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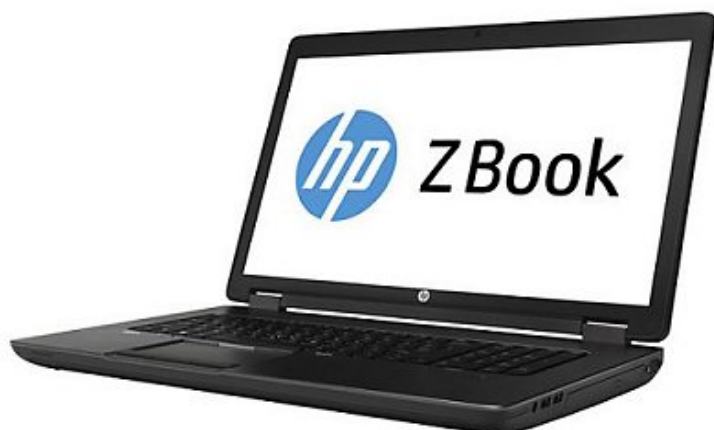
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HP ZBook 17 G2 Mobile Workstation Specifications

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Product image



HP ZBook 17 G2 Mobile Workstation

Product features

Feature	Description
Accelerated processing unit	<ul style="list-style-type: none"> ● 4th Generation Intel® Core™ i7-4940MX (3.10 GHz, 1600 MHz, 8 MB L3 Cache, 4 cores, 57W) Up to 4.00 GHz with Intel Turbo Boost Technology ● 4th Generation Intel® Core™ i7-4910MQ (2.9 GHz, 1600MHz, 8 MB L3 cache, 4 cores, 47W)* Up to 3.90 GHz with Intel Turbo Boost Technology ● 4th Generation Intel® Core™ i7-4810MQ (2.8 GHz, 1600MHz, 6 MB L3 cache, 4 cores, 47W)* Up to 3.80 GHz with Intel Turbo Boost Technology ● 4th Generation Intel® Core™ i7-4710MQ (2.5 GHz, 1600MHz, 6 MB L3 cache, 4 cores, 47W) (no vPro support)* Up to 3.50 GHz with Intel Turbo Boost Technology ● 4th Generation Intel® Core™ i7-4610M (3.00 GHz, 1600 MHz, 4 MB L3 Cache, 2 cores, 37W) Up to 3.70 GHz with Intel Turbo Boost Technology ● 4th Generation Intel® Core™ i5-4340M (2.90 GHz, 1600 MHz, 3 MB L3 Cache, 2 cores, 37W) Up to 3.60 GHz with Intel Turbo Boost Technology ● Intel Dual-Core i5-4210M (3.20 GHz, 1600 MHz, 3 MB L3 Cache, 4 threads, 37W) Up to 3.20 GHz with Intel Turbo Boost Technology <p>NOTE: *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. 64-bit computing system required. Performance will vary depending on your hardware and software configurations. Intel's numbering is not a measurement of higher performance.</p>
Chipset	Mobile Intel® QM87



Feature	Description
Intel Core i5 with vPro and Core i7 with vPro Technology Capable	<p>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 9.0 (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.</p> <p>NOTE: *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. Some functionality of 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.</p>



Feature	Description
Graphics	<ul style="list-style-type: none"> • AMD FirePro™ M6100 with 2 GB dedicated GDDR5 video memory Microsoft DirectX 11.1 (Shader Model 5.0) and OpenGL 4.2 capable • NVIDIA Quadro K1100M with 2 GB dedicated GDDR5 video memory Microsoft DirectX 11.1 (Shader Model 5.0) and OpenGL 4.2 capable • NVIDIA Quadro K3100M with 4 GB dedicated GDDR5 video memory Microsoft DirectX 11.1 (Shader Model 5.0) and OpenGL 4.2 capable • NVIDIA Quadro K4100M with 4 GB dedicated GDDR5 video memory Microsoft DirectX 11.1 (Shader Model 5.0) and OpenGL 4.2 capable • NVIDIA Quadro K5100M with 8 GB dedicated GDDR5 video memory Microsoft DirectX 11.1 (Shader Model 5.0) and OpenGL 4.2 capable • NVIDIA Optimus Technology and AMD Enduro™ Technology supported <p>NOTE: NVIDIA Quadro mobile professional graphics support up to five independent displays when using an HP Advanced Docking station (sold separately). AMD FirePro™ professional graphics support up to five independent displays when using an HP Advanced Docking station (sold separately).</p> <p>Multi-Display Support</p> <ul style="list-style-type: none"> • Without Docking Station: HP ZBook 17 without the use of a Docking Station supports up to a maximum of four independent displays. These four displays are the internal panel plus three external displays connected to the VGA, the DisplayPort (DP), and the Thunderbolt™ Port connectors. • With Docking Station*: The Advanced Docking Station has VGA and four digital display output connectors (two DVI and two DP). Of those four digital display connectors, only two may be used at a time (two DVI, two DP or one DP and one DVI). When used together with the HP ZBook 17, a maximum of five independent displays are supported. These five displays are the internal panel plus four external displays connected to three display outputs connectors from the standard or Advanced Docking Station*, and the Thunderbolt™ connector from the ZBook. • DP 1.2 “daisy-chain” feature: On HP ZBook 17, the maximum number of independent displays is increased to six with the use of DP1.2 “daisy-chain” feature. This requires Hybrid Graphics to be enabled, one monitor connected to the dock VGA, and at least one daisy chain connection on (A) System DP, (B) Docking Station DP 1, (C) Docking Station DP 2.
Display	Internal



