Overview

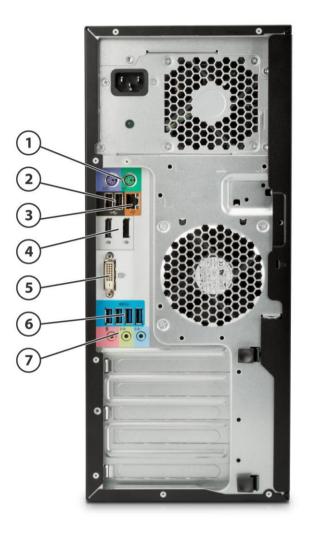
HP Z240 Tower Workstation



- 1. Optional Handle* in Top 5.25" Bay
- 2. Optional External Slim Optical Drive Bay
- 3. Power Button
- 4. 1 USB 2.0 Battery Charging Port
- 5. 1 USB 2.0 port

- 6. 2 USB 3.0 (blue) ports
- 7. Headphone
- 8. Headphone/Microphone
- 9. Optional SD Card Reader

Overview



1. PS/2 ports (keyboard, mouse)

- 2. 2 USB 2.0
- 3. RJ-45 to integrated GBE
- 4. 2 DisplayPort (DP 1.2) output from Intel® HD graphics (available on selected processors only)
- 5. DVI-I single link
- 6. 4 USB 3.0
- 7. 1 Audio Line In, 1 Audio Line Out, 1 Microphone



Overview

Form Factor

Minitower

Operating Systems Preinstalled:

- Windows[®] 10 Pro 64*
- Windows 7 Professional (available through downgrade rights from Windows 10 Pro 64)**
- Windows 10 Home 64
- Windows 7 Professional 64
- HP Linux[®]-ready
- Red Hat[®] Enterprise Linux[®] Workstation (1 year paper license available; Preinstall not available)

Supported:

- Windows[®] 10 Enterprise 64
- Windows 8.1 Enterprise 64
- Windows 8.1 Pro 64
- Windows 7 Enterprise 32/64
- Windows 7 Professional 32
- Red Hat[®] Enterprise Linux Desktop/Workstation 6, 7, 7.2
- SUSE Linux[®] Enterprise Desktop 11 SP3, 12 SP1

NOTE: For detailed OS/hardware support information for Linux, see: http://www.hp.com/support/linux_hardware_matrix

Processors

Name	Cores	Clock Speed (GHz)	Intel® Turbo Boost Technology ¹	Cache (MB)	Memory Speed (MT/s)	Hyper- Threading	Integrated Graphics	Featuring Intel® vPro™ Technology	TDP (W)
Intel® Xeon® processor E3-1280v5	4	3.7	4.0	8	2133	Y	N/A	Y	80W
Intel® Xeon® processor E3-1270v5	4	3.6	4.0	8	2133	Y	N/A	Y	80W
Intel® Xeon® processor E3-1245v5	4	3.5	3.9	8	2133	Y	Intel HD Graphics P530	Y	80W
Intel® Xeon® processor E3-1240v5	4	3.5	3.9	8	2133	Y	N/A	Y	80W
Intel® Xeon® processor E3-1230v5	4	3.4	3.8	8	2133	Y	N/A	Y	80W
Intel® Xeon® processor E3-1225v5	4	3.3	3.7	8	2133	N	Intel HD Graphics P530	Y	80W
Intel® Core™ i7-6700 processor	4	3.4	4.0	8	2133	Y	Intel HD Graphics 530	Y	65W
Intel® Core™ i5-6600 processor	4	3.3	3.9	6	2133	N	Intel HD Graphics 530	Y	65W
Intel® Core™ i5-6500 processor	4	3.2	3.6	6	2133	N	Intel HD Graphics 530	Y	65W
Intel® Core™ i3-6300 processor	2	3.8	N/A	4	2133	Y	Intel HD Graphics 530	Ν	51W
Intel® Core™ i3-6100 processor	2	3.7	N/A	3	2133	N	Intel HD Graphics 530	N	51W
Intel® Pentium™G4400	2	3.3	N/A	3	2133	N	Intel HD Graphics 510	N	54W



Overview

	n in this column represent the maximum turbo frequency with one core active. Turbo boost stepping ents. Processors that do not have turbo functionality are denoted as N/A.
NOTES	Integrated Intel® HD graphics is not supported on the Intel® Xeon E3 processors.
	Intel® Xeon® E3, Intel® Core™ i3 and Intel® Pentium processors can support either ECC or non-ECC memory; Intel® Core i5/i7 processors only support non-ECC memory.
	Processor numbers differentiate features within each processor family, not across different processor families. See: http://www.intel.com/products/processor_number/ for details.
	Multi-Core is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering is not a measurement of higher performance.
Color	Black
Expansion Slots (see system board section for more details)	1 PCIe Gen3 x16 slot 1 PCIe Gen3 x4 slot /x16 connector 1 PCIe Gen3 x4 slot/x4 connector 1 PCIe Gen3 x1 slot 1 PCI slot 32-bit (optional) 1 M.2 slot (PCIe Gen3 x4)*
	In the PCIe Gen3 x16 slot, if it is not being used for a graphics card, only cards certified as After Market Options for this platform are supported.
	* M.2 slot supports compatible devices up to 110mm
Expansion Bays (see storage section for more details)	 2 external Half Height 5.25" Bays 1 external 9.5mm Slim Optical Drive Bay 2 internal 3.5" Drive Bays 1 internal 2.5" Drive Bay
Front I/O	2 USB 3.0, 1 USB 2.0, 1 USB 2.0 Charging Data Port, 1 Headphone, and 1 Microphone.
Internal I/O	1 USB 3.0 and 3 USB 2.0 ports available as 2 separate 2x10 (3.0 x1, 2.0 x1) and 2x5 (2.0 x2) header: supports one HP Internal USB 2.0 Port Kit and one USB 3.0 Media Card Reader.
Rear I/O	1 DVI-I Single Link and 2 DisplayPort (DP 1.2) outputs from Intel HD graphics (available on specific processors only); 4 USB 3.0 ports, 2 USB 2.0 ports, 1 serial port (optional), 1 parallel port (optional), 2 PS/2, RJ-45 (LoM), 1 Audio Line-in, and 1 Audio Line-out, Microphone; 2 IEEE 1394b ports (optional).
Interfaces Supported	SD Media Card Reader (optional)
Chassis Dimensions (H x W x D)	Standard minitower orientation: 399mm x 170mm x 442mm (15.7 x 6.7 x 17.4 in)
Weight	Exact weights depend upon configuration:
	Minimum: 8.6 kg (18.95 lb)



Overview	
	Typical*: 9.4 kg (20.79 lb) Maximum: 11.9 kg (26.20 lb)
	Supported Weight (desktop orientation): 35 kg (77 lb)
Temperature	* Typical weight when configured with 2 3.5" hard drives, 1 optical drive, 2 DIMMs and 1 NVIDIA Quadro® K620 graphics card Operating: 40° to 95°F (5° to 35°C) Non-operating: -40° to 140°F (-40° to 60°C)
	NOTES: Derate the maximum operating temperature by one degree C (1.8 degrees F) for every 305m (1,000 ft) altitude over 1,524m (5,000 ft).
Humidity	Operating: 8% to 85% Non-operating: 8% to 90%
Maximum Altitude (non pressurized)	- Operating: 3,000 m; (10,000 ft) Non-operating: 9,100 m; (30,000 ft)
Power Supply	400 watts wide-ranging, active Power Factor Correction, 92% Efficient 320W Standard Efficiency wide-ranging, active PFC Power Supply option available in some countries.
	The Power Supply Efficiency Report for the 400W 92% Efficiency and 280W 90% Efficiency Power Supply may be found at the following link: http://www.plugloadsolutions.com/psu_reports/HEWLETT-PACKARD%20COMPANY_704427- 001%20(DPS-400AB-19%20A)_400W_ECOS%203496_Report.pdf
Backup Devices	For a complete listing of compatible DAT tape drives, LTO tape drives and RDX Removable Disk Backup System offerings, please visit http://www.hp.com/go/connect
Chipset	Intel® C236 chipset
Memory	4 DIMM slots, supporting up to 64GB ECC/non-ECC, DDR4 2133 MT/s
	The CPUs determine the speed at which the memory is clocked. If a 2133 MT/s capable CPU and 1866MT/s memory are used in the system, memory will operate at the speed of the slowest rated installed processor or memory module NOTE: transfer rates up to 2133 MT/s
Workstation ISV Certifications	See the latest list of certifications at http://www.hp.com/united-states/campaigns/workstations/partnerships.html



