internal panel plus four external displays connected to the ZBook dock's Thunderbolt™ 3, VGA, and two DisplayPort™ ports (sold separately).

Features

DisplayPort^{TM} 1.2 protocol features supported on Thunderbolt^{TM} 3 ports:

- Legacy displays (HDMI, DVI, VGA) may be attached to Thunderbolt^{TM} port with the use of a certified dongle.
- DisplayPort^{TM} monitors capable of supporting DisplayPort^{TM} 1.2 may be directly attached to the Thunderbolt^{TM} port to achieve HBR2 with the use a dongle.
- Thunderbolt^{TM} 3 enabled monitors may be directly attached to the Thunderbolt port to achieve HBR2 and MST.
- DisplayPort^{TM} 1.2 MST feature ("daisy-chain" feature) is supported through Thunderbolt^{TM} 3 port on Thunderbolt^{TM} 3 enabled devices or DisplayPort^{TM} 1.2 monitors (requires monitor with DisplayPort^{TM} 1.2 MST capability) with the use of a dongle.
- Up to 2 streams (eight lanes) of DisplayPort^{TM} 1.2 are supported over a single Thunderbolt^{TM} 3 port. Up to (2) 4K displays 24/30-bit color depth at 60 Hz or (1) 5K display supported over a single Thunderbolt^{TM} 3 port. (Requires Intel® certified Thunderbolt^{TM} cable).
- DisplayPort^{TM} 1.2 w/MST (Multi-stream Transport): Supports resolutions up to Full 4K, 24/30-bit color depth at 60 Hz, and WUXGA (1920 x1200) monitors, 24/30-bit color depth at 120 Hz.

* Thunderbolt^{TM} 3 is superset port supporting DisplayPort^{TM} 1.2, USB 3.1 Gen 2, and PCIe Gen 3 devices over the new USB-C^{TM} connector. Install all the latest drivers for your Thunderbolt^{TM} device before connecting the device to the Thunderbolt^{TM} port. Thunderbolt^{TM} cable and Thunderbolt^{TM} device (sold separately) must be compatible with Windows. To determine whether your device is Thunderbolt^{TM} Certified for Windows, see https://Thunderbolttechnology.net/products.

Multi-display Support

Without ZBook Dock with Thunderbolt^{TM} 3:

HP ZBook x2 with hybrid graphics and without the use of the ZBook dock supports up to a maximum of three independent displays. These three displays are the internal panel plus two external displays connected to two of the three following ports: HDMI 1.4, Thunderbolt^{TM} 3, Thunderbolt^{TM} 3.

HP ZBook x2 with HP DreamColor configurations (discrete graphics only mode enabled) and without the use of the ZBook dock supports up to a maximum of three independent displays. These three displays are the internal panel plus two external displays connected to two of the three following ports: HDMI 1.4, Thunderbolt^{TM} 3, Thunderbolt^{TM} 3.

HP ZBook x2 configuration with Intel® integrated graphics and without the use of the ZBook dock supports up to a maximum of three independent displays. These three displays are the internal panel plus two external displays connected to two of the three following ports: HDMI, Thunderbolt^{TM} 3, Thunderbolt^{TM} 3.

With ZBook Dock with Thunderbolt^{TM} 3:

The ZBook Dock with Thunderbolt^{TM} 3 has a Thunderbolt^{TM} 3 port, VGA port, and two DisplayPort^{TM} 1.2 ports.

When used together with the HP ZBook x2 configuration with hybrid graphics, a maximum of 5 independent displays are supported. These five displays are internal panel plus four external displays connected to the ZBook dock's Thunderbolt^{TM} 3, VGA, and two DisplayPort^{TM} ports.
When used together with the HP ZBook x2 with HP DreamColor configurations (discrete graphics only mode enabled), a maximum of 4 independent displays are supported.
When used together with the HP ZBook x2 configuration with Intel® integrated graphics, a maximum of 3 independent displays are supported.

Without ZBook Dock with Thunderbolt^{TM} 3 (using DP 1.2 MST)

Features

Multi-stream Transport (MST) is a DP 1.2 feature that allows daisy chaining of DP 1.2 monitors (requires built in support of DP 1. MST in monitor), or the use of DP 1.2 hubs with MST to achieve 5 active displays without a docking station on configurations wit hybrid graphics enabled.

* HP ZBook Dock with Thunderbolt^{TM} 3 sold separately.

DISPLAY

Touch

14.0-inch diagonal LED-backlit UHD Anti-glare UWVA Touch (3840 x 2160) - 10 bit (8+2 FRC) - Support for 1 billion colors
14.0-inch diagonal LED-backlit UHD DreamColor Anti-glare UWVA Touch (3840 x 2160) - 10 bit (8+2 FRC) - Support for 1 billion colors

External
Up to 32-bit per pixel color depth

HDMI
HDMI 1.4

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

STORAGE AND DRIVES

Primary Storage Bay

M.2 PCIe (NVMe) SSD TLC
256GB PCIe TLC Solid State Drive
512GB PCIe TLC Opal 2 Solid State Drive
1TB PCIe TLC Solid State Drive
2TB PCIe TLC Solid State Drive

M.2 PCIe (NVMe) SSD MLC
256GB HP Z Turbo Drive MLC Solid State Drive
512GB HP Z Turbo Drive MLC Solid State Drive

M.2 SATA SSD

512GB SATA-3 SS TLC SSD FIPS-140-2
128 GB SATA SATA SSD

NOTE: For Solid State Drives or Hard Drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 3 GB (for Windows 10) is reserved for system recovery software.

Features

DRIVE CONTROLLERS

M.2 Storage Bay (SATA):	SATA-3 for SSD
HP Z Turbo Drive:	PCIe NVMe SSD
RAID:	Not supported

NOTE: Raid 0, 1 supported only on SATA drives.