Feature	Description
	<ul style="list-style-type: none"> ● 17.3" diagonal LED-backlit HD+SVA anti-glare (1600 x 900) ● 17.3" diagonal LED-backlit FHD WVA anti-glare (1920 x 1080) ● 17.3" diagonal LED-backlit FHD DreamColor UWVA IPS anti-glare (1920 x 1080) <p>External</p> <ul style="list-style-type: none"> ● Up to 30-bit (2³⁰) per pixel "Deep Color" (total of 1,073,741,824 color variations) <p>Thunderbolt™ 2*</p> <p>Supported as part of the daisy chain connected with Intel approved thunderbolt cables.</p> <p>Thunderbolt Features</p> <ul style="list-style-type: none"> ● Legacy : DP 1.1a, DVI-A/D, HDMI and VGA displays attached to the end of the thunderbolt daisy chain via Intel certified dongles ● DP 1.2 redrive: DisplayPort monitors capable of supporting DP 1.2 may be directly attached to the Thunderbolt port to achieve HBR2 and MST functionality. ● DP display with miniDP connector may be attached directly to TB (Thunderbolt) port. ● DP display with standard DP connector and other legacy displays (HDMI, DVI, VGA) may be attached to TB with the use of a dongle. ● DP1.2 MST feature ("daisy-chain" feature) is supported through TB port. <div style="background-color: #f0f0f0; padding: 10px; margin: 10px 0;"> <p>NOTE: * Thunderbolt™ 2 is new technology. Install all the latest drivers for your Thunderbolt device before connecting the device to the Thunderbolt port. Thunderbolt cable and Thunderbolt device (sold separately) must be compatible with Windows.</p> </div> <p>DisplayPort w/MST (Multi-stream Transport)</p> <p>Supports resolutions up to Supports resolutions up to QFHD 3840 x 2160, 24/30-bit color depth at 60 Hz, and WUXGA (1920 x 1200) monitors, 24/30-bit color depth at 120 Hz.</p> <p>DisplayPort Feature</p> <ul style="list-style-type: none"> ● Multi-stream Transport (MST): Multi-stream Transport is a DP 1.2 feature that allows daisy chaining of DP 1.2 monitors (requires built in support of DP 1.2 MST in monitor), or the use of DP 1.2 hubs with MST to achieve 4 active displays without a docking station. ● Optimal configurations for enabling the maximum number of displays (up to five independent displays when using an HP Advanced Docking station (sold separately) with hybrid graphics enabled): <ul style="list-style-type: none"> ● With Port Replicator:



Feature	Description
	<ul style="list-style-type: none"> • Dock DP + Dock DVI + Internal Display + Thunderbolt DP port (enabling VGA will drop one digital display) • With Advanced Port Replicator: <ul style="list-style-type: none"> • Dock DP1 + Dock DP2 + Internal Display + Thunderbolt DP port (enabling VGA will drop one digital display) <p>VGA</p> <p>Port supports resolutions up to 2048 x 1536 at 75 Hz, and lower resolutions at up to 100 Hz.</p> <p>DVI-D (single link)</p> <p>Video signal available through DVI port in optional HP Docking Station (sold separately) as well as through DP to DVI adapters to use without the optional HP Docking Station supports resolutions up to 1600 x 1200 at both full and reduced blanking, and 1920 x 1200 at reduced blanking.</p> <p>NOTE: Resolutions are dependent upon monitor capability, and resolution and color depth settings.</p>
Storage and drives	<p>Primary storage bay: Hard Drives</p> <ul style="list-style-type: none"> • 320/500 GB*5400 rpm SMART SATA II HDD <p>NOTE: *For hard drives GB = 1 billion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 8.1) of system disk is reserved for the system recovery software.</p>



Feature	Description
Memory	<p>Z Turbo Drive Storage Bay</p> <p>256 GB Z Turbo Drive (PCIe Solid State Drive)</p> <p>Primary Storage Bay</p> <p>Hard Drives*</p> <ul style="list-style-type: none"> • 500/750 GB, 1 TB 7200 rpm SMART SATA II • 500 GB 7200 rpm SMART SATA II Self Encrypting Drive • 500 GB 5400 rpm SMART SATA II Self Encrypting Drive FIPS 140-2 compliant <p>HP 3D DriveGuard (Windows only)</p> <p>The hard drive is mounted directly to the notebook frame, reducing the transmission of shock to the hard drive. Uses three-axis digital motion detection with intelligent sensitivity to help protect the hard drive during normal use from shock and vibration. The digital accelerometer temporarily halts all data transfer and parks the hard drive when abrupt motion is detected.</p> <p>Solid State Drive*</p> <ul style="list-style-type: none"> • 128/180/240/256/512 GB SATA 6 Gb/sec • 256 GB SATA 6 Gb/sec Self Encrypting Drive <p>NOTE: *For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 16 GB (for Windows 7) of system and up to 30 GB (for Windows 8) disk is reserved for system recovery software.</p>
Networking/Communications	<p>Wireless</p> <p>Support for a broad range of secure, integrated wireless LAN and wireless WAN options featuring support for the latest industry standards. Optional Broadband Wireless (WWAN) requires a Windows operating system and is available in select countries as a standard, factory configurable feature only. Integrated Bluetooth® is also available (factory configurable only) and can be combined with any of the supported wireless LAN and wireless WAN options.</p> <p>Mobile Broadband options</p> <ul style="list-style-type: none"> • HP hs3110 HSPA+ Mobile Module • HP lt4112 LTE/HSPA+ Qualcomm® Gobi™ 4G Module



Feature	Description
	<ul style="list-style-type: none"> • HP Lt4211 LTE/EV-DO/HSPA+ Gobi 4G Module <p>All 802.11 integrated wireless LAN options</p> <ul style="list-style-type: none"> • Intel Dual Band Wireless-NB 7260 802.11 a/b/g/n (2x2) WiFi • Intel Dual Band Wireless-AC 7260 802.11 a/b/g/n/ac (2x2) WiFi and Bluetooth 4.0 combo • Intel Dual Band Wireless-AN 7260 802.11 a/b/g/n (2x2) WiFi and Bluetooth 4.0 combo <p>Communications</p> <p>Integrated Intel I217-LM Gigabit** Network Connection (vPro configurations)</p> <div style="background-color: #f0f0f0; padding: 10px; margin-top: 10px;"> <p>NOTE: *Broadband wireless is an optional feature and requires separately purchased service contract. Check with your local vendor for coverage area and availability in your area. Connection and speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products, in all regions. **The term "10/100/1000" or "Gigabit" Ethernet indicates compatibility with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required. ***Integrated Intel Wi-Di feature is available on select configurations only and requires separately purchased projector, tv or computer monitor with an integrated or external Wi-Di receiver. External Wi-Di receivers connect to the projector, tv or computer monitor via a standard HDMI cable, also sold separately. ****802.11 requires access point and internet service. Availability of public wireless access points limited. WWAN not available with DreamColor displays.</p> </div>