Supported Components

Processors			actory nfigured	Option Kit
	Intel® Xeon® processor E3-1200 v5 family			
	Intel Xeon E3-1280 v5 3.7 2133 4C CPU		Y	Ν
	Intel Xeon E3-1270 v5 3.6 2133 4C CPU		Y	Ν
	Intel Xeon E3-1245 v5 3.5 2133 4C CPU		Y	Ν
	Intel Xeon E3-1240 v5 3.5 2133 4C CPU		Y	Ν
	Intel Xeon E3-1230 v5 3.4 2133 4C CPU		Y	Ν
	Intel Xeon E3-1225 v5 3.3 2133 4C CPU		Y	Ν
	6th generation Intel® Core™ processor family			
	Intel® Core™ i7-6700 3.4 2133 4C CPU		Y	Ν
	Intel® Core™ i7-6600 3.3 2133 4C CPU		Y	Ν
	Intel® Core™ i7-6500 3.2 2133 4C CPU		Y	Ν
	6th generation Intel® Core™ i3/Pentium processor f	amily		
	Intel Pentium G4400 3.3 2133 2C CPU		Y	Ν
	Intel Core i3-6100 3.7 2133 2C CPU		Y	Ν
	Intel Core i3-6300 3.8 2133 2C CPU		Y	Ν
	compared to Intel HD Graphics 530. NOTE 2: These processors support either ECC or non- NOTE 3: These processors support only non-ECC men			
Monitors / Displays				
		Factory Configured	Option Kit	Option Kit Part Number
	HP Z Display Z30i 30-inch IPS LED Backlit Monitor HP Z Display Z27i 27-inch IPS LED Backlit Monitor HP Z Display Z24i 24-inch IPS LED Backlit Monitor HP Z Display Z23i 23-inch IPS LED Backlit Monitor HP Z Display Z22i 21.5-inch IPS LED Backlit Monitor HP DreamColor Z24x Professional Display HP DreamColor Z27x Professional Display	-	-	
	HP Z Display Z27i 27-inch IPS LED Backlit Monitor HP Z Display Z24i 24-inch IPS LED Backlit Monitor HP Z Display Z23i 23-inch IPS LED Backlit Monitor HP Z Display Z22i 21.5-inch IPS LED Backlit Monitor	-	-	
SATA Hard Drives	HP Z Display Z27i 27-inch IPS LED Backlit Monitor HP Z Display Z24i 24-inch IPS LED Backlit Monitor HP Z Display Z23i 23-inch IPS LED Backlit Monitor HP Z Display Z22i 21.5-inch IPS LED Backlit Monitor HP DreamColor Z24x Professional Display HP DreamColor Z27x Professional Display Supported by all Operating Systems available from HP	-	-	
	HP Z Display Z27i 27-inch IPS LED Backlit Monitor HP Z Display Z24i 24-inch IPS LED Backlit Monitor HP Z Display Z23i 23-inch IPS LED Backlit Monitor HP Z Display Z22i 21.5-inch IPS LED Backlit Monitor HP DreamColor Z24x Professional Display HP DreamColor Z27x Professional Display Supported by all Operating Systems available from HP	Configured	Kit	Number Option Kit
	HP Z Display Z27i 27-inch IPS LED Backlit Monitor HP Z Display Z24i 24-inch IPS LED Backlit Monitor HP Z Display Z23i 23-inch IPS LED Backlit Monitor HP Z Display Z22i 21.5-inch IPS LED Backlit Monitor HP DreamColor Z24x Professional Display HP DreamColor Z27x Professional Display Supported by all Operating Systems available from HP Screen Size Diagonally Measured	Configured Factory Configured	Kit Option Kit	Number Option Kit Part Number
	HP Z Display Z27i 27-inch IPS LED Backlit Monitor HP Z Display Z24i 24-inch IPS LED Backlit Monitor HP Z Display Z23i 23-inch IPS LED Backlit Monitor HP Z Display Z22i 21.5-inch IPS LED Backlit Monitor HP DreamColor Z24x Professional Display HP DreamColor Z27x Professional Display Supported by all Operating Systems available from HP Screen Size Diagonally Measured	Configured Factory Configured Y	Kit Option Kit Y	Number Option Kit Part Number LQ036AA
	HP Z Display Z27i 27-inch IPS LED Backlit Monitor HP Z Display Z24i 24-inch IPS LED Backlit Monitor HP Z Display Z23i 23-inch IPS LED Backlit Monitor HP Z Display Z22i 21.5-inch IPS LED Backlit Monitor HP DreamColor Z24x Professional Display HP DreamColor Z27x Professional Display Supported by all Operating Systems available from HP Screen Size Diagonally Measured 500GB SATA 7200 rpm 6Gb/s 3.5" HDD 1TB SATA 7200 rpm 6Gb/s 3.5" HDD	Configured Factory Configured Y Y	Kit Option Kit Y Y	Number Option Kit Part Number LQ036AA LQ037AA
	HP Z Display Z27i 27-inch IPS LED Backlit Monitor HP Z Display Z24i 24-inch IPS LED Backlit Monitor HP Z Display Z23i 23-inch IPS LED Backlit Monitor HP Z Display Z22i 21.5-inch IPS LED Backlit Monitor HP DreamColor Z24x Professional Display HP DreamColor Z27x Professional Display Supported by all Operating Systems available from HP Screen Size Diagonally Measured 500GB SATA 7200 rpm 6Gb/s 3.5" HDD 1TB SATA 7200 rpm 6Gb/s 3.5" HDD 2.0TB SATA 7200 rpm 6Gb/s 3.5" HDD	Configured Factory Configured Y Y Y Y	Kit Option Kit Y Y Y	Number Option Kit Part Number LQ036AA LQ037AA QB576AA
	 HP Z Display Z27i 27-inch IPS LED Backlit Monitor HP Z Display Z24i 24-inch IPS LED Backlit Monitor HP Z Display Z23i 23-inch IPS LED Backlit Monitor HP Z Display Z22i 21.5-inch IPS LED Backlit Monitor HP DreamColor Z24x Professional Display HP DreamColor Z27x Professional Display Supported by all Operating Systems available from HP Screen Size Diagonally Measured 500GB SATA 7200 rpm 6Gb/s 3.5" HDD 1TB SATA 7200 rpm 6Gb/s 3.5" HDD 2.0TB SATA 7200 rpm 6Gb/s 3.5" HDD 3.0TB SATA 7200 rpm 6Gb/s 3.5" HDD	Configured Factory Configured Y Y Y Y Y	Kit Option Kit Y Y Y Y	Number Option Kit Part Number LQ036AA LQ037AA QB576AA QF298AA
	HP Z Display Z27i 27-inch IPS LED Backlit Monitor HP Z Display Z24i 24-inch IPS LED Backlit Monitor HP Z Display Z23i 23-inch IPS LED Backlit Monitor HP Z Display Z22i 21.5-inch IPS LED Backlit Monitor HP DreamColor Z24x Professional Display HP DreamColor Z27x Professional Display Supported by all Operating Systems available from HP Screen Size Diagonally Measured 500GB SATA 7200 rpm 6Gb/s 3.5" HDD 1TB SATA 7200 rpm 6Gb/s 3.5" HDD 2.0TB SATA 7200 rpm 6Gb/s 3.5" HDD 3.0TB SATA 7200 rpm 6Gb/s 3.5" HDD 4TB SATA 7200 rpm 6Gb/s 3.5" HDD	Configured Factory Configured Y Y Y Y Y Y Y	Kit Option Kit Y Y Y Y Y Y	Number Option Kit Part Number LQ036AA LQ037AA QB576AA QF298AA



Supported Components

SATA Solid State Drives

HP 256GB SATA 6Gb/s SSD	Y	Y	A3D26AA
HP 512GB SATA 6Gb/s SSD	Y	Y	D8F30AA
HP 1TB SATA 6Gb/s SSD	Y	Y	F3C96AA
HP 256GB SATA 6Gb/s SED Opal 2 SSD	Y	Y	G7U67AA