MEMORY

Standard
32 GB DDR4 1.2V Non ECC SDRAM (Transfer rates up to 2133MT/s)
Two SODIMM slots supporting dual-channel memory
4 GB, 8GB and 16 GB SODIMMs

Maximum
Upgradeable to 32768 MB with optional 16384 MB SODIMMs in 2 slots

Dual-channel
Maximized dual-channel performance requires SODIMMs of the same size and speed in both memory channels.

* Maximum memory capacities assume Windows 64-bit operating systems or Linux®. With Windows 32-bit operating systems, memory above 3 GB may not all be available due to system resource requirements.

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.

NETWORKING/COMMUNICATIONS

Wireless
Secure, integrated wireless LAN options featuring support for the latest industry standards. Integrated Bluetooth® is also available (factory configurable only) and is combined with the supported wireless LAN feature.

802.11 Wireless LAN*

Intel® Dual Band Wireless-AC 8265 802.11 a/b/g/n/ac (2x2) WiFi + Bluetooth® 4.2 Combo Adaptor* (vPro)

NFC Support
Assembly on Detachable keyboard

Near Field Communications (NFC)
Integrated NXP NFC Controller NPC100

* Wireless cards are optional or add-on features and requires separately purchased wireless access point and internet service. Availability of public wireless access points limited. The specifications for the 802.11ac WLAN are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ac WLAN devices.

Features

AUDIO/MULTIMEDIA

Audio

Audio by Bang & Olufsen

Integrated stereo speakers (2)

Integrated dual-microphone array; located in the display

Two discrete buttons for volume up and down

Combo mic-in / stereo headphone-out jack

Intel® Smart Sound Technology (Windows 10)

Front Camera

720 HD webcam with IR (Near infrared imaging)

- Microsoft Hello Certification: Microsoft face authentication in Windows 10 is an enterprise-grade identity verification mechanism
- Microsoft Skype for Business[1] Certified
- HD format (widescreen 16:9)
- Supports videoconferencing and still image capture
- High quality fixed focus lens
- Video capture at various resolutions up to 1280x720 resolution (720p) and up to 30fps
- M-JPEG compression supports higher frame rates for video capture and videoconferencing
- Improved low light sensitivity
- Improved dynamic range

World Facing Camera

World Facing Camera (8MP USB3.0)

- Supports videoconferencing and still image capture
- High quality auto-focus lens
- Still capture at various resolutions up to 8MP (4:3)
- Video capture at various resolutions up to 1920x1080 (1080p) and up to 30fps
- M-JPEG compression supports higher frame rates for video capture and videoconferencing
- Improved low light sensitivity
- Improved dynamic range

* HD content required to view HD images.

* 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.

1. Skype is not offered in China.

Features

KEYBOARDS/POINTING DEVICES/BUTTONS & FUNCTION KEYS

Full size Bluetooth Keyboard
The ZBook x2 Bluetooth® keyboard delivers a best in class typing experience using a stiffened anodized aluminum deck and keys uniquely designed for ideal contouring, separation, and size. Class leading 1.5 mm of keyboard travel. The addition of patterned polyurethane material nicely contrasts the smooth aluminum for a feel of comfort and a tailored appeal. This helps reduce the risk of damage to sensitive components underneath.
Backlit keyboard supports backlit brightness settings - off/full/half brightness

The 85-key compatible keyboard features a full-pitch key layout with desktop keyboard features, such as editing keys, both left and right control and alt keys, function keys, and 18.7 x 18.4 mm key pitch (center-to-center spacing).
U.S. and International key layouts are available. For North America, a US/Euro Spanish Keyboard option now available. Other features include hot keys for instant access to power conservation and brightness.

Pointing Devices
Extra large clickpad with On/Off button, two-way scroll, gestures, two integrated buttons within chemically etched clickpad surface
Image sensor clickpad for enhanced performance and improved precision on scroll and gesture.

Buttons and Function Keys
Power button
Volume control buttons
HP Quick Keys located on left and right side of the device
Function keys provide control of the following features: standby mode, external display, volume down, volume up, and display brightness.

SOFTWARE AND SECURITY

Preinstalled Software with Windows® Operating System

BIOS

HP BIOSphere Gen3[1]

HP Sure Start Gen3 [2]

HP DriveLock | HP Automatic DriveLock

BIOS Update via Network

Master Boot Record Security

Power On Authentication

Secure Erase[3]

Absolute Persistence Module[4]

Pre-boot Authentication

Communication / Connectivity

HP Mobile Connect Pro[5]

Native Miracast Support[6]

HP LAN-WLAN Protection

HP MAC Address Manager (select models only)

HP Wireless Wakeup (select models only)

Features

HP SureConnect

Adobe Productivity Software

Adobe Creative Cloud Desktop Manager Application
Adobe Creative Cloud Suite

HP Value Add Software

HP ePrint Driver + JetAdvantage[7]
HP Hotkey Support
HP Recovery Manager
HP Jumpstart
HP Support Assistant[12]
HP Noise Cancellation Software
HP Performance Advisor
HP Remote Graphics Software
HP Velocity

Microsoft Products

Buy Office
Bing Search
Skype[8]

Manageability

HP Driver Packs [9]
HP SoftPaq Download Manager (SDM)
HP System Software Manager (SSM) [9]
HP BIOS Config Utility (BCU) [9]
HP Client Catalog [9]
HP Manageability Integration Kit for Microsoft SCCM [10]
HP Image Assistant
LANDESK Management [11]

For more information on HP Client Management Solutions refer to: http://www.hp.com/go/clientmanagement.

Client Security Software

HP Client Security Suite Gen3[13]
HP Security Manager (including Credential Manager and Password Manager)
HP Fingerprint Sensor
Power On Authentication
Device Access Manager
Microsoft Defender [14]
HP WorkWise[15]

Standard

For Windows 10, Trusted Platform Module (TPM) 2.0 (Infineon SLB9670). Common Criteria EAL4+ Certified.