Feature	Description
Audio/Multimedia	<p data-bbox="523 241 592 271">Audio</p> <ul data-bbox="517 320 1430 584" style="list-style-type: none"><li data-bbox="517 320 1082 349">• DTS Studio Sound HD audio (Windows OS only)<li data-bbox="517 367 858 396">• Integrated stereo speakers<li data-bbox="517 414 1430 483">• Integrated microphone (dual-microphone array when equipped with optional webcam)<li data-bbox="517 501 1275 530">• Button for volume mute; function keys for volume up and down<li data-bbox="517 548 1038 577">• Combo mic-in / stereo headphone-out jack <p data-bbox="523 624 639 654">Webcam</p> <p data-bbox="523 701 871 730">Optional 720p HD webcam</p> <ul data-bbox="517 875 1445 1274" style="list-style-type: none"><li data-bbox="517 875 823 904">• HD format (widescreen)<li data-bbox="517 922 1139 952">• Supports videoconferencing and still image capture<li data-bbox="517 969 874 999">• High quality fixed focus lens<li data-bbox="517 1016 1445 1086">• Video capture at various resolutions up to 1280x720 resolution (720p) and up to 30fps<li data-bbox="517 1104 1366 1173">• M-JPEG compression supports higher frame rates for video capture and videoconferencing<li data-bbox="517 1191 887 1220">• Improved low light sensitivity<li data-bbox="517 1238 836 1267">• Improved dynamic range

Feature	Description
Keyboard/Pointing devices/Buttons and function keys	<p>Keyboard</p> <p>Optional backlit keyboard with Function key control to toggle backlit brightness setting - off/full/half brightness The HP spill-resistant keyboard is designed using a thin layer of Mylar film under the keyboard and a drain system that funnels fluid through a hole in the bottom of the notebook. This minimizes the risk of damage to sensitive components underneath. The 101/102-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 19.05 x 19.05 mm key pitch (center-to-center spacing). U.S. and International key layouts are available. Other features include hot keys for instant access to power conservation and brightness.</p> <p>Pointing devices</p> <ul style="list-style-type: none"> • Touchpad with On/Off button, two-way scroll, gestures, three pick buttons • Pointstick with three additional pointstick buttons • Image sensor touchpad for enhanced performance and improved precision on scroll and gesture <p>Buttons and Function Keys</p> <p>Separate launch buttons provide easy access to the following features: wireless on/off, volume mute. Function keys provide control of the following features: standby mode, external display, volume down, volume up, HP Power Assistant (Windows 7 only), and display brightness.</p>

Power specifications

Specification	Description
Stand-alone power requirements (AC power)	<ul style="list-style-type: none"> • Nominal operating voltage: <ul style="list-style-type: none"> • 19.5 V • Average Operating Power: <ul style="list-style-type: none"> • DreamColor: 35 W • Without DreamColor: 25 W • Max operating power: <ul style="list-style-type: none"> • Discrete: < 200 W or < 230 W



Display specifications

17.3-inch HD+ SVA LED anti-glare

Specification	Description
Dimensions (H x W)	38.2 x 21.5 cm (15.0 x 8.5 in)
Diagonal size	43.9 cm (17.3 in)
Surface treatment	Anti-glare
Contrast ratio	300:1 (min)
Refresh rate	60 Hz
Brightness	200 nits (typ)
Pixel resolution	<ul style="list-style-type: none"> • Pitch: 0.3287 x 0.3287 mm • Format: 1600 x 900 • Configuration: RGB stripe
Backlight	LED
PPI	106
Viewing angle	<ul style="list-style-type: none"> • ±30° Horizontal, ±10° Vertical (minimum) • 30/30/10/20 (Left/Right/Down/Up) (minimum)



17.3-inch FHD WVA LED anti-glare

Specification	Description
Dimensions (H x W)	38.2 x 21.5 cm (15.0 x 8.5 in)
Diagonal size	43.9 cm (17.3 in)
Surface treatment	Anti-glare
Contrast ratio	500:1 (min)
Refresh rate	60 Hz
Brightness	300 nits (typ)
Pixel resolution	<ul style="list-style-type: none"> • Pitch: 0.1989 x 0.1989 mm • Format: 1920 x 1080 • Configuration: RGB stripe
Backlight	LED
PPI	127
Viewing angle	<ul style="list-style-type: none"> • $\pm 60^\circ$ Horizontal, $\pm 50^\circ$ Vertical (minimum) • 60/60/50/50 (Left/Right/Down/Up) (minimum)

17.3-inch FHD UWVA LED anti-glare Dreamcolor



Specification	Description
Dimensions (H x W)	38.2 x 21.5 cm (15.0 x 8.5 in)
Diagonal size	43.9 cm (17.3 in)
Surface treatment	Anti-glare
Contrast ratio	600:1 (min)
Refresh rate	60 Hz
Brightness	300 nits (typ)
Pixel resolution	<ul style="list-style-type: none"> • Pitch: 0.1989 x 0.1989 mm • Format: 1920 x 1080 • Configuration: RGB stripe
Backlight	LED
PPI	127
Viewing angle	<ul style="list-style-type: none"> • 80° Horizontal, ±80° Vertical (minimum) • 80/80/80/80 (Left/Right/Down/Up) (min)
Technology Type	30-bit In-Plane Switching (IPS)

Need
help?