Supported Components

PCIe SSDs	PCIe SSDs for HP Workstations					
	HP Z Turbo Drive G2 128GB SSD ³	k		Y Y		
	HP Z Turbo Drive G2 256GB SSD			Y Y		F73AA
	HP Z Turbo Drive G2 512GB SSD			Y Y	M1	F74AA
	* Not available today as After Ma	arket Option				
	NOTE: For storage drives, GB = 1 to 36GB (for Windows 10) of sys			· · · · · · · · · · · · · · · · · · ·		ty is less. U
	NOTE: Intelligent Disk Caching S as cache for the HDD and does n				nology. The S	SD acts only
Hard Drive Controllers	5				actory nfigured	Option Kit
	Integrated SATA Controller (Z2	40)				
	Integrated SATA Controller, RAII	0 0,1 supporte	ed: 4x 6 Gb/s p	orts	Y	Ν
	Factory integrated RAID on mo	therboard for	SATA drives			
	RAID 0 Data Configuration				Y	Ν
	RAID 1 Data Configuration				Y	Ν
Graphics	based RAID. All drives must be id than 2 TB (for 32-bit Windows). NOTE 1: Requires identical hard					ported
	Integrated Intel® HD Graphics Med	-	-	Number	# UI Calu	s mixeu:
	Intel [®] HD Graphics P530	Y	N N		1	
	Intel [®] HD Graphics 530	Y	N		1	
	Professional 2D					
	NVIDIA® NVS™ 310 1GB Graphics*	Y	Y	M6V51AA	1	
	* Can be mixed with one NVS™ 510					
	NVIDIA [®] NVS™ 315 1GB Graphics	Y	Y	E1U66AA	1	NO
	NVIDIA® NVS™ 510 2GB Graphics*	Y	Y	C2J98AA	1	YES
	* Can be mixed with one NVS™ 310					
	Graphics Cable Adapters					
	HP DisplayPort to Dual Link DVI Adapter	Y	Y	NR078AA	1	
	HP DisplayPort To DVI-D Adapter (4-Pack)	Y	Ν		1	
	HP DisplayPort To DVI-D Adapter	Y	Ν		1	

Υ

Υ

FH973AA

1



(2-Pack)

HP DisplayPort To DVI-D Adapter

Supported Components

HP DisplyPort To VGA Adapter	Y	Y	AS615AA	1
Entry 3D				
AMD FirePro™ W2100 2GB Graphics	Y	Y	J3G91AA	2
NVIDIA® Quadro® K420 2GB Graphics	Y	Y	N1T07AA	2
NVIDIA® Quadro® K620 2GB Graphics	Y	Y	J3G87AA	1
Mid-range 3D				
AMD FirePro™ W5100 4GB Graphics	Ν	Y	J3G92AA	1
NVIDIA® Quadro® K2200 4GB Graphics	Y	Y	J3G88AA	1
High End 3D				
AMD FirePro™ W7100 8GB Graphics*	Ν	Y	J3G93AA	1
* Requires 400W PSU. Not supporte	d with 280W F	PSU.		
NVIDIA® Quadro® M4000 8GB Graphics*	Y	Y		1
* Requires 400W PSU. Not supporte	d with 280W F	SU.		

NOTE 1: Intermixing integrated Intel[®] HD graphics and discrete graphics cards in order to drive more than three displays can be enabled using the Computer (F10) Setup Utility. However, HP recommends using only discrete graphics when four or more displays are required to be supported.

Memory

DDR4-2133 ECC Unbuffered DIMMs CTO

СТО

HP 64GB (4x16GB) DDR4-2133 ECC RAM HP 32GB (2x16GB) DDR4-2133 ECC RAM HP 32GB (4x8GB) DDR4-2133 ECC RAM HP 16GB (2x8GB) DDR4-2133 ECC RAM HP 8GB (1x8GB) DDR4-2133 ECC RAM HP 8GB (2x4GB) DDR4-2133 ECC RAM HP 4GB (1x4GB) DDR4-2133 ECC RAM

DDR4-1600 nECC Unbuffered DIMMs - CTO

HP 64GB (4x16GB) DDR4-2133 nECC RAM HP 32GB (2x16GB) DDR4-2133 nECC RAM HP 32GB (4x8GB) DDR4-2133 nECC RAM HP 16GB (2x8GB) DDR4-2133 nECC RAM HP 8GB (1x8GB) DDR4-2133 nECC RAM HP 8GB (2x4GB) DDR4-2133 nECC RAM



Supported Components

HP 4GB (1x4GB) DDR4-2133 nECC RAM

Intel[®] Xeon E3, Intel[®] Core i3 and Intel[®] Pentium processors can support either ECC or non-ECC memory; Intel[®] Core i5/i7 processors only support non-ECC memory. **NOTE 1:** Two channels of DDR4 memory are supported. To realize full performance at least one DIMM must be inserted into each channel. **NOTE 2:** Max transfer rates up to 2133 MT/s

АМО	Option Kit Part Number
DDR4-1600 nECC Unbuffered DIMMs AMO	
HP 16GB (1x16GB) DDR4-2133 ECC RAM	NOH88AA
HP 8GB (1x8GB) DDR4-2133 ECC RAM	NOH87AA
HP 4GB (1x4GB) DDR4-2133 ECC RAM	NOH86AA
DDR4-1600 ECC Unbuffered DIMMs - AMO	
HP 16GB (1x16GB) DDR4-2133 non-ECC RAM	T0E52AA
HP 8GB (1x8GB) DDR4-2133 non-ECC RAM	T0E51AA

HP 4GB (1x4GB) DDR4-2133 non-ECC RAM

NOTE: Only unbuffered DDR4 DIMMs are supported.

The CPUs determine the speed at which the memory is clocked. If a 2133 MHz capable CPU is used in the system, the maximum speed the memory will run at is 2133 MHz regardless of the specified speed of the memory.

T0E50AA

Multimedia and Audio Devices		Factory Configured	Option Kit	Option Kit Part Number	
	Integrated Realtek HD ALC221-VB Audio	Ŷ	N		
Optical and Removable Storage		Factory Configured	Option Kit	Option Kit Part Number	
	HP 9.5mm Slim SuperMulti DVD Writer	Y	Y	K3R64AA	
	For use as 1st Optical Drive				
	HP 9.5mm Slim DVD-ROM Drive	Y	Y	K3R63AA	
	For use as 1st Optical Drive				
	HP 9.5mm Slim BDXL Blu-Ray Writer	Y	Y	K3R65AA	
	For use as 1st Optical Drive				
	HP SD Media Card Reader	Y	Y		

Actual speeds may vary. Does not permit copying of commercially available DVD movies or other copyright protected materials. Intended for creation and storage of your original material and other lawful uses. Double Layer discs can store more data than single layer discs. However, double-layer discs burned with this drive may not be compatible with many existing single-layer DVD drives and players. With Blu-ray, certain disc, digital connection, compatibility and/or performance issues may arise, and do not constitute defects in the product. Flawless playback on all systems is not guaranteed. In order for some Blu-ray titles to play, they may require a DVI or HDMI digital connection and your display may require HDCP support. HD-DVD movies cannot be played on this workstation.

Controller Cards		Factory Configured	Option Kit	Option Kit Part Number
	HP Thunderbolt™ 2 PCIe 1-port I/O Card	Y	Y	F3F43AA



Supported Components

NOTE 1: Four USB 3.0 ports are available integrated on the motherboard (2 front, 2 rear). Integrated USB 3.0 ports are supported under Microsoft Windows 10, Microsoft Windows 7 or Microsoft Windows 8 operating systems only.

Networking and Communications		Factory Configured	Option Kit	Option Kit Part Number
	Integrated Intel® I219LM PCIe GbE Controller (Intel® vPro™ with Intel® AMT 11.0)	Υ	Ν	
	Intel [®] Ethernet I210-T1 PCIe NIC	Y	Y	E0X95AA
	HP X520 10GbE Dual Port Adapter ^{3, 4}	Y	Y	C3N52AA
	HP 10GbE SFP+ SR Transceiver	Y	Y	C3N53AA
	Intel® 8260 802.11 a/b/g/n/ac with Bluetooth® 4.2 PCIe NIC	Y	Y	NOS95AA
	Intel® 8260 802.11 a/b/g/n/ac with Bluetooth® 4.2 PCIe NIC	Y	Y	NOS95AA

NOTE 1: The integrated network connection is required to support Intel[®] vPro[™] Technology. **NOTE 2**: If AMT is provisioned, then network teaming with the integrated LAN port is not possible. **NOTE 3**: "Gigabit" Ethernet indicates compliance with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/sec. For high speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

NOTE 4: The Intel Ethernet I210-T1 PCIe NIC is supported on the following operating systems:

- Windows 7 and Windows 8 32-bit and 64-bit versions
- Red Hat[®] Enterprise Linux[®] (RHEL)
- SLED 11