HP Fingerprint Reader

For more information on HP Client Security Software Suite, refer to http://www.hp.com/go/clientsecurity.

Features

1. Requires Intel® 7th generation processors
2. Available on HP Elite products equipped with Intel® 7th generation processors.
3. For the methods outlined in the National Institute of Standards and Technology Special Publication 800-88.
4. 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.
5. HP Mobile Connect Pro is only available on preconfigured devices with WWAN. For geographic availability refer to http://www.hp.com/go/mobileconnect
6. Miracast is a wireless technology your PC can use to project your screen to TVs, projectors, and streaming media players that also support Miracast. You can use Miracast to share what you're doing on your PC and present a slide show. For more information: http://windows.microsoft.com/en-us/windows-8/project-wireless-screen-miracast
7. Requires an Internet connection to HP web-enabled printer and HP ePrint account registration (for a list of eligible printers, supported documents and image types and other HP ePrint details, see http://www.hp.com/go/eprintcenter). Requires optional broadband module. Broadband use requires separately purchased service contract. Check with service provider for coverage and availability in your area. Separately purchased data plans or usage fees may apply. Print times and connection speeds may vary.
8. Skype is not offered in China.
9. Not preinstalled, however available for download at http://www.hp.com/go/clientmanagement
10. HP Manageability Integration Kit can be downloaded from http://www8.hp.com/us/en/ads/clientmanagement/overview.html
11. Subscription required.
12. Requires Windows and Internet Access
13. Requires Windows and Intel® 7th generation processors.
14. Opt in and internet connection required for updates
15. HP WorkWise smartphone app is available as a free download on the App Store and Google Play. As of September 2017, HP WorkWise will no longer support iOS or iPhone® devices.

Workstation ISV Certifications
Find the latest list of certifications at: http://www.hp.com/go/isv

HP Performance Advisor

HP Performance Advisor enables optimal configuration of HP Mobile Workstations delivering stability and best performance. HP Performance Advisor will guide your system setup allowing a "custom" configuration that best matches the workstation to use requirements.
Download at: http://www.hp.com/go/performanceadvisor

Security

See Software section above.

Other Standard Security Features

Smart Card Reader integrated into keyboard
One-Step Logon
Security lock slot
Support for Intel® AT

Optional Security Features

HP Fingerprint Sensor (optional)

Features

HP CENTRAL MANAGEMENT

HP offers a variety of scalable hardware, software, and BIOS-based security features to help you defend your organization against viruses and other threats. These integrated security features safeguard what matters to you the most - your data, devic and identity. Now, be confident your fleet of devices is protected in multiple layers of HP Client Security protection.

HP BIOS Protection keeps you up and running with enhanced protection against virus attacks and other threats. And if the BIOS i accidently compromised, the auto recovery feature automatically restores it to its fully functional state.

HP Sure Start detects and negates a BIOS attack with automatic recovery of the BIOS even when the installation is accidentally compromised (i.e. power outage). When HP Sure Start heals the BIOS an event log is generated that an IT administrator can retrieve so the business is aware of a BIOS attack. Golden copy of BIOS is stored in protected nonvolatile memory providing redundant, hardware-based protection against a new generation of attacks. This helps to future-proof your technology and business.

An optional fingerprint reader to help keep your identity secure. The security cable slot helps keep your notebook physically secure.

You can even permanently destroy data on your hard drive in preparation for your system disposal or redeployment with Secur Erase.

POWER

Power Supply

HP 65W Smart AC Adapter (Configurations with Intel® HD graphics only; Does not support HP Fast Charge)

HP 65W EM Smart AC Adapter

HP 90W Smart AC Adapter (Supports HP Fast Charge)

Primary Battery
HP 4-cell Long Life Polymer Battery (70 WHr)

Battery Life
Battery life up to 10 hours * (Hybrid Graphics configurations and Intel® HD graphics configurations)

System Standby Time
Up to TBD weeks**

* Windows 10 MM14 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 http://www.bapco.com for additional details.
** Standby life will vary depending on various factors including battery, Memory, CPU, EC and LAN chip. The maximum capacity o the battery will naturally decrease with time and usage.

Power Conservation
NVIDIA® Optimus®
Hibernation
Standby
ACPI compliance

Features

ENVIRONMENTAL

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

NOTE: 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.

WEIGHTS & DIMENSIONS

Weight

Starting at 4.78 lbs (2.17 kg) (laptop mode) and 3.64 lbs (1.65 kg) (Tablet mode)

Dimensions (w x d x h)

20.3 x 364.5 x 227 mm (h x w x d) - Mobile workstation laptop mode
0.80 x 14.35 x 8.94 in (h x w x d) - Mobile workstation laptop mode

14.6 x 364.5 x 227 mm (h x w x d) - detachable workstation tablet mode
 0.57 x 14.35 x 8.94 in (h x w x d) - detachable workstation tablet mode

NOTE: Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components. Weight includes 4 cell 70Whr battery, without hard drive and with 256 GB Z Turbo Drive (PCIe SSD).

PORTS/SLOTS

Ports

Left side:

(1) Stereo microphone in / headphone-out combo jack
(1) Security lock slot

Right side:
(1) Power Connector
(2) Thunderbolt^{TM} 3 (supporting DP 1.2, USB 3.1 Gen2, PCIe Gen 3 devices)
(1) HDMI 1.4
(1) USB 3.0 (Charging)

Thunderbolt^{TM} 3
Thunderbolt^{TM} 3 ports supports DisplayPort^{TM} 1.2, USB 3.1 Gen 2, and PCIe Gen 3 devices over the new USB-C port connector. The port is compatible with existing DisplayPort^{TM} displays, devices, and cables. Install all the latest drivers for your Thunderbolt^{TM} device before connecting the device to the Thunderbolt^{TM} port. Thunderbolt^{TM} cable and Thunderbolt^{TM} device (sold separately) must be compatible with Windows®. To determine whether your device is Thunderbolt^{TM} Certified for Windows®, see
https://Thunderbolttechnology.net/products.