Specification	Description												
Color Depth	10-bits/color												
Display Colors	Over 1 billion colors (native mode)												
Color Gamut Coverage	<table border="1"> <thead> <tr> <th></th> <th>CIE1931 (x,y)</th> <th>CIE 1976 (u',v')</th> </tr> </thead> <tbody> <tr> <td>NTSC</td> <td>109%</td> <td>129%</td> </tr> <tr> <td>AdobeRGB</td> <td>114%</td> <td>127%</td> </tr> <tr> <td>sRGB</td> <td>154%</td> <td>148%</td> </tr> </tbody> </table>		CIE1931 (x,y)	CIE 1976 (u',v')	NTSC	109%	129%	AdobeRGB	114%	127%	sRGB	154%	148%
	CIE1931 (x,y)	CIE 1976 (u',v')											
NTSC	109%	129%											
AdobeRGB	114%	127%											
sRGB	154%	148%											

Storage and drives

750 GB 7200 rpm SATA Hard Drive

Specification	Description
Drive weight	115 g (0.25 lb)
Capacity	750 GB
Height	9.5 mm (0.37 in)



Specification	Description
Width	69.85 mm (2.75 in)
Interface	ATA-8, SATA 3.0 Gb/s
Transfer rate (synchronous maximum):	600 MB/s (Drive Capability)
Seek time (typical reads, including settling)	<ul style="list-style-type: none"> • Single Track: 1.5 ms ~ 2 ms • Average: 11 ms ~ 13 ms • Maximum: 15 ms ~ 21 ms
Cache	Up To 32 MB
Rotational speeds	7200 rpm
Logical Blocks	1,465,149,168
Operating Temperature	0° to 60° C (32° to 140° F) [top cover temp]
Features	ATA Security, S.M.A.R.T., NCQ, Ultra DMA

500 GB 7200 rpm SATA Hard Drive

Specification	Description
Drive weight	92 - 115 g (0.20 - 0.25 lbs)



Specification	Description
Capacity	500 GB
Height	7/9.7 mm (0.28/0.38 in)
Width	69.85 mm (2.75 in)
Interface	ATA-8, SATA 3.0
Rotational speed	7200 rpm
Logical blocks	976,773,168
Operating temperature [case temp]	0° to 60° C (32° to 140° F) [top cover temp]
Features	ATA Security, S.M.A.R.T., NCQ, Ultra DMA
Transfer rate (synchronous maximum):	600 MB/s (Drive Capability)
Seek time (typical reads, including settling)	<ul style="list-style-type: none"> • Single Track: 1.5 ms ~ 2 ms • Average: 11 ms ~ 13 ms • Maximum: 18 ms ~ 22 ms

Need
help?

Specification	Description
Cache	Up To 32 MB

NOTE: *For hard drives and solid state drives, GB = 1 billion bytes. Actual formatted capacity is less. Up to 30 GB (for Windows 8.1) of system disk is reserved for the system recovery software.

500 GB 5400 rpm SATA FIPS* Hard Drive

Specification	Description
Drive weight	95 g (0.21 lbs)
Capacity	500 GB
Height	7 mm (0.28 in)
Width	69.85 mm (2.75 in)
Interface	ATA-8, SATA 3.0
Rotational speed	5400 rpm
Logical blocks	976,773,168
Operating temperature [case temp]	0° to 60° C (32° to 140° F) [top cover temp]



Specification	Description
Features	ATA Security; TCG Opal 2.x, FIPS, S.M.A.R.T., NCQ, Ultra DMA
Transfer rate (synchronous maximum):	600 MB/s (Drive Capability)
Seek time (typical reads, including settling)	<ul style="list-style-type: none"> • Single Track:: 1.5 ms • Average: 12 ms • Maximum: 22 ms
Cache	16 MB
<p>NOTE: *FIPS-certified, hardware-based AES-256 encryption image.</p>	

500 GB 7200 rpm SMART SATA II Self Encrypting Drive

Specification	Description
Drive weight	95 g (0.21 lbs)
Capacity	500 GB
Height	7 mm (0.28 in)
Width	69.85 mm (2.75 in)
Interface	ATA-8, SATA 2.6



Specification	Description
Rotational speed	7200 rpm
Logical blocks	976,773,168
Operating temperature [case temp]	0° to 60° C (32° to 140° F) [top cover temp]
Features	ATA Security, TCG OPAL v1.00, S.M.A.R.T., NCQ, Ultra DMA
Transfer rate (synchronous maximum):	300 MB/s (Drive Capability)
Seek time (typical reads, including settling)	<ul style="list-style-type: none"> • Single Track: 2 ms • Average: 13 ms • Maximum: 18 ms
Cache	32 MB
<p>NOTE: *FIPS-certified, hardware-based AES-256 encryption image.</p>	

SATA 6 Gb/s 512 GB, 2.5-inch Solid State Drive

Specification	Description
Drive weight	78 g (0.17 lbs)
Capacity	512 GB



Specification	Description
NAND Type	MLC
Height	7 mm (0.28 in)
Width	69.85 mm (2.75 in)
Interface	ATA-8, SATA 3.0
Performance	<ul style="list-style-type: none"> • Maximum Sequential Read: 505 MB/s • Maximum Sequential Write: 470 MB/s
Logical blocks	1,000,215,216
Operating temperature	0° to 70° C (32° to 158° F) [ambient temp]
Features	ATA Security; DIPM; TRIM; DEVSLP

SATA 6 Gb/s 256 GB, 2.5-inch SATA SED Solid State Drive

Specification	Description
Drive weight	78 g (0.17 lbs)
Capacity	556 GB



Specification	Description
NAND Type	MLC
Height	7 mm (0.28 in)
Width	69.85 mm (2.75 in)
Interface	ATA-8, SATA 3.0
Performance	<ul style="list-style-type: none"> • Maximum Sequential Read: Up to 515 MB/s • Maximum Sequential Write: Up to 465 MB/s
Logical blocks	500,118,192
Operating temperature	0° to 70° C (32° to 158° F) [ambient temp]
Features	ATA Security; DIPM; TRIM; DEVSLP

SATA 6 Gb/s 240 GB, 2.5-inch Solid State Drive

Specification	Description
Drive weight	78 g (0.17 lbs)
Capacity	240 GB



Specification	Description
NAND Type	MLC
Height	7 mm (0.28 in)
Width	69.85 mm (2.75 in)
Interface	ATA-8, SATA 3.0
Performance	<ul style="list-style-type: none"> • Maximum Sequential Read: Up to 540 MB/s • Maximum Sequential Write: Up to 490 MB/s
Logical blocks	468,862,128
Operating temperature	0° to 70° C (32° to 158° F) [ambient temp]
Features	ATA Security; DIPM; TRIM; DEVSLP