Racking and Physical Security		Factory Configured	Option Kit	Option Kit Part Number
	HP xw4/Z2/Z4 Depth Adjustable Fixed Rail Rack Kit	Ν	Y	WH340AA
	HP Solenoid Lock and Hood (TWR) Sensor	Y	Y	E0X96AA
	HP Business PC Security Lock Kit	Ν	Y	PV606AA
	HP UltraSlim Cable Lock Kit	Ν	Y	H4D73AA
Input Devices		Factory Configured	Option Kit	Option Kit Part Number
	HP USB 1000dpi Laser Mouse	Y	Y	QY778AA
	HP USB Optical 3-Button Mouse	Y	Y	DY651A
	HP USB Optical Mouse	Y	Y	QY777AA
	HP PS/2 Mouse	Y	Y	QY775AA
	HP 2.4GHz Wireless Keyboard & Mouse	Ν	Y	NB896AA
	3Dconnexion CADMouse	Ν	Y	M5C35AA
	HP USB CCID SmartCard Keyboard	Y	Y	BV813AA
	HP USB Business Slim Keyboard	Y	Y	N3R87AA
	HP PS/2 Business Slim Keyboard	Y	Y	N3R86AA
	HP Wireless Business Slim Keyboard	Y	Y	
Other Hardware		Factory Configured	Option Kit	Option Kit Part Number
	HP Power Cord Kit	Ν	Y	DM293A
	HP Workstation Mouse Pad (Japan only)	Y	Ν	
	HP Serial Port Adapter	Y	Y	PA716A
	HP ENERGY STAR [®] Certified Configuration	Y	Ν	



Supported Components

HP Internal USB Port Kit	Ν	Y	EM165AA
HP eSATA PCI Cable Kit	Y	Y	FH966AA
Z240 TWR Bezel w/ Dust Filter option	Ν	Y	M6W77AA
HP Parallel Port Adapter Kit	Ν	Y	KD061AA
Z240 Dust Filter (Filter Only)	Ν	Y	T9W48AA

Software		Factory Configured	Option Kit
	HP Performance Advisor (See Note 1)	Υ	Ν
	HP Remote Graphics Software (RGS) 7.0	Υ	Ν
	PDF Complete - Corporate Edition	Υ	Ν
	Cyberlink PowerDVD and Power2Go	Υ	Ν
	HP PC Hardware Diagnostics UEFI (Windows OS only)	Y	Ν
	HP Client Security Software	Υ	Y

Operating Systems

Windows® 7 Professional 64-bit
Windows 8.1 Standard 64-bit
HP Linux [®] Installer Kit
Red Hat® Enterprise Linux® (RHEL) Workstation - Paper License (1yr)
Windows 10 Pro 64
Windows 10 Pro downgrade to Windows 7 Professional 64
Windows 10 Home 64
Windows 7 Professional 64-bit (National Academic)
See http://www.microsoft.com/windows/windows-7/ for support details.
See http://h20331.www2.hp.com/hpsub/cache/537200-0-0-225-121.html
See http://www.redhat.com/rhel/desktop/



HP Z240 Tower Workstation

System Board		
System Board Form Factor	ATX 24.89 x 24.38 mm (9.8 x 9.6 inches)	
Processor Socket	Single LGA-1151	
CPU Bus Speed	DMI	
Chipset	Intel [®] PCH C236	
Memory Expansion Slots	4 DDR4 memory slots	
Memory Type Supported	DDR4, UDIMM (Unbuffered), ECC& n	on-ECC
Memory Modes	Non-Interleaved for single channel.	Interleaved when both channels are populated.
Memory Speed Supported	2133MT/s DDR4	
Memory Protection	ECC available on data	
Maximum Memory	64GB	
Memory Configuration (Supported)	4GB, 8GB and 16GB non-ECC/4GB, 8GB and 16GB ECC unbuffered DIMMs are supported. ECC and non-ECC memory DIMMs cannot be mixed on the same system. NOTE : * Maximum memory capacities assume 64-bit operating systems, such as Genuine Windows [®] 10	
PCI Express Connectors	Professional 64 bit, Windows® 7 Pro Systems support up to 4 GB.	ofessional 64-Bit or Red Hat Linux 64-bit. 32-bit Windows Operating
	 1 PCI Express Gen3 slot x1 mechanical/ x1 electrical (full height, full length) 1 PCI Express Gen3 slot x16 mechanical/ x16 electrical (full height, full length) 1 PCI Express Gen3 slot x4 mechanical/ x4 electrical (full height, full length) 1 PCI Express Gen3 slot x16 mechanical/ x4 electrical (full height, full length) 1 PCI Express Gen3 slot x16 mechanical/ x4 electrical (full height, full length) 1 N.2 slot (PCIe Gen3 x4) In the PCIe Gen3 (x16 electrical/x16 mechanical) slot, if it is not being used for a graphics card, only cards certified as After Market Options for this platform are supported. Note: M.2 slot supports compatible devices up to 110mm	
PCI Connectors (5.0V)	1 (optional) PCI slot, full height, full	llength
Supported Drive Interfaces	SATA	Integrated (4) Serial ATA interfaces (6Gb/s SATA). One port can optionally be used for eSATA. RAID 0 and 1 supported. Factory integrated RAID is Microsoft Windows only. RAID 5 is supported by Software XOR.
	Serial Attached SCSI	None
	Integrated RAID	NOTE: Requires identical hard drives (speeds, capacity, interface)
	Integrated Graphics	Intel® HD Graphics 530 (on Core i3/i5/i7-6xxx processors); Intel® Integrated Graphics for Xeon processors
		Based on Unified Memory Architecture (UMA) - a region of system memory is reserved and dedicated to the graphics display.
		Support for Microsoft DirectX 11, OpenGL 4.0 and OpenCL 1.2 on Intel® HD Graphics P530;
		1 DVI-D and 2 DP 1.2 graphics ports integrated in motherboard; Supports up to three simultaneous displays



		across DP & DVI-D outputs.	
		Max. resolution supported on DVI- D ports: 1920x1200 @60Hz	
		Max. resolution supported on DP 1.2 ports: 3840x2160 @60Hz	
	Network Controller	Integrated Ethernet PHY Connection I219LM. Management capabilities: WOL, PXE 2.1 and AMT 9	
	External SATA (eSATA)	1 port eSATA capable (SATA 3) with optional eSATA After- Market Option cable kit.	
	IDE connector	No	
	Floppy connector	No	
	Serial	1 internal header (requires optional Serial Port Adapter Kit)	
	2nd Serial	No	
	Parallel	1 internal header (optional Parallel Port Adapter required)	
	HD Integrated Audio	Yes	
IEEE 1394 Connector(s)			
USB Connector(s)	Front	2 USB 3.0, 1 USB 2.0, 1 USB 2.0 Charging Data Port.	
	Rear	4 USB 3.0, 2 USB 2.0	
	Internal	1 USB 3.0 and 3 USB 2.0 ports available as 2 separate 2x6(3.0 x1,2.0 x1) and 1x6(2.0 x1) headers: supports 1 HP Internal USB Port Kits plus one USB 3.0 SD Card Reader.	
HD Integrated Audio	Yes		
Flash ROM	Yes		
CPU Fan Header	Yes		
Chassis Fan Header	1 Rear System Chassis Fan Header		
Front Control Panel/Speaker Header	Yes		
CMOS Battery Holder - Lithium	Yes		
Integrated Trusted Platform Module	Integrated TPM 1.2. The TPM module disabled where restricted by law, i.e. Russia.		
Power Supply Headers	Yes		
Power Switch, Power LED & Hard Drive LED Header	Yes		
Clear Password Jumper	Yes		
Keyboard/Mouse	USB or PS/2		
	400W Wide Ranging, Active PFC, 92% Efficient; (Note: 280W 90% Efficiency wide-ranging, active PFC Power Supply option available in some countries). The Z240 Tower 400W PSU Efficiency Report can be found at this link:		
Operating Voltage Range	90-269 VAC		
Operating Voltage Range Rated Voltage Range	90-269 VAC 100-240 VAC		