Digital Media Slots
(1) Integrated SD flash media slot (RT5237S)- supports SD, SDHC, SDX

SERVICE AND SUPPORT

Limited 3-year, 1-year or 90-day limited warranty options available, depending on country. Long Life batteries which will have same 1-year or 3-year limited warranty as the platform. 24/7 operation will not void the HP warranty. Optional[1] HP Care Pack Services[2] are extended service contracts which go beyond your standard limited warranties.

1. Sold separately or as an optional feature.

2. 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. Consult the HP Customer Support Center for details. For details, visit 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.

Technical Specifications – Displays

SYSTEM UNIT

			Windows® 10 (32-bit)	Windows® 10 (64-bit)
Stand-Alone Power Requirements (AC Power)	**Nominal Operating Voltage**	19.5 V dc @ 3.3 A		
	Average Operating Power		Windows® 10 (32-bit)	Windows® 10 (64-bit)
	NVIDIA ® Quadro® Graphics		16.28 W	16.8 W
	Max Operating Power	< 65 W		
Temperature	**Operating**	32° to 95° F (0° to 35° C) (not writing optical) 41° to 95° F (5° to 35° C) (writing optical)		
	Non-operating	-4° to 140° F (-20° to 60° C)		
Relative Humidity	**Operating**	10% to 90%, non-condensing		
	Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature		
Shock	**Operating**	40 G, 2 ms, half-sine		
	Non-operating	200 G, 2 ms, half-sine		
Random Vibration	**Operating**	0.75 grms		
	Non-operating	1.50 grms		
Altitude (unpressurized)	**Operating**	-50 to 10,000 ft. (-15.24 to 3,048 m)		
	Non-operating	-50 to 15,000 ft. (-15.24 to 12,192 m)		
Planned Industry Standard Certifications	**UL**	Yes		
	CSA	Yes		
	FCC Compliance	Yes		
	ENERGY STAR®	Select models*		
	EPEAT®	Gold**		
	ICES	Yes		
	Australia / NZ A-Tick Compliance	Yes		
	CCC	Yes		
	Japan VCCI Compliance	Yes		
	KCC	Yes		
	BSMI	Yes		
	CE Marking Compliance	Yes		
	MIL STD*	Planned		

* Configurations of the HP ZBook x2 G4 that are ENERGY STAR® certified are identified as HP ZBook x2 G4 ENERGY STAR® on HP websites and on http://www.energystar.gov.

** EPEAT registration varies by country. See http://www.epeat.net for registration status by country.
EPEAT status listed above applies to U.S. Search keyword generator on HP's 3rd party option store for solar generator accessories at http://www.hp.com/go/options

*** MIL STD 810G testing is pending and is not intended to demonstrate fitness for U.S. Department of Defense contract requirement or for military use. Test results are not a guarantee of future performance under these test conditions. Damage under the MIL STD test conditions or any accidental damage requires an optional HP Accidental Damage Protection Care Pack.

QuickSpecs

Technical Specifications – Displays

For accessibility information on HP products, please visit: http://www.hp.com/accessibility.

DISPLAYS*

14.0-inch 4K UHD UWVA IPS LED w/ multi-touch and anti-glare (3840 x 2160)			
Active Area (W x H)	13.62 x 7.59 in (34.6 x 19.4 cm)		
Dimensions (W x H)	14.0 in (35.56 cm)		
Weight	345 g (max)		
Surface Treatment	Anti-glare		
Contrast Ratio	1000:1 (typ)		
Refresh Rate	60 Hz		
Brightness	300 nit typical		
Pixel Resolution	**Format**	3840 x 2160 (UHD)	
	Configuration	RGB Stripe	
Backlight	LED		
PPI	283		
Viewing Angle	85/85/85/85 (Left/Right/Down/Up) (typical)		

14.0-inch 4K UHD HP DreamColor UWVA IPS LED w/ multi-touch and anti-glare (3840 x 2160)			
Dimensions (W x H)	13.62 x 7.59 in (34.6 x 19.4 cm)		
Diagonal Size	14.0 in (35.56 cm)		
Weight	345 g (max)		
Surface Treatment	Anti-glare		
Contrast Ratio	1000:1 (typ)		
Refresh Rate	60 Hz		
Brightness	300 nit typical		
Pixel Resolution			
	Format	3840 x 2160 (UHD)	
	Configuration	RGB Stripe	
Backlight	LED		
PPI	283		
Viewing Angle	85/85/85/85 (Left/Right/Down/Up) (typical)		

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

Technical Specifications – Storage and Drives

STORAGE AND DRIVES

Internal Storage

128 GB M2 2280 SATA-3 TLC Solid State Drive			
	Drive Weight	0.019 lb (8.5 g)-0.022 lb (10 g)	
	Capacity	128 GB	
	Height	0.09 in (2.23 mm)- 0.14 in (3.58 mm)	
	Width	0.87 in (22 mm)	
	Interface	ATA-8, SATA 3.0	
	Performance	**Maximum Sequential Read**	**Maximum Sequential Write**
		Up to 540 MB/s	Up to 300 MB/s
	Logical Blocks	250,069,680	
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]	
	Features	ATA Security, DIPM; TRIM; DEVSLP	