SATA 6 Gb/s 180 GB, 2.5-inch Solid State Drive

Specification	Description
Drive weight	78 g (0.17 lbs)
Capacity	180 GB



Specification	Description
NAND Type	MLC
Height	7 mm (0.28 in)
Width	69.85 mm (2.75 in)
Interface	ATA-8, SATA 3.0
Performance	<ul style="list-style-type: none"> • Maximum Sequential Read: Up to 540 MB/s • Maximum Sequential Write: Up to 490 MB/s
Logical blocks	351,651,888
Operating temperature	0° to 70° C (32° to 158° F) [ambient temp]
Features	ATA Security; DIPM; TRIM; DEVSLP

SATA 6 Gb/s 180 GB, 2.5-inch Solid State Drive

Specification	Description
Drive weight	78 g (0.17 lbs)
Capacity	128 GB



Specification	Description
Height	7 mm (0.28 in)
Width	69.85 mm (2.75 in)
Interface	ATA-8, SATA 3.0
Performance	<ul style="list-style-type: none"> • Maximum Sequential Read: Up to 550 MB/s • Maximum Sequential Write: Up to 350 MB/s
Logical blocks	250,069,680
Operating temperature	0° to 70° C (32° to 158° F) [ambient temp]
Features	ATA Security; DIPM; TRIM; DEVSLP

Z Turbo Drive 256 GB, PCIe Solid State Drive

Specification	Description
Drive weight	10 g (0.02 lbs)
Capacity	256 GB
Height	60 mm (0.24 in)



Specification	Description
Width	22 mm (0.87 in)
Interface	ATA-8, PCIe 2.0
Performance	<ul style="list-style-type: none"> • Maximum Sequential Read: 730 MB/s • Maximum Sequential Write: 620 MB/s
Logical blocks	500,118,192
Operating temperature	0° to 70° C (32° to 158° F) [case temp]
Features	ATA Security; DIPM; TRIM; DEVSLP

NOTE: *For hard drives and solid state drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 16 GB (for Windows 7) of system and up to 30 GB (for Windows 8) disk is reserved for system recovery software.

Software and Security

Specifications	Description
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Specifications	Description	
Security	<p>Windows 8</p> <ul style="list-style-type: none"> • HP Device Access Manager with Just In Time Authentication • DigitalPersona Fingerprint Driver • HP Drive Encryption¹ • HP File Sanitizer² • HP Client Security Manager • HP SpareKey • Microsoft Defender • Validity Fingerprint Driver 	<p>Windows 7</p> <ul style="list-style-type: none"> • HP Device Access Manager with Just In Time Authentication • HP Drive Encryption • HP File Sanitizer • HP Client Security Manager • HP SpareKey • Microsoft Security Essentials • Validity Fingerprint Driver
BIOS Features	<p>Windows 8</p> <ul style="list-style-type: none"> • Absolute Persistence Module³ • HP Sure Start • HP Automatic Drive Lock⁴ • HP BIOS Protection • HP Disk Sanitizer (Not for SSD)⁵ • HP DriveLock⁶ • HP SpareKey • Hybrid Boot • Master Boot Record Security • Measured Boot • Power On Authentication • Pre-Boot Security • Secure Boot • Secure Erase (SSD & HDD)⁷ • BIOS Update via Network 	<p>Windows 7</p> <ul style="list-style-type: none"> • Absolute Persistence Module • HP Sure Start • HP Automatic Drive Lock • HP BIOS Protection • HP Disk Sanitizer (Not for SSD) • HP DriveLock • HP SpareKey • Hybrid Boot • Master Boot Record Security • Measured Boot • Power On Authentication • Pre-Boot Security • Secure Boot • Secure Erase (SSD & HDD) • BIOS Update via Network
MultiMedia	<p>Windows 8</p> <ul style="list-style-type: none"> • Cyberlink Power2Go • Cyberlink PowerDVD 	<p>Windows 7</p> <ul style="list-style-type: none"> • Cyberlink Power2Go • Cyberlink PowerDVD • Cyberlink YouCam BE



Specifications	Description	
HP Value Add	<p>Windows 8</p> <ul style="list-style-type: none"> • Getting Started with Windows 8 • HP 3D DriveGuard⁸ • HP ePrint Driver⁹ • HP Hotkey Support • HP Manageability • HP PageLift App¹⁰ • HP Support Assistant • Box 50GB Offer¹¹ • Foxit PhantomPDF Express for HP • Skype 	<p>Windows 7</p> <ul style="list-style-type: none"> • HP 3D DriveGuard • HP ePrint Driver • HP Hotkey Support • HP Manageability • HP PageLift • HP Recovery Manager • HP Support Assistant • HP Recovery Disc Creator (HPRDC) • Box 50GB • Foxit PhantomPDF Express for HP • Skype
Microsoft Products	<p>Windows 8</p> <ul style="list-style-type: none"> • Buy Office 	<p>Windows 7</p> <ul style="list-style-type: none"> • Buy Office
Additional Software Available from the Web	<p>HP SoftPaq Download Manager</p> <p>HP Software System Manager</p>	
Workstation ISV Certifications	<p>See the latest list of certifications at HP Workstation ISV Certification page.</p>	
HP Remote Graphics Software	<p>The remote desktop solution for serious workstation users and their most demanding applications.</p> <p>Download at: www.hp.com/go/RGS</p> <p>NOTE: HP Remote Graphics Software will not be available for Windows 8.1 at launch.</p>	