Range		
Rated Input Current	6A @ 100-240V	
	Typical: 444 btu/hr (112 kcal/hr) Maximum: 1484 btu/hr (374 kcal/hr)	
Power Supply Fan	80mm x 80mm x 25mm	4-wire PWM
ENERGY STAR [®] qualified (Config Dependent)	Yes	
CECP Compliant @ 220V	Yes	
FEMP Standby Power Compliant	Yes, with Wake-on-LAN	disabled: <2W in S5- Power Off
Built-in Self Test (BIST) LED	Yes	
Surge Tolerant Full Ranging Power Supply (withstands power surges up to 2000V)	Yes	
Hood Lock Header	Yes	
ErP Lot 6- Tier 1 Compliance @ 230V (<1W in S5- Power Off)	Yes	
ErP Lot 6- Tier 2 Compliance @ 230V (<0.5W in S5- Power Off)	Yes	
Declared Noise Emissions (Entry-level and High-end configurations)		
Environmental Requirements	Temperature	Operating: 40° to 95° F (5° to 35° C) Non-operating: -40° to 140° F (-40° to 60° C)
	Humidity	Operating: 8% to 85% RH, non-condensing Non-operating: 8% to 90% RH, non-condensing
	Maximum Altitude	Operating: 3,000 m (10,000 ft) Non-operating: 9,100 m (30,000 ft)
	Dynamic (new)	Shock Operating: ½-sine: 40g, 2-3ms Non-operating: ½-sine: 160 cm/s, 2-3ms (~100g) square: 422 cm/s, 20g
		Vibration Operating random: 0.5g (rms), 5-300 Hz Non-operating random: 2.0g (rms), 10-500 Hz
		NOTES: Values represent individual shock events and do not indicate repetitive shock events. Values do not indicate continuous vibration.
	Cooling	Above 1524 m (5,000 ft) altitude, maximum operating temperature is de- rated by 1.8° F (1° C) per 305 m (1000 ft) elevation increase

Physical Security and Serviceability	
Access Panel	Tool-less
	Includes system board and memory information



Optical Drive	Tool-less
Hard Drives	Tool-less
Expansion Cards	Tool-less
Processor Socket	Tool-less, except for the processor heatsink
Green User Touch Points	Yes, on tool-less internal chassis mechanisms
Color-coordinated Cables	
and Connectors	
Memory	Tool-less
System Board	Screw-In
Dual Color Power and HD LED on Front of Computer	Yes
Configuration Record SW	Yes
Over-Temp Warning on Screen	Yes
Restore CD/DVD Set	Consists of an operating system DVD (OSDVD) and a driver DVD (DRDVD). OSDVD restores the original operating system. DRDVD will provide all drivers for the system. The DRDVD may also contain applications that originally shipped with the system for optional installation. Applications can also be obtained from HP.com. OSDVD and DRDVD are orderable with the system and available from HP Support.
Dual Function Front	Yes, causes a fail-safe power off when held for 4 seconds
Power Switch	
Padlock Support	Yes (optional): Locks side cover and secures chassis from theft 0.22-in diameter padlock loop at rear of system
Cable Lock Support	Yes, Kensington Cable Lock (optional): Locks side cover and secures chassis from theft 3 mm x 7 mm slot at rear of system
Universal Chassis Clamp Lock Support	Yes (optional): Locks side cover and locks cables to chassis. Secures chassis from theft and allows multiple units to be chained together when used with optional cable Threaded feature at rear of system
Solenoid Lock and Hood Sensor	Yes (optional) The Solenoid Hood Lock eliminates the need for a physical key by making the chassis lockable through software and a password. You can also lock and unlock the chassis remotely over the network. The Sensor Kit detects when the access panel has been removed.
Rear Port Control Cover	Yes, locks rear IO cables to prevent cable theft
Serial, Parallel, USB, Audio, Network, Enable/Disable Port Control	Yes, enables or disables serial, USB, audio, and network ports
Removable Media Write/Boot Control	Yes, prevents ability to boot from removable media on supported devices (and can disable writes to media)
Power-On Password	Yes, prevents an unauthorized person from booting up the workstation
Setup Password	Yes, prevents an unauthorized person from changing the workstation configuration
3.3V Aux Power LED on System PCA	Yes
NIC LEDs (integrated) (Green & Amber)	Yes
CPUs and Heatsinks	A T-15 Torx or flat blade screwdriver is needed to remove the CPU heatsink before the CPU can be removed. CPU removal is tool-less
Power Supply Diagnostic LED	Yes



Front Power Button	Yes, ACPI multi-function	
Front Power LED	Yes, white (normal), red (fault)	
Front Hard Drive Activity LED	'es, white	
Front ODD Activity LED	Yes	
Internal Speaker	Yes	
System/Emergency ROM Flash Recovery	Recovers corrupted system BIOS.	
Cooling Solutions	Air cooled forced convection	
Power Supply Fans	92mm x 92mm x 25mm 4-wire PWM (non-serviceable)	
CPU Heatsink Fan	Mainstream (<=65W): 92 mm x 92 mm x 52.5 mm Performance (<=95W): 94mm x 100.2mm x 110mm	
Chassis Fan	92mm x 92mm x 25mm 4-wire PWM (non-serviceable)	
Memory Heatsink Fan	No	
HP PC Hardware Diagnostics UEFI	HP PC Hardware Diagnostics (UEFI) enables hardware level testing outside the operating system on many components. The diagnostics can be invoked by pressing F2 at POST, and is available as a download from HP Support.	
Access Panel Key Lock	No	
ACPI-Ready Hardware	 Advanced Configuration and Power Management Interface (ACPI). Allows the system to wake from a low power mode. Controls system power consumption, making it possible to place individual cards and peripherals in a low-power or powered-off state without affecting other elements of the system. 	
Integrated Chassis Handles	Rear Recessed Handle; optional Optical Bay Front Handle available.	
Power Supply	Requires T15 Torx or flat blade screwdriver	
PCI Card Retention	Yes, rear (all), middle (optional), front (full-length cards with extender)	
Flash ROM	Yes	
Diagnostic Power Switch LED on board	Yes	
Clear Password Jumper	Yes	
Clear CMOS Button	Yes	
CMOS Battery Holder	Yes	
DIMM Connectors	Yes	
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BIOS		
BIOS 32-bit Services	Standard BIOS 32-bit Service Directory Proposal v0.4	
PCI 3.0 Support	Full BIOS support for PCI Express through industry standard interfaces.	
АТАРІ	ATAPI Removable Media Device BIOS Specification Version 1.0.	
BBS	BIOS Boot Specification v1.01. Provides more control over how and from what devices the workstation will boot.	
WMI Support	WMI is Microsoft's implementation of Web-Based Enterprise Management (WBEM) for Windows. WMI is fully compliant with the Distributed Management Task Force (DMTF) Common Information Model (CIM) and WBEM specifications.	
BIOS Power On	Users can define a specific day-of-week and time for the system to power on.	
ROM Based Computer Setup Utility (F10)	Review and customize system configuration settings controlled by the BIOS.	
System/Emergency ROM Flash Recovery with Video	Recovers system BIOS in corrupted Flash ROM.	
Replicated Setup	Saves BIOS settings to USB flash device in human readable file. Repsetup.exe utility can then replicate these settings on machines being deployed without entering Computer Configuration Utility (F10 Setup).	
SMBIOS	System Management BIOS 2.7.1, for system management information.	
Boot Control	Disables the ability to boot from removable media on supported devices.	
Memory Change Alert	Alerts management console if memory is removed or changed.	
	 NORMAL - normal temperature ranges. ALERTED - excessive temperatures are detected. Raises a flag so action can be taken to avoid shutdown or provide for a smoother system shutdown. SHUTDOWN - excessive temperatures are encountered. Automatically shuts down the computer without warning before hardware component damage occurs. 	
Remote ROM Flash	Provides secure, fail-safe ROM image management from a central network console. Updates can be performed before starting the OS. Updates can be periodically scheduled.	
ACPI (Advanced Configuration and Power Management Interface)	Allows the system to enter and resume from low power modes (sleep states). Enables an operating system to control system power consumption based on the dynamic workload. Makes it possible to place individual cards and peripherals in a low-power or powered-off state without affecting other elements of the system. Supports ACPI 4.0 for full compatibility with 64-bit operating systems.	
Ownership Tag	A user-defined string stored in non-volatile memory that is displayed in the BIOS splash screen.	
Remote Wakeup/Remote Shutdown	System administrators can power on, restart, and power off a client computer from a remote location.	
ASF 2.0 Compliant	No.	
Instantly Available PC (Suspend to RAM - ACPI sleep state S3)	Allows for very low power consumption with quick resume time.	
Remote System Installation via F12 (PXE 2.1) (Remote Boot from Server)	Allows a new or existing system to boot over the network and download software, including the operating system.	