System Technical Specifications

HP Z Turbo Drive 512 GB, M.2 NVMe MLC Solid State Drive	**Drive Weight**	0.022 lb. (10 g)	
	Capacity	512 GB	
	Height	0.14 in (3.7 mm)	
	Width	0.87 in (22 mm)	
	Generation	NVMe	
	NAND Type	MLC	
	Form-Factor (I/O)	M.2 2280	
	Interface	PCIe GEN3X4	
	Performance	**Maximum Sequential Read**	**Maximum Sequential Write**
		Up to 2260MB/s	Up to 1600MB/s
	Logical Blocks	1,000,215,216	
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]	
	Features	ATA Security; TRIM; L1.2	

HP Z Turbo Drive 256 GB, M.2 NVMe MLC Solid State Drive	**Drive Weight**	0.022 lb. (<10 g)	
	Capacity	256 GB	
	Height	0.09 in (2.3 mm)	
	Width	0.87 in (22.1 mm)	
	Generation	NVMe	
	NAND Type	MLC	
	Form-Factor (I/O)	M.2 2280	
	Interface	PCIe GEN3X4	
	Performance	**Maximum Sequential Read**	**Maximum Sequential Write**
		Up to 2260MB/s	Up to 1260 MB/s
	Logical Blocks	500,118,192	
	Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]	
	Features	ATA Security; TRIM; L1.2	

QuickSpecs

System Technical Specifications

HP Z Turbo Drive 256 GB, M.2 NVMe TLC Solid State Drive		
Drive Weight	0.022 lb (<10 g)	
Capacity	256 GB	
Height	0.09 in (2.3 mm)	
Width	0.87 in (22 mm)	
Generation	NVMe	
NAND Type	TLC	
Form-Factor (I/O)	M.2 2280	
Interface	PCIe GEN3X4	
Performance	**Maximum Sequential Read**	**Maximum Sequential Write**
	Up to 2600MB/s	Up to 900 MB/s
Logical Blocks	500,118,192	
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]	
Features	ATA Security,TRIM; L1.2	

HP Z Turbo Drive 512 GB, M.2 NVMe TLC Opal 2 Solid State Drive		
Drive Weight	0.022 lb (<10 g)	
Capacity	512 GB	
Height	0.09 in (2.3 mm)	
Width	0.87 in (22 mm)	
Generation	NVMe	
NAND Type	TLC	
Form-Factor (I/O)	M.2 2280	
Interface	PCIe GEN3X4	
Performance	**Maximum Sequential Read**	**Maximum Sequential Write**
	Up to 1800MB/s	Up to 980 MB/s
Logical Blocks	500,118,192	
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]	
Features	ATA Security,TRIM; L1.2	

System Technical Specifications

HP Z Turbo Drive 1TB, M.2 NVMe TLC Solid State Drive			
Drive Weight	0.022 lb (<10 g)		
Capacity	1TB		
Height	0.14 in (3.7 mm		
Width	0.87 in (22 mm)		
Generation	NVMe		
NAND Type	TLC		
Form-Factor (I/O)	M.2 2280		
Interface	PCIe GEN3X4		
Performance	**Maximum Sequential Read**		**Maximum Sequential Write**
	Up to 2400MB/s		Up to 1500MB/s
Logical Blocks	2,000,409,264		
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]		
Features	ATA Security, L1.2		

512 GB, M.2 SATA FIPS-140-2 Solid State Drive			
Drive Weight	0.022 lb (<10 g)		
Capacity	512 GB		
Height	0.09 in (2.3 mm)		
Width	0.87 in (22 mm)		
Generation	SM951 NVMe		
NAND Type	MLC		
Form-Factor (I/O)	M.2 2280		
Interface	PCIe GEN3X4		
Performance	**Maximum Sequential Read**		**Maximum Sequential Write**
	Up to 2260MB/s		Up to 1260 MB/s
Logical Blocks	500,118,192		
Operating Temperature	32° to 158°F (0° to 70°C) [ambient temp]		
Features	ATA Security,TRIM; L1.2		

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

Technical Specifications – Networking

NETWORKING

Intel® Dual Band Wireless-AC 8265 802.11 AC/a/b/g/n (2x2) WiFi + Bluetooth® 4.2 Combo Adaptor* (vPro)	**Wireless LAN Standards**	IEEE 802.11a IEEE 802.11b IEEE 802.11g IEEE 802.11n IEEE 802.11n	
	Interoperability	Wi-Fi certified	
	Frequency Band	802.11b/g/n	2.402 - 2.482 GHz **Note:** The FCC has declared as of January 1, 2015 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
		802.11a	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 **Note:** Indonesia only supports 5.725 - 5.825 GHz (CH149 - CH161)
	Data Rates	• 802.11a: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11b: 1, 2, 5.5, 11 Mbps • 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps • 802.11n: MCS 0 ~ MCS 15, (20MHz, and 40MHz) • 802.11ac : MCS0 ~ MCS9, (1SS, and 2SS) (20MHz, 40MHz, and 80MHz)	
	Modulation	Direct Sequence Spread Spectrum CCK, BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM	
	Security[1]	• IEEE and Wi-Fi 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 • IEEE 802.11i • Cisco Certified Extensions, all versions through CCX4 and CCX Lite • WAPI	
	Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)	
	Roaming	IEEE 802.11 compliant roaming between band Access Points	
	Output Power[2]	• 802.11b : +16dBm minimum • 802.11g : +14dBm minimum • 802.11a : +14dBm minimum • 802.11n HT20(2.4GHz) : +13dBm minimum • 802.11n HT40(2.4GHz) : +13dBm minimum • 802.11n HT20(5GHz) : +12dBm minimum • 802.11n HT40(5GHz) : +12dBm minimum	
	Power Consumption	Transmit: 2.0 Watts (max)	