Specifications	Description
HP Performance Advisor	<p>HP Performance Advisor enables optimal configuration of HP Mobile Workstations delivering stability and best performance.</p> <p>HP Performance Advisor will guide your system setup allowing a "custom" configuration that best matches the workstation to user requirements.</p> <p>Download at: www.hp.com/go/performanceadvisor</p>
HP Recovery Manager	<p>Models shipped with Windows 7 include HP Recovery Manager. HP Recovery Manager enables fast recovery of the factory preinstalled image if the system becomes corrupted or if important system files are accidentally deleted. Up to 36 GB (for Windows 7) of system and up to 36 GB (for Windows 8) disk is reserved for system recovery software.</p>
Security	<p>See Software section above.</p>
Other Standard Security Features	<p>Integrated Smart Card Reader</p> <p>HP Spare Key (requires initial user setup)</p> <p>One-Step Logon</p> <p>Common Criteria EAL4+ Augmented Certified Discrete TPM 1.2 Embedded Security Chip</p> <p>Security lock slot</p> <p>Support for Intel® AT¹²</p>



Specifications	Description
Optional Security Features	<p>HP Fingerprint Sensor (optional)</p> <p>Computrace* with GPS Tracking - Subscription based security solution providing the ability to track, initiate physical recovery, conduct asset management, and perform remote data delete by utilizing GPS technology. GPS functionality requires HP Mobile Broadband Module.</p> <p>NOTE: * The Computrace agent is shipped turned off, and must be activated by customers when they purchase a subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S.</p>

Audio/multimedia - DTS Sound+

Hardware

Specification	Description
Implementation	IDT 92HD91
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

Specification	Description
Frequency response	20 Hz - 20 kHz
Signal to noise ratio	>85 dB
Total harmonic distortion	0.01%
Noise floor	-110 dB
Play/Record sampling rate(s)	8 kHz - 48kHz
DAC	16, 20 or 24-bit
ADC	16 or 20-bit

Integrated stereo

Specification	Description
Power rating	2 W
Impedance	4 ohms

Power specifications

HP 230W Slim Smart AC Adapter



Specifications	
Dimensions	7.87 x 3.94 x 1.0 in (200 x 100mm x 25.4mm)
Weight	840 g (1.85 lb)
Input	<p>100 to 240 VAC</p> <ul style="list-style-type: none"> • Output power: 40W • Input frequency range: 47 to 63 Hz • Input AC current: 3.5 A at 90 VAC, 1.75 A at 180 VAC
Output power	<ul style="list-style-type: none"> • Output power: 230W • DC output: 19.5V • Hold-up time: 5 msec at 115 VAC input • Output current limit: <18A, Over voltage protection- 29V max automatic shutdown
Connector	3 pin/grounded, mates with interchangeable cords
Environmental Design	<ul style="list-style-type: none"> • Temperature <ul style="list-style-type: none"> • Operating: 5° to 40° C (32° to 104° F) • Non-operating (storage): -20° to 65° C (-4° to 149° F) • Altitude: 0 to 3,048 m (0 to 10,000 ft) • 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- IEC950, EN60950, UL1950, Class 1, SELV; Agency approvals- C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCIB, NOM-1 NYCE; MTBF- over 200,000 hours at 25°C ambient condition.



Specifications	Description
Dimensions (H x W x L)	172 x 96 x 25.4 mm (6.77 x 3.80 x 1.0 in)
Weight	748 g (1.65 lb)
Input	<p>100 to 240 VAC</p> <ul style="list-style-type: none"> • Input Efficiency: 87% 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	<ul style="list-style-type: none"> • 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
Connector	3 pin/grounded, mates with interchangeable cords
Environmental Design	<ul style="list-style-type: none"> • Temperature <ul style="list-style-type: none"> • Operating: 5° to 40° C (32° to 104° F) • Non-operating (storage): -20° to 65° C (-4° to 149° F) • Altitude: 0 to 3,048 m (0 to 10,000 ft) • 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- IEC950, EN60950, UL1950, Class 1, SELV; Agency approvals- C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCIB, NOM-1 NYCE; MTBF- over 200,000 hours at 25°C ambient condition.

HP 8-cell Lithium-Ion Battery (83 WHr)



Specifications	Description
Dimensions (H x W x L)	2 x 5.3 x 27cm (0.8 x 2.1 x 10.6 in)
Weight	0.442 kg (0.99 lb)
Cells/Type	Lithium-Ion
Energy	<ul style="list-style-type: none"> • Temperature <ul style="list-style-type: none"> • Operating (Charging): 0° to 45° C (32° to 113° F) • Operating (Discharging): -10° to 50° C (14° to 122° F) • Non-operating: -20° to 50° C (-4° to 122° F)
Battery Re-Charge Time	<ul style="list-style-type: none"> • System in OFF or Standby Mode: 2.5 hours • System ON: 3 to 5 hours
Fuel Gauge LED	No
Warranty	1 year
Compatible with optional Travel Battery	Yes

HP Long Life 8-cell Lithium-Ion Battery (75 WHr)

Specifications	Description
Dimensions (H x W x L)	2 x 5.3 x 27 cm (0.8 x 2.1 x 10.6 in)



Specifications	Description
Weight	0.442 kg (0.99 lb)
Cells/Type	8-cell; Lithium-Ion
Energy	<ul style="list-style-type: none"> • Voltage: 14.4V • Amp-hour capacity: 5.1Ah • Watt-hour capacity: 75Wh
Temperature	<ul style="list-style-type: none"> • Operating (Charging): 0° to 45° C (32° to 113° F) • Operating (Discharging): (-10° to 60° C (14° to 140° F) • Non-operating: -20° to 60° C (-4° to 140° F)
Battery Re-Charge Time	<ul style="list-style-type: none"> • System in OFF or Standby Mode: 2.5 hours • System ON: 3 to 5 hours
Fuel Gauge LED	No
Warranty*	3 year
Compatible with optional Travel Battery	Yes
<p>NOTE: * 3-year platform warranty is required for a 3-year Long Life Battery warranty.</p>	

Optional HP BB09 Ultra Extended Life Notebook Battery (secondary battery)