	available through an industry standard interface (SMBIOS) so that management SW applications can use and report this information.
System board revision level	Allows management SW to read revision level of the system board. Revision level is digitally encoded into the HW and cannot be modified.
Start-up Diagnostics (Power-on Self-Test)	Assesses system health at boot time with selectable levels of testing.
Auto Setup when new hardware installed	System automatically detects addition of new hardware.
Keyboard-less Operation	The system can be booted without a keyboard.
Localized ROM Setup	Common BIOS image supports System Configuration Utility (F10 Setup) menus in 12 languages with local keyboard mappings.
Asset Tag	Enables the user or IT administrator to set a unique tag string in non-volatile memory.
Per-slot Control	Allows I/O slot parameters (option ROM enable/disable) to be configured individually.
Adaptive Cooling	Control parameters are set according to detected hardware configuration for optimal acoustics.
Pre-boot Diagnostics	(Pre-video) critical errors are reported via beeps and blinks on the power LED.
Intel® Active Management Technology (AMT)	AMT 11.0; Allows workstation status to be monitored on a remote console
Digitally and Cryptographically Signed BIOS	Helps to prevent the installation of unauthorized versions of a BIOS (a rogue BIOS) from a virus, malware, or other code that could lead to compromised system security, data access, physical service, or even system board replacement.
Master Boot Record Protection	A feature in the HP BIOS that prevents changes and/or infections to the Master Boot Record. Useful in protecting from viruses
Boot Block Emergency Recovery Mode (BIOS Recovery)	The HP BIOS offers a write-protected boot block ROM that provides recovery from a failed flashing of the computer BIOS. This special recovery mode prevents the system from becoming unusable or "bricked" when a BIOS update is interrupted.
Industry Standard Specification Support	
Industry Standard	Revision Supported by the BIOS
UEFI Specification Revision	UEFI 2.4.0
ACPI	Advanced Configuration and Power Management Interface, Version 4.0
ASF	Alert Standard Format Specification, Version 2.0
ATA (IDE)	AT Attachment 6 with Packet Interface (ATA/ATAPI-6), Revision 3b
CD Boot	"El Torito" Bootable CD-ROM Format Specification Version 1.0
EDD	- Enhanced Disk Drive Specification Version 1.1 - BIOS Enhanced Disk Drive Specification Version 3.0
PCI	PCI Local Bus Specification, Revision 2.3 PCI Power Management Specification, Revision 1.1 PCI Firmware Specification, Revision 3.0
PCI Express	PCI Express Base Specification, Revision 2.0 PCI Express Base Specification, Revision 3.0
РММ	POST Memory Manager Specification, Version 1.01
SATA	- Serial ATA Specification, Revision 1.0a - Serial ATAII: Extensions to Serial ATA 1.0, Revision 1.0a - Serial ATAII Cables and Connectors Volume 2 Gold - SATA-IO SATA Revision 3.0 Specification
SPD	PC SDRAM Serial Presence Detect (SPD) Specification, Revision 1.2B
ТРМ	Trusted Computing Group TPM Specification Version 1.2



USB		USB
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Universal Serial Bus Revision 1.1 Specification Universal Serial Bus Revision 2.0 Specification

Universal Serial Bus Revision 3.0 Specification

Eco-Label Certifications	mental Responsibility This product is low halogen except for power cords, cables and peripherals. Service parts obtained after			
& Declarations	purchase may not be Low Halogen:			
	 ENERGY STAR[®] (energy-saving features available on selected configurations-Windows only) US Federal Energy Management Program (FEMP) 			
	 China Energy Conservation Program 			
	IT ECO declaration			
Batteries	The battery in this product complies with EU Directive 2006/66/EC			
	Battery size: CR2032 (coin cell) Battery type: Lithium Metal			
	The battery in this product does not contain:			
	Mercury greater than 5ppm by weight			
	Cadmium greater than 10ppm by weight			
	Lead greater than 40ppm by weight			
Restricted Material Usag	This product meets the material restrictions specified in HP's General Specification for the			
	Environment. http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf Hewlett-Packard is committed to compliance with all applicable environmental laws and regulations,			
	including the European Union Restriction of Hazardous Substances (RoHS) Directive. HP's goal is to			
	exceed compliance obligations by meeting the requirements of the RoHS Directive on a worldwide			
	basis.			
Low Halogen Statement	This product is low halogen except for power cords, cables and peripherals, as well as the following			
	customer-configurable internal components: Creative Recon3D PCIe Audio Card is not Low Halogen. Service parts obtained after purchase may not be Low Halogen.			
End-of-Life Management	Hewlett-Packard offers end-of-life HP product return and recycling programs in many geographic			
and Recycling	areas. To recycle your product, please go to: http://www.hp.com/recycle or contact your nearest HP			
	sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. This product is greater than 90% recyclable by weight when properly disposed of at end of life.			
Hewlett-Packard	For more information about HP's commitment to the environment:			
	Living Progress Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html			
Information				
	Eco-label certifications			
	http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html			
	ISO 14001 certificates:			
	http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html			
Additional Information	• This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive - 2002/96/EC.			
	 Plastic parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043. 			
	 This product is >90% recycle-able when properly disposed of at end of life EPEAT Gold registered in the U.S. EPEAT registration varies by country. See 			



Packaging	HP Workstation product packaging meets the HP General Specification for the Environment at http://www.hp.com/hpinfo/globalcitizenship/society/gen_specifications.html			
	Does not contain restricted substances listed in HP Standard 011-1 General Specification for the Environment			
	 Does not contain ozone-depleting substances (ODS) Does not contain heavy metals (lead, mercury, cadmium or hexavalent chromium) in excess of 100 ppm sum total for all heavy metals listed 			
	 Maximizes the use of post-consumer recycled content materials in packaging materials All packaging material is recyclable 			
	All packaging material is designed for ease of disassembly			
	 Reduced size and weight of packages to improve transportation fuel efficiency Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards formatting 			
Packaging Materials				
Internal	Cushions made from fabricated recycled expanded-polyethylene (EPE) or recycled expanded- polypropylene (EPP). May also be made from recycled molded paper-pulp (MPP).			
External	Carton made from corrugated fiberboard with at least 25% recycled content.			
Manageability				
Intel® Active Management Technology (AMT)	An advanced set of remote management features and functionality which provides network administrators the latest and most effective tools to remotely discover, heal, and protect networked client systems regardless of the system's health or power state. AMT 11.0 includes the following advanced management functions::			
	Power Management (on, off, standby, reset)			
	 Hardware/Software Inventory (includes BIOS and firmware revisions Hardware Alerting Agent Presence System Defense Filters 			
	 SOL (Serial Over LAN) ME Wake-on-LAN DASH 1.1 compliance 			
	 IPv6 Support Fast Call for Help - a client inside or outside the firewall may initiate a call for help via BIOS screen, periodic connections, or alert triggered connection Remote Scheduled Maintenance - pre-schedule when the PC connects to the IT or service provider console for maintenance. Remote PCs can get required patches, be inventoried, etc b 			
	 connecting to their IT console or Service Provider when it's convenient Remote Alerts - automatically alert IT or service provider if issues arise Access Monitor - Provides oversight into Intel[®] AMT actions to support security requirements 			

- PC Alarm Clock
- Protected Audio Video Path (PAVP)
- Microsoft NAP Support
- Host Base set-up and configuration
- Management Engine (ME) firmware roll back
- Enhanced KVM resolution (Up to 4K)

Intel® vPro™ Technology The HP Z240 workstations support Intel® vPro™ technology when purchased with a vPro™ technology capable CPU: Intel® Xeon® E3 processor family or 6th Generation Intel® Core i5/i7 processors with Intel® VT-d/VT-x and Intel® TXT technology



Remote Manageability Software Solutions	Visit: http://www.hp.com/go/easydeploy Visit: http://www.hp.com/go/ssm		
System Software Manager			
Service, Support, and Warranty	 Program to proactively communicate Product Change Notifications (PCNs) and CustomerAdvisories by email to customers, based on a user-defined profile. PCNs provide advance notification of hardware and software changes to be implemented in the factory providing time to plan for transition. Customer Advisories provide concise, effective problem resolution, greatly reducing the need to call technical support 		



Stable & Consistent Offerings

As part of its commitment to hardware, software, and solution innovation, HP is proud to introduce this breakthrough platform configuration stability to HP Workstation customers. HP Stable & Consistent Offerings are built on the foundation of a carefully chosen set of hardware and software designed and tested to work with all HP Z Workstation platforms through their end of life. These components and their corresponding HP Workstation platform compatibility are outlined in this section. HP Stable & Consistent Offerings are available worldwide to all HP Workstation customers—no special programs, no additional cost—no kidding. Simply select your hardware and software components when you customize your HP Workstation and be assured that you'll be able to buy that same configuration throughout the lifecycle of the product.