Technical Specifications – Networking

	Receive: 1.6 Watts (max) Idle mode (PSP): 180 mW (WLAN Associated) Idle mode: 50 mW (WLAN unassociated) Connect Standby: 10mW (WLAN + BT) Radio disabled: 5 mW	
Power Management	ACPI and PCI Express compliant power management 802.11 compliant power saving mode	
Receiver Sensitivity[3]	802.11b, 1Mbps : -94dBm maximum 802.11b, 11Mbps : -86dBm maximum 802.11g, 6Mbps : -88dBm maximum 802.11g, 54Mbps : -74dBm maximum 802.11a, 6Mbps : -88dBm maximum 802.11a, 54Mbps : -74dBm maximum 802.11n, MCS07 : -69dBm maximum 802.11n, MCS15 : -66dBm maximum 802.11ac, 1SS, MCS-0 : -86dBm maximum 802.11ac, 1SS, MCS-9 : -61dBm maximum 802.11ac, 2SS, MCS-0 : -83dBm maximum 802.11ac, 2SS, MCS-9 : -58dBm maximum	
Antenna Type	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 and Bluetooth communications	
Form Factor	PCI-Express M.2 MiniCard	
Dimensions	Type 2230 : 2.3 x 22.0 x 30.0 mm Or Type 1630 : 2.3 x 16.0 x 30.0 mm	
Weight	Type 2230 : 2.8g Or Type 1630 : 2g	
Operating Voltage	3.3v +/- 9%	
Temperature	Operating Non-operating	14° to 158° F (-10° to 70° C) -40° to 176° F (-40° to 80° C)
Humidity	Operating Non-operating	10% to 90% (non-condensing) 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 White - Radio ON	

HP Integrated Module with Bluetooth® 4.0/4.1/4.2 Wireless Technology	**Bluetooth® Specification**	4.0/4.1/4.2 Compliant
	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)

Technical Specifications – Networking

Transmit Power	The Bluetooth component shall operate as a Class II Bluetooth device with a maximum transmit power of +4 dBm for BR and EDR
Receiver Sensitivity	

Modulation	0.01% BER	0.001% BER
GFSK	-80 dBm	-70 dBm
p/4-DQPSK	-80 dBm	-70 dBm
8DPSK	-80 dBm	-70 dBm

Power Consumption	Peak (Tx) 330 mW Peak (Rx) 230 mW Selective Suspend 17 mW
Antenna	Internally integrated within module
Range	Legacy Up to 33 ft (10 m) BLE Up to 99 ft (30 m)
Electrical Interface	USB 2.0 compliant
Bluetooth® Software Supported	Microsoft Windows Bluetooth Software
Link Topology	Point to Point, Multipoint Pico Nets up to 7 slaves
Security	Full support of Bluetooth Security Provisions
Power Management Certifications	Microsoft Windows ACPI, and USB Bus Support
	Self-configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff
Security	All necessary regulatory approvals for supported countries, including:
	FCC (47 CFR) Part 15C, Section 15.247 & 15.249
Power management certifactions	ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark
Certifications **Bluetooth® Profiles Supported**	Serial Port Profile (SPP)1 Service Discovery Application Profile (SDAP) Dial-Up Networking (DUN)1,2 Generic Object Exchange Profile (GOEP)1,2 Object Push Profile (OPP)1,2 Hard Copy Cable Replacement (HCRP)1,2 Personal Area Networking Profile (PAN)1,2 Human Interface Device Profile (HID)1,2 Hands Free Profile (HFP) Advanced Audio Distribution Profile (A2DP) Audio Video Remote Control Profile (AVRCP)
Bluetooth® V4.1/V4.2 support feature	V4.1: ESR5/6/7 compliant V4.2: ESR8 compliant, LE Secure Connection - Basic.

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CCK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).

WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows XP. WLAN may also be compatible with certain third-party software supplicants. WLAN supplier IHV extensions required for Cisco Compatible Extensions support for Microsoft Windows Vista.

NXP NPC100 Near	**Dimensions** (L x W	Module 25 mm by 10 mm by 2.0 mm

QuickSpecs

Technical Specifications – Networking

Field Communication (NFC) Module	x H)			
	Chipset	NPC100		
	System interface	I^{2}C		
	NFC RF standards	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		
	NFC Forum Support	Tag Type 1, Type 2, Type3 and Type 4, NFCIP-1 and NFCIP-2		
	Reader (PCD-VCD) Mode[1]	ISO/IEC 14443 A ISO/IEC 14443 B ISO/IEC 15693 MIFARE 1K MIFARE 4K MIFARE DESFire FeliCa Jewel and Topaz cards		
	Card Emulation (PICC-VICC) Mode[1]	ISO/IEC 14443 A ISO/IEC 14443 B and B' MIFARE FeliCa		
	Frequency	13.56 MHz		
	NFC Modes Supported	Reader/Writer, Peer-to-Peer		
	Raw RF Data Rates	106, 212, 424, 848 kbps		
	Operating temperature	0°C to 70°C		
	Storage temperature	-20°C to 125°C		
	Humidity	10-90% operating 5-95% non-operating		
	Supply Operating voltage	2.97 to 5.5 Volts		
	I/O Voltage	1.8V or 3.3V		

Power Consumption	**Mode**	**Power Consumption, Typical[2]**
(Booster enable, VBAT= 3.3V, VCC_BOOST = 5V)	Polling	7.3 mA
	Detected Test Tag Type 1	Total 283.8 mA Net Module 236.8 mA
	Detected Test Tag Type 2	Total 288.8 mA Net Module 241.8 mA
	Detected Test Tag Type 3	Total 287.7 mA Net Module 240.7 mA
	Detected Test Tag Type 4	Total 282.3 mA Net Module 235.3 mA

Technical Specifications – Networking

Antenna	Antenna connector, 0.5mm pitch, 7 connector FPC. Antenna matching is external to module.
Notes	1. With application or UICC support
	2. Actual Power Consumption is dependent on NFC antenna and matching circuit and on the particular polling sequence and period configured.