Specifications	Description
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Specifications	Description
Dimensions (H x W x L)	3 x 15 x 29 cm (1.2 x 5.9 x 11.4 in)
Weight	0.682 kg (1.5 lb)
Cells/Type	Lithium-Ion
Energy	<ul style="list-style-type: none"> • Voltage: 11.25V • Amp-hour capacity: 8.85Ah • Watt-hour capacity: 100Wh
Temperature	<ul style="list-style-type: none"> • Operating (Charging): 0° to 45° C (32° to 113° F) • Operating (Discharging): (-10° to 50° C (14° to 122° F) • Non-operating: -20° to 50° C (-4° to 122° F)
Battery Re-Charge Time	<ul style="list-style-type: none"> • System in OFF or Standby Mode: 3.5 to 5 hours • System ON: 4 to 7 hours
Fuel Gauge LED	Yes
Warranty	1 year
Compatible with optional Travel Battery	No

Optional HP ST09 Extended Life Notebook Battery ("Travel Battery") (secondary battery)

Specifications	Description
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Specifications	Description
Dimensions (H x W x L)	3 x 15 x 30.5 cm (1.2 x 6.1 x 12 in)
Weight	0.550 kg (1.2 lb)
Cells/Type	Lithium-Ion Polymer
Energy	<ul style="list-style-type: none"> • Voltage: 11.1V • Amp-hour capacity: 6.6Ah • Watt-hour capacity: 73Wh
Temperature	<ul style="list-style-type: none"> • Operating (Charging): 0° to 45° C (32° to 113° F) • Operating (Discharging): (-10° to 50° C (14° to 122° F) • Non-operating: -20° to 50° C (-4° to 122° F)
Battery Re-Charge Time	<ul style="list-style-type: none"> • System in OFF or Standby Mode: 3.5 to 5 hours • System ON: 4 to 7 hours
Fuel Gauge LED	Yes
Warranty	1 year
Compatible with optional Travel Battery	Yes

Networking/Communications



Specifications	Description
Wireless	Support for a broad range of secure, integrated wireless LAN and wireless WAN options featuring support for the latest industry standards. Optional Broadband Wireless (WWAN) requires a Windows operating system and is available in select countries as a standard, factory configurable feature only. Integrated Bluetooth® is also available (factory configurable only) and can be combined with any of the supported wireless LAN and wireless WAN options.
Mobile Broadband options	<p>HP hs3110 HSPA+ Mobile Module</p> <p>HP lt4112 LTE/HSPA+ Qualcomm® Gobi™ 4G Module</p> <p>HP lt4211 LTE/EV-DO/HSPA+ Gobi 4G Module</p>
All 802.11 integrated wireless LAN options	<p>Intel Dual Band Wireless-NB 7260 802.11 a/b/g/n (2x2) WiFi</p> <p>Intel Dual Band Wireless-AC 7260 802.11 a/b/g/n/ac (2x2) WiFi and Bluetooth 4.0 combo</p> <p>Intel Dual Band Wireless-AN 7260 802.11 a/b/g/n (2x2) WiFi and Bluetooth 4.0 combo</p>
Communications	Integrated Intel I217-LM Gigabit** Network Connection (vPro configurations)

NOTE: * Broadband wireless is an optional feature and requires separately purchased service contract. Check with your local vendor for coverage area and availability in your area. Connection and speeds will vary due to location, environment, network conditions, and other factors. 4G LTE not available on all products, in all regions. ** The term "10/100/1000" or "Gigabit" Ethernet indicates compatibility with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/s. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required. *** Integrated Intel Wi-Di feature is available on select configurations only and requires separately purchased projector, tv or computer monitor with an integrated or external Wi-Di receiver. External Wi-Di receivers connect to the projector, tv or computer monitor via a standard HDMI cable, also sold separately. **** 802.11 requires access point and internet service. Availability of public wireless access points limited. WWAN not available with DreamColor displays.

Specification	Description
Dimensions (H x W x D)	<p>1.33 in (at front) x 16.37 in x 10.7 in</p> <p>34 mm (at front) x 416 mm x 272 mm</p> <p>Height with DreamColor display: 1.34 in / 34.0 mm at front; 1.57in / 40.0 mm at rear</p> <p>NOTE: Height varies depending upon where on the notebook the measurement is made. Weight varies by configuration and components. Weight includes Dual Core CPU, HD+, NVIDIA Kepler, DVD R/W, 2GBx1 SODIMM, , wLAN, FPR, 8-cell battery, no wWAN, no BlueTooth.</p>
Weight	<p>Starting at 7.42 lb (3.36 kg) with Z Turbo Drive and weight saver (no optical drive)</p> <p>Starting at 7.67 lb (3.46 kg) with hard drive and DVD-R/W drive</p>

Software overview

Preinstalled Software with Windows Operating System

Feature	Description		
Security	<table border="0"> <tr> <td style="vertical-align: top;"> <p>Windows 8</p> <ul style="list-style-type: none"> • HP Device Access Manager with Just In Time Authentication • DigitalPersona Fingerprint Driver • HP Drive Encryption¹ • HP File Sanitizer² • HP Client Security Manager • HP SpareKey • Microsoft Defender • Validity Fingerprint Driver </td> <td style="vertical-align: top;"> <p>Windows 7</p> <ul style="list-style-type: none"> • HP Device Access Manager with Just In Time Authentication • HP Drive Encryption • HP File Sanitizer • HP Client Security Manager • HP SpareKey • Microsoft Security Essentials • Validity Fingerprint Driver </td> </tr> </table>	<p>Windows 8</p> <ul style="list-style-type: none"> • HP Device Access Manager with Just In Time Authentication • DigitalPersona Fingerprint Driver • HP Drive Encryption¹ • HP File Sanitizer² • HP Client Security Manager • HP SpareKey • Microsoft Defender • Validity Fingerprint Driver 	<p>Windows 7</p> <ul style="list-style-type: none"> • HP Device Access Manager with Just In Time Authentication • HP Drive Encryption • HP File Sanitizer • HP Client Security Manager • HP SpareKey • Microsoft Security Essentials • Validity Fingerprint Driver
<p>Windows 8</p> <ul style="list-style-type: none"> • HP Device Access Manager with Just In Time Authentication • DigitalPersona Fingerprint Driver • HP Drive Encryption¹ • HP File Sanitizer² • HP Client Security Manager • HP SpareKey • Microsoft Defender • Validity Fingerprint Driver 	<p>Windows 7</p> <ul style="list-style-type: none"> • HP Device Access Manager with Just In Time Authentication • HP Drive Encryption • HP File Sanitizer • HP Client Security Manager • HP SpareKey • Microsoft Security Essentials • Validity Fingerprint Driver 		