Processors	Product #	Offering	
	N2L03AV	Intel Xeon E3-1225v5 3.3 8M GT2 4C TWR	
	N2L06AV	Intel Xeon E3-1240v5 3.5 8M GTO 4C TWR	
	N2L04AV	Intel Xeon E3-1245v5 3.5 8M GT2 4C TWR	
Hard Drives	Product #	Offering	
	M6U81AV	500GB 7200 RPM SATA 1st HDD	
	M6U90AV	500GB 7200 RPM SATA 2nd HDD	
	M6U98AV	500GB 7200 RPM SATA 3rd HDD	
	M6U82AV	1TB 7200 RPM SATA 1st HDD	
	M6U91AV	1TB 7200 RPM SATA 2nd HDD	
	M6U99AV	1TB 7200 RPM SATA 3rd HDD	
Graphics	Product #	Offering	
-	M6Q36AV	NVIDIA NVS 510 2GB 1st GFX	
	M6Q40AV	NVIDIA Quadro K620 2GB 1st GFX	
	M6Q38AV	NVIDIA Quadro K2200 4GB 1st GFX	
	M6Q32AV	AMD FirePro W2100 2GB 1st GFX	
Memory	Product #	Offering	
	M6Q57AV	4GB DDR4-2133 ECC (1x4GB) RAM	
	M6Q58AV	8GB DDR4-2133 ECC (2x4GB) RAM	
	M6Q59AV	8GB DDR4-2133 ECC (1x8GB) RAM	
	M6Q60AV	16GB DDR4-2133 ECC (2x8GB) RAM	
	M6Q61AV	32GB DDR4-2133 ECC (4x8GB) RAM	
Optical and Removable	Product #	Offering	
Storage	L8S24AV	Slim SuperMulti DVDRW SATA 1st ODD	



Technical Specifications - Processors

Intel® Xeon® processor E3-1200 v5 family

Intel Xeon E3-1280 v5 3.7 2133 4C CPU Intel Xeon E3-1270 v5 3.6 2133 4C CPU Intel Xeon E3-1245 v5 3.5 2133 4C CPU Intel Xeon E3-1240 v5 3.5 2133 4C CPU Intel Xeon E3-1230 v5 3.4 2133 4C CPU Intel Xeon E3-1225 v5 3.3 2133 4C CPU

6th generation Intel[®] Core[™] processor family

Intel[®] Core[™] i7-6700 3.4 2133 4C CPU Intel[®] Core i7-6600 3.3 2133 4C CPU Intel[®] Core i7-6500 3.2 2133 4C CPU

6th generation Intel® Core™ i3/Pentium processor family

Intel Core i3-6300 3.8 2133 2C CPU Intel Core i3-6100 3.7 2133 2C CPU Intel Pentium G4400 3.3 2133 2C CPU



SATA Hard Drives for HP	500GB SATA 7200 rpm	Capacity	500GB	
Workstations	6Gb/s 3.5" HDD	Height	1 in; 2.54 cm	
		Width	Media Diameter	3.5 in; 8.9 cm
			Physical Size	4 in; 10.17 cm
		Interface	Serial ATA (6.0Gb/s), N	
		Synchronous Transfer Rate (Maximum)	Up to 600MB/s	
		Buffer	16MB	
		Seek Time (typical reads,	Single Track	2 ms
		includes controller overhead, including	Average Full Stroke	11 ms 21 ms
		settling)		21113
		Rotational Speed	7,200 rpm	
		Logical Blocks	976,773,168	-
		Operating Temperature	41° to 131° F (5° to 55°	C)
	1TB SATA 7200 rpm	Capacity	1 Terabyte (1000 GB)	
	6Gb/s 3.5" HDD	Height	1 in; 2.54 cm	
		Width	Media Diameter	3.5 in; 8.9 cm
			Physical Size	4 in; 10.17 cm
		Interface	Serial ATA (6.0Gb/s), N	
		Synchronous Transfer Rate (Maximum)	Up to 600 MB/s	
		Buffer	32MB	
		Seek Time (typical reads,	Single Track	2 ms
		includes controller	Average	11 ms
		overhead, including settling)	Full Stroke	21 ms
		Rotational Speed	7,200 rpm	
		Logical Blocks	1,953,525,168	
		Operating Temperature	41° to 131° F (5° to 55°	C)
	2.0TB SATA 7200 rpm	Capacity	2TB	
	6Gb/s 3.5" HDD	Height	1 in; 2.54 cm	
		Width	Media Diameter	3.5 in; 8.9 cm
			Physical Size	4 in; 10.17 cm
		Interface	Serial ATA (6.0 Gb/s), N	CQ Enabled
		Synchronous Transfer Rate (Maximum)	Up to 600MB/s	
		Buffer	64MB	
		Seek Time (typical reads,	Single Track	1.0 ms
		includes controller overhead, including	Average Full Stroke	11 ms 18 ms
		settling)		
		Rotational Speed	7,200 rpm	
		Logical Blocks	3,907,029,168	
		Operating Temperature	41° to 131° F (5° to 55°	()



3.0TB SATA 7200 rpm	Capacity	3.0TB	
6Gb/s 3.5" HDD	Height	1 in; 2.54 cm	
	Width	Media Diameter	3.5 in; 8.9 cm
		Physical Size	4.0 in; 10.17 cm
	Interface	Serial ATA (6.0Gb/s), N	CQ enabled
	Synchronous Transfer Rate (Maximum)	Up to 6.0 Gb/s	
	Buffer	64MB	
	Seek Time (typical reads,	Single Track	0.6 ms
	includes controller	Average	11 ms
	overhead, including settling)	Full Stroke	Not specified
	Rotational Speed	7200 rpm	
	Operating Temperature	41° to 140° F (5° to 60°	° C)
4TB SATA 7200 rpm	Capacity	4TB	
6Gb/s 3.5" HDD	Height	1 in; 2.54 cm	
	Width	Media Diameter	3.5 in; 8.9 cm
		Physical Size	4 in; 10.17 cm
	Interface	Serial ATA (6Gb/s)	
	Synchronous Transfer Rate (Maximum)	Up to 600MB/s	
	Buffer	32MB	
	Seek Time (typical reads, includes controller	Single Track	0.7ms
		Average	8.5ms
	overhead, including settling)	Full Stroke	15.7ms
	Rotational Speed	7,200 rpm	
	Operating Temperature	5° to 60° F (-15° to 15.	56° C)
500GB SATA 7.2K SED SF	F Canacity	500GB	
HDD	Height	0.275 in; 0.7 cm	
	Width	Media Diameter	2.5 in; 6.36 cm
		Physical Size	2.75 in; 6.99 cm
	Interface	Up to 600MB/s	2.75 m, 0.55 cm
	Synchronous Transfer Rate (Maximum)	128MB	
	Buffer	64MB	
	Seek Time (typical reads,	-	1ms
	includes controller	Average	4.2ms
	overhead, including	Full Stroke	25ms (typical)
	settling)	- 411 JU VNC	
	Rotational Speed	7,200 rpm	
	Operating Temperature	32° to 140° F (0° to 60°	° C)

HP Z240 Tower Workstation

	1TB SATA 7200 rpm 8GB 3.5" SSHD (hybrid)	Capacity Height	1TB 1 in; 2.54 cm	
	···· ···· ····	Width	Media Diameter	3.5 in; 8.9 cm
		width	Physical Size	4 in; 10.17 cm
		Interface	6Gb/s SATA	
		Synchronous Transfer Rate (Maximum)	Up to 600MB/s	
		Buffer	64MB standard HDD ca	che buffer
		Cache	8GB NAND flash	
		Rotational Speed	7,200 rpm	
		Operating Temperature	32° to 140° F (0° to 60°	C)
		6		
HP Solid State Drives (SSDs) for Workstations	HP 256GB SATA 6Gb/s SSD	Capacity	256GB	
		Height Interface	0.28 in; 0.7 cm	
		Synchronous Transfer	SATA 6Gb/s	atial Doad)
		Rate (Maximum)	Up to 500MB/s (Sequei	
		Operating Temperature	32° to 158° F (0° to 70°	, C)
	HP 256GB SATA 6Gb/s SED Opal 2 SSD	Capacity	256GB	
		Height	0.28 in; 0.7 cm	
		Width	Physical Size	
		Interface	6Gb/s SATA	
		Synchronous Transfer Rate (Maximum)	Up to 550MB/s (Sequei	ntial Read)
		Operating Temperature	32° to 158° F (0° to 70°	° C)
	HP 512 GB SATA 6Gb/s	Capacity	512GB	
	SSD	Height	0.28 in; 0.7 cm	
		Width	Physical Size	2.5 in; 6.36 cm
		Interface	SATA 6Gb/s	
		Synchronous Transfer Rate (Maximum)	Up to 550MB/s (Sequer	ntial Read)
		Operating Temperature	32° to 158° F (0° to 70°	C)
	HP 1TB SATA 6Gb/s SSD	Capacity	1TB	
		Height	0.28 in; 0.7 cm	
		Width	Physical Size	2.5 in; 6.36 cm
		Interface	6Gb/s SATA	
		Synchronous Transfer Rate (Maximum)	Up to 500MB/s (Sequer	ntial Read)
		Operating Temperature	32° to 158° F (0° to 70°	C)
PCIe SSDs for HP	HP Z Turbo Drive G2	Capacity	128GB	