Technical Specifications – Security

SECURITY

HP Fingerprint Reader	Mobile Voltage Operation	3.0V-3.6V Single Supply
	Operating Temperature	14° - 167°F (-10° - 75°C)
	Current consumption image	36mA
	Low latency wait for finger	950 uA
	Capture rate	3000 lines/sec
	ESD Resistance	IEC 6100-4-2 4B (+/-15KV)
	Detection Matrix	200*1 (plus another secondary line); 508 dpi, sensor area 12*3 mm

Technical Specifications – Audio/Multimedia

AUDIO/MULTIMEDIA - BANG & OLUFSEN

Hardware		
	Implementation	Conexant CX7700
	Function Key Volume Controls	Volume up, volume down, and mute
	Full Duplex	Yes
	Microphone In	Stereo
	Headphone/Line Out	Stereo
	Integrated Microphone	Yes, dual digital microphone array when equipped with optional webcam

Audio Output Quality		
	Frequency Response	20 Hz - 20 kHz
	Signal to Noise Ratio	106dB (DAC), 102dB (ADC)
	Total Harmonic Distortion	91dB THD+n on LineOut/HP (0.003%)
	Noise Floor	-110 dB
	Play Sampling Rate(s)	Up to 192kHz
	Record Sampling Rate(s)	Up to 96kHz
	DAC	16, 20 or 24-bit
	ADC	16,20 or 24-bit

Integrated Stereo Speakers		
	Power Rating	2 Watts
	Impedance	4 Ohms

QuickSpecs

Technical Specifications – HP Pen technology

HP PEN TECHNOLOGY

HP ZBook x2 Pen	Key Features	Precision	The pen has a 1.6mm tip size (0.063inch), ensuring pinpoint accuracy.
		Stylus Ergonomic design	Ergonomic stylus design for professional users. Well balanced weight distribution and customized latex-free silicone rubber for comfortable grip.
		One Control Button	One customized side button for users to customize desired application specific function.
		Battery free	pen leverages battery-less technology
		Pressure sensitivity	4096 levels pressure sensitivity to make sure stylus can capture any tiny stroke difference.
		Hovering capability	The on-screen pen cursor can be controlled by hovering the pen above the screen's surface - no physical contact is necessary.
		Report Rate	200 Hz pen report rate to minimize inking latency or lag.
		Tail Eraser	Intuitive tail eraser design for users to eraser items with another option.
		Tilt function	Enable tilt stroke support capability for better usability and stylus control.
		Palm rejection	Users can rest the underside of their hand on the screen surface without registering any unintended inputs.
		Replacement kit	Different writing feel pen tips (POM & Felt pen tips) are offered for users to choose their preferable inking experience.
	Physical specifications	Pen Technology	Wacom Electro-Magnetic Resonance (EMR)
		Dimension	163.04mm x 11mm
		Weight	12.3gram
		Power	Battery-free
		System Requirement	Win10
		Tip Diameter	1.6mm
		Pressure Sensitivity	4096 pressure level
		Pen Resolution	2540 ppi
		Hover Capability (Y/N)	Yes
		Hover Height (mm)	10mm+
		Report Rate	200 Hz
		Tilt Support (Y/N)	Yes
		Tail Eraser (Y/N)	Yes
		Palm Rejection (Y/N)	Yes
		Pen Tips	10 standard, 4 POM tips and 6 Felt tips for different inking experience
	Environmental conditions	Operating temperature	5° to 40° C (41° F - 104° F)
		Operating humidity	30 - 80 %
		Storage temperature	-10 to 55°C (14° F - 131° F)
		Storage humidity	30 - 80 %

Technical Specifications – HP Pen technology

QuickSpecs

Technical Specifications – Power

POWER

HP 65W EM Smart AC Adapter	Dimensions	127.0x51.0x30.0mm	
	Weight	unit: 350g +/- 10g	
	Input	90 to 265 VAC	
		Input Efficiency	88.0 % at 115 Vac and 89.0 % at 230Vac
		Input frequency range	47 to 63 Hz
		Input AC current	Max. 1.7 A at 90 Vac
	Output	Output power	65W
		DC output	19.5V
		Hold-up time	5ms at 115 Vac input
		Output Over Current Protection	<11.0A
	AC Connector (Ac Inlet)	C6 (3pin/with grounded, with Smart ID DC connector)	
	AC Connector (Ac Inlet) Environmental Design	Operating temperature	32F to 104F (0 to 40C)
		Non-operating (storage) temperature	-4F to 185F (-20 o 85C)
		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, EN60950, UL60950, Class1, SELV; Agency approvals - C–UL–US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM–1 NYCE. * MTBF - over 200,000 hours at 25°C ambient condition.	

Technical Specifications – Power

HP 65W Smart AC Adapter			
	Dimensions	107.0x47.0x30.0mm	
	Weight	unit: 250g +/- 10g	
	Input	90 to 265 VAC	
		Input Efficiency	88% min at 115 VAC
		Input frequency range	47 to 63 Hz
		Input AC current	2.9 A at 90 VAC, 1.45 A at 180 VAC
	Output	**Output power**	200W
		DC output	19.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<16A, Over voltage protection- 29V max automatic shutdown
	AC Connector (Ac Inlet)	C6 (3pin/with grounded, with Smart ID DC connector)	
	AC Connector (Ac Inlet) Environmental Design	**Operating temperature**	32° to 104° F (0° to 40° C)
		Non-operating (storage) temperature	-4° to 149° F (-20° to 65° C)
		Altitude	0 to 10,000 ft (0 to 3,048 m)
		Humidity	20% to 80%
		Storage Humidity	10% to 90%
	EMI and Safety Certifications	*CE Mark - full compliance with LVD and EMC directives * Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE. * MTBF - over 200,000 hours at 25°C ambient condition.	