Feature	Description	
BIOS Features	<p>Windows 8</p> <ul style="list-style-type: none"> • Absolute Persistence Module³ • HP Sure Start • HP Automatic Drive Lock⁴ • HP BIOS Protection • HP Disk Sanitizer (Not for SSD)⁵ • HP DriveLock⁶ • HP SpareKey • Hybrid Boot • Master Boot Record Security • Measured Boot • Power On Authentication • Pre-Boot Security • Secure Boot • Secure Erase (SSD & HDD)⁶ • BIOS Update via Network 	<p>Windows 7</p> <ul style="list-style-type: none"> • Absolute Persistence Module • HP Sure Start • HP Automatic Drive Lock • HP BIOS Protection • HP Disk Sanitizer (Not for SSD) • HP DriveLock • HP SpareKey • Hybrid Boot • Master Boot Record Security • Measured Boot • Power On Authentication • Pre-Boot Security • Secure Boot • Secure Erase (SSD & HDD) • BIOS Update via Network
MultiMedia	<p>Windows 8</p> <ul style="list-style-type: none"> • Cyberlink Power2Go • Cyberlink PowerDVD 	<p>Windows 7</p> <ul style="list-style-type: none"> • Cyberlink Power2Go • Cyberlink PowerDVD • Cyberlink YouCam BE



Feature	Description	
HP Value Add	<p>Windows 8</p> <ul style="list-style-type: none"> • Getting Started with Windows 8 • HP 3D DriveGuard⁸ • HP ePrint Driver⁹ • HP Hotkey Support • HP Manageability • HP PageLift App¹⁰ • HP Support Assistant • Box 50GB Offer¹¹ • Foxit PhantomPDF Express for HP • Skype 	<p>Windows 7</p> <ul style="list-style-type: none"> • HP 3D DriveGuard • HP ePrint Driver • HP Hotkey Support • HP Manageability • HP PageLift • HP Recovery Manager • HP Support Assistant • HP Recovery Disc Creator (HPRDC) • Box 50GB Offer • Foxit PhantomPDF Express for HP • Skype
Microsoft Products	<p>Windows 8</p> <ul style="list-style-type: none"> • Buy Office 	<p>Windows 7</p> <ul style="list-style-type: none"> • Buy Office
Additional Software Available from the Web	<ul style="list-style-type: none"> • HP SoftPaq Download Manager • HP Software System Manager 	
Workstation ISV Certifications	See the latest list of certifications at HP Workstation ISV Certification page.	
HP Remote Graphics Software	<ul style="list-style-type: none"> • The remote desktop solution for serious workstation users and their most demanding applications. • Download at: www.hp.com/go/RGS <p>NOTE: HP Remote Graphics Software will not be available for Windows 8.1 at launch.</p>	



Feature	Description
HP Performance Advisor	<ul style="list-style-type: none"> 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 user requirements. Download at: www.hp.com/go/performanceadvisor
HP Recovery Manager	<p>Models shipped with Windows 7 include HP Recovery Manager. HP Recovery Manager enables fast recovery of the factory preinstalled image if the system becomes corrupted or if important system files are accidentally deleted. Up to 36 GB (for Windows 7) of system and up to 36 GB (for Windows 8) disk is reserved for system recovery software.</p>
Security	<p>See Software section above.</p>
Other Standard Security Features	<ul style="list-style-type: none"> Integrated Smart Card Reader HP Spare Key (requires initial user setup) One-Step Logon Common Criteria EAL4+ Augmented Certified Discrete TPM 1.2 Embedded Security Chip Security lock slot Support for Intel® AT¹²
Optional Security Features	<ul style="list-style-type: none"> HP Fingerprint Sensor (optional) Computrace* with GPS Tracking - Subscription based security solution providing the ability to track, initiate physical recovery, conduct asset management, and perform remote data delete by utilizing GPS technology. GPS functionality requires HP Mobile Broadband Module. <p>NOTE: * The Computrace agent is shipped turned off, and must be activated by customers when they purchase a subscription. Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S.</p>

Environmental specifications




Specification	Description
Temperature	<ul style="list-style-type: none"> • Operating: 0° to 35° C (32° to 95° F) (not writing optical) • Operating: 5° to 35° C (41° to 95° F) (writing optical) • Non-operating: (-20° to 60° C (-4° to 140° F)
Relative humidity	<ul style="list-style-type: none"> • Operating: 10% to 90%, non-condensing • Non-operating: 5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
Shock	<ul style="list-style-type: none"> • Operating: 40 G, 2 ms, half-sine • Non-operating: 200 G, 2 ms, half-sine
Random vibration	<ul style="list-style-type: none"> • Operating: 0.75 grms • Non-operating: 1.50 grms
Altitude (unpressurized)	<ul style="list-style-type: none"> • Operating: -15.24 to 3,048 m (-50 to 10,000 ft) • Non-operating: -15.24 to 12,192 m (-50 to 40,000 ft)
Planned Industry Standard Certifications	<ul style="list-style-type: none"> • UL: Yes • CSA: Yes • FCC Compliance: Yes • ENERGY STAR®: Select models* • EPEAT: Gold ** • Non-operating: -15.24 to 12,192 m (-50 to 40,000 ft) • ICES: Yes • Australia / NZ A-Tick Compliance: Yes • CCC: Yes • Japan VCCI Compliance: Yes • KC: Yes • BSMI: Yes • CE Marking Compliance: Yes




Specification	Description
<p>NOTE: *Configurations of the HP Classmate that are ENERGY STAR qualified are identified as HP Classmate ENERGY STAR on HP websites and on www.energystar.gov . **EPEAT® registered where applicable. EPEAT registration varies by country. For accessibility information on HP products, please visit: http://www.hp.com/accessibility.</p>	

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