HP 90W Smart AC Adapter			
	Dimensions	107.0x47.0x30.0mm	
	Weight	unit: 250g +/- 10g	
	Input	90 to 265 VAC	
		Input Efficiency	88% min at 115 VAC
		Input frequency range	47 to 63 Hz
		Input AC current	2.9 A at 90 VAC, 1.45 A at 180 VAC
	Output	**Output power**	200W
		DC output	19.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<16A, Over voltage protection- 29V max automatic shutdown
	AC Connector (Ac Inlet)	C6 (3pin/with grounded, with Smart ID DC connector)	
	AC Connector (Ac Inlet) Environmental Design	**Operating temperature**	32° to 104° F (0° to 40° C)
		Non-operating (storage) temperature	-4° to 149° F (-20° to 65° C)

Technical Specifications – Power

Altitude	0 to 10,000 ft (0 to 3,048 m)	
Humidity	20% to 80%	
Storage Humidity	10% to 90%	

EMI and Safety Certifications	*CE Mark - full compliance with LVD and EMC directives * Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C–UL–US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM–1 NYCE. * MTBF - over 200,000 hours at 25°C ambient condition.

HP Long Life 4-cell Polymer Battery (70 WHr)

Dimensions (H x W x L)	0.29 x 3.35 x 10.2 in (0.74cm x 8.5cm x 25.8cm)	
Weight (max)	315g	
Cells/Type	4-cell; Prismatic	
Energy	Voltage	15.2V
	Amp-hour capacity	4.21Ah
	Watt-hour capacity	64Wh
Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
	Operating (Discharging)	14° to 140° F (-10° to 60° C)
	Non-operating	-4° to 140° F (-20° to 60° C)
Battery Re-Charge Time	System in OFF or Standby Mode	3 hours
	System ON	3 to 5 hours
Fuel Gauge LED	No	
Warranty*	3 year	

* 3-year platform warranty is required for a 3-year Long Life Battery warranty.

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

Type	Description	Part #
Cases	HP ZBook x2 Case	Y7B68AA
	HP Executive 15.6 Black Top Load	P6N18AA
	HP Business Case (up to 15.6")	H5M92AA
Docking	HP ZBook 150W Thunderbolt 3 Dock	P5Q58AA
	HP USB-C^{TM} Travel Dock	T0K29AA
	HP USB Travel Dock	T0K30AA
	HP 3005pr USB 3.0 Port Replicator w/ USB-C^{TM} Adapter	Y4H06AA
	HP Display and Notebook Stand II	E8G00AA#xxx
	HP USB-C^{TM} Elite Dock	X7W54AA
	HP USB-C^{TM} Universal Dock	1MK33AA
	HP Elite USB-C^{TM} Dock	Z9R42AA
	HP USB-C^{TM} Mini Dock	1PM64AA
Pen	HP ZBook x2 Pen	TBD
	HP ZBook x2 Nib Set	TBD
Input/Output - Mice	HP Comfort Grip Mouse	H2L63AA
	HP 3-Button Laser Mouse	H4B81AA#xxx
	HP Ultra Mobile Wireless Mouse	H6F25AA#xxx
	HP X4000 Bluetooth Mouse	H3T50AA#xxx
	HP Slim Bluetooth Mouse	F3J92AA#xxx
	HP Ultrathin Wireless Mouse	L9V78AA
	HP USB Travel Mouse	G1K28AA#xxx
	HP Slim Wireless Keyboard and Mouse	T6L04AA#xxx
	HP USB Essential Keyboard and Mouse	H6L29AA#xxx
	HP Slim USB Keyboard and Mouse	T6T83AA
	HP Wireless (Link-5) Keyboard	T6U20AA#xxx
Power Adapters	HP 65W Slim A/C Adapter w/USB	H6Y82AA
	HP 90W Slim A/C Adapter w/USB	H6Y83AA
	HP 90W Slim Auto Combo AC Adapter w/USB	H6Y84AA
	HP 65W Smart AC Adapter	H6Y89AA
	HP 90W Smart AC Adapter	H6Y90AA

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

Adapters	HP USB-C™ to VGA Adapter	N9K76AA
	HP USB-C™ to USB 3.0	N2Z63AA
	HP USB-C™ to USB Hub	Z6A00AA
	HP USB-C™ to DisplayPort™ Adapter	N9K78AA
	HP USB-C™ to DisplayPort™ Adapter	N9K78AA
	HP HDMI to DVI adapter	F5A28AA
	DisplayPort™ to DVI Adapter	F7W96AA
	DisplayPort™ to VGA	F7W97AA
	DisplayPort™ to HDMI 1.4 Adapter	F3W43AA
Wireless		TBD
Collaboration	HP UC Conferencing Keyboard	K8P74AA#xxx
	HP UC Speaker Phone	K7V16AA
	HP UC Wired Headset	K7V17AA
	HP UC Mono Wireless Headset	W3K08AA
	HP UC Duo Wireless Headset	W3K09AA
	HP Stereo 3.5mm Headset	T1A66AA
	HP Stereo USB Headset	T1A67AA
Storage - External Storage	HP External USB DVDRW Drive	F2B56AA
Security	HP Dual Head Cable Lock (Non-Master key)	T1A64AA
	HP Dual Head Cable Lock (Master Key)	T1A65AA
	HP 15.6" Notebook PC Privacy Filter (non-touch)	J7H71AA
	HP Docking Station Cable Lock	AU656AA#XXX
	HP Essential Combination Lock	T0Y16AA
	HP Combination Lock	T0Y15AA
	HP Keyed Cable Lock	T0Y14AA
	HP 15'6 Privacy Filter (touch panel)	V8Z58AA#xxx

NOTE: External power supplies, power cords, cables and peripherals are not low halogen. Service parts obtained after purchase may not be low halogen.

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

Summary of Changes

Date of change:	Version History:		Description of change:
October 23, 2017	From v1 to v2	Changed	At A Glance section

title