Workstations	128GB SSD	Interface Operating Temperature	PCI Express 3.0 x4 electrical x4 physical 32° to 158° F (0° to 70° C)
	HP Z Turbo Drive G2 256GB SSD	Capacity Interface Operating Temperature	256GB PCI Express 3.0 x4 electrical x4 physical 32° to 158° F (0° to 70° C)
	HP Z Turbo Drive G2 512GB SSD	Capacity Interface Operating Temperature	512GB PCI Express 3.0 x4 electrical x4 physical 32° to 158° F (0° to 70° C)



Integrated Intel® HD Graphics (Z240)	Form Factor	Integrated in select Intel® Xeon® E3, Intel® Core™ i7, and Intel® Core™ i5 processors.
	Graphics Controller	Check specific platform specifications for selections. Intel® HD Graphics
	Memory	Unified Memory Architecture (UMA) frame buffer. Graphics memory is shared with system memory. Size selectable between 64 MB to 512 MB via BIOS setting. Default size is 64 MB. Additional memory is allocated for graphics as needed using Intel's Dynamic Video Memory Technology (Intel DVMT 5.0), to provide an optimal balance between graphics and system memory use.
	Connectors	Check system platform specifications where Intel [®] HD Graphics are available.
	Maximum Resolution	Display Port: 2560 x 1600 DVI: 1920x1200 VGA: 2048x1536
		NOTE: For DVI and VGA outputs, separate adapters may be required.
	Shading Architecture	Shader Model 5.0
	Supported Graphics APIs	OpenGL 4.0 DirectX 11.1
	Available Graphics Drivers	Windows 10 Windows 7
NVIDIA® NVS™ 310 1GB Graphics	Form Factor	Low Profile: 2.713 inches in height × 6.150 inches in length Weight: ~142 grams
	Graphics Controller	NVIDIA [®] NVS [™] 310 GPU: GF119-825
	Bus Type	PCI Express x16, 2.0 compliant
	Memory	Size: 1GBB DDR3 Clock: 875Mhz Memory Bandwidth: 14GB/s
	Connectors	2 x DisplayPort 1.2
	Maximum Resolution	Up to 2560 x 1600 (digital display) per display.
	Image Quality Features	The following video formats are supported:
		 MPEG2 MPEG4 Part 2 Advanced Simple Profile H.264 SVC codec support Support for 3D Blu Ray VC1 DivX version 3.11 and later MVC A full range of video resolutions are supported including 1080p, 1080i, 720p, 480p and 480i. The NVS [™] 310 GPU provides hardware acceleration for the computationally intensive parts of video processing, as well as provides improved video playback capade via factor decade and transcende



provides improved video playback speeds via faster decode and transcode.

Display Output

Up to 2 displays in the following configurations:

DisplayPort output:

- Drives two DisplayPort enabled digital display at resolutions up to 2560 × 1600 at 60 Hz with reduced blanking, when connected natively using the 2 DisplayPort connectors on the NVS[™] 310 graphics card
- Supports 2 monitors up to resolution of 1920 × 1200 at 60 Hz with reduced blanking using DisplayPort 1.2 multi stream topology technology.

DVI-D output:

- Drives two digital display at resolutions up to 1920 × 1200 at 60 Hz with reduced blanking using DisplayPort to DVI-D single-link cable adaptors
- Drives two digital display at resolutions up to 2560 × 1600 at 60 Hz with reduced blanking using DisplayPort to DVI-D dual-link cable adaptors

HDMI output:

 NVS™ 310 is capable of driving two high definition (HD) panels up to resolutions of 1920 × 1080P at 60 Hz using DisplayPort to HDMI cable adaptors

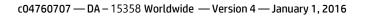
VGA display output:

• Drives two analog display at resolutions up to 1920 × 1200 at 60 Hz using DisplayPort to VGA cable adaptors

Shading Architecture Supported Graphics APIs Available Graphics Drivers	Shader Model 5.0 DX11, OpenGL 4.1 Windows 8.1 Windows 8 Windows 7 Professional (64-bit and 32-bit) Windows XP Professional (64-bit and 32-bit) Red Hat® Enterprise Linux® (RHEL) SUSE Linux® Enterprise Desktop 11 (64-bit and 32-bit) HP qualified drivers may be preloaded or the latest HP qualified drivers are available from the HP support Web site: http://welcome.hp.com/country/us/en/support.html
Power Consumption Note	 SUSE Linux® Enterprise drivers may also be obtained from: ftp://download.nvidia.com/novell or http://www.nvidia.com 19.5 Watts 1. The thermal solution used on this card is an active fan heatsink. 2. Factory configured NVS 310 graphics card have no cable adpaters included. Adapters must be ordered separately. 3. Option kit NVS 310 includes 2 DP to DVI-D cable adapters.



		4. Configurations of three NVS 310 graphics cards in HP Z440 Workstation require the HP Z440 Fan and Front Card Guide Kit, configurable from the factory (CTO PN: G8T99AV) or as an Aftermarket Option (AMO PN: J9P80AA).
NVIDIA® NVS™ 315 1GB Graphics (for HP Workstations)	Form Factor	Low Profile: 2.713 inches in height × 5.7 inches in length Weight: ~142 grams
	Graphics Controller	NVIDIA NVS 315 (using GF119-825 GPU) Number of Cores: 48 CUDA cores Max. Power: 19.3W Cooling Solution: Active fan heatsink
	Bus Type	PCI Express x16, 2.0 compliant
	Memory	Size: 1GB DDR3 Clock: 875Mhz Memory Bandwidth: 14GB/s
	Connectors	DMS-59 output Cables included: - For CTO: DMS-59 to DVI cable - For AMO: DMS-59 to DVI cable and DMS-59 to VGA cable
	Maximum Resolution	Maximum number of displays supported: 2
		Maximum Resolution Support: - DMS-59 to VGA: 2048 x 1536 @ 85Hz - DMS-59 to DVI: 1980 x 1200 @ 60Hz - DMS-59 to DP: 2560 x 1600 @ 60Hz
	Image Quality Features	See Display Output section.
		The following video formats are supported: - MPEG2 - MPEG4 Part 2 Advanced Simple Profile - H.264 SVC codec support - Support for 3D Blu Ray - VC1 - DivX version 3.11 or later A full range of video resolutions are supported including 1080p, 1080i, 720p, 480p and 480i. The NVS 315 GPU provides hardware acceleration for the computationally intensive parts of video processing, as well as
	Display Output	provides improved video playback speeds via faster decode and transcode. Up to 2 displays using one of the following DMS-59 cables: DMS-59 to DVI DMS-59 to VGA DMS-59 to DP
		DisplayPort output: ● Drives two DisplayPort enabled digital displays at resolutions up to 2560





•	•	
		× 1600 at 60 Hz with reduced blanking, when connected via the DMS-59 to DP adapter.
		DVI-D output: • Drives two digital display at resolutions up to 1920 × 1200 at 60 Hz with reduced blanking using DMS-59 to DVI-D single-link cable adaptor
		VGA display output: • Drives two analog display at resolutions up to 2048 × 1536 at 85 Hz using DMS-59 to VGA cable adaptor.
	Shading Architecture	Shader Model 5.0
	Supported Graphics APIs	
	Available Graphics Drivers	Windows 8.1 Windows 8 Microsoft Windows 7 Professional (64-bit and 32-bit) Microsoft Windows XP Professional (64-bit and 32-bit) Red Hat Enterprise Linux(RHEL) SUSE Linux Enterprise Desktop 11 (64-bit and 32-bit)
		HP qualified drivers may be preloaded or the latest HP qualified drivers are available from the HP support Web site: http://welcome.hp.com/country/us/en/support.html
		SUSE Linux Enterprise drivers may also be obtained from: ftp://download.nvidia.com/novell or http://www.nvidia.com
	Notes	 The thermal solution used on this card is an active fan heatsink. Factory configured graphics card includes DMS-59 to DVI cable. Option kit graphics card includes DMS-59 to DVI and DMS-59 to VGA cables (one each). Configurations of three NVS 315 graphics cards in HP Z440 Workstation require the HP Z440 Fan and Front Card Guide Kit, configurable from the factory (CTO PN: G8T99AV) or as an Aftermarket Option (AMO PN: J9P80AA).
NVIDIA® NVS™ 510 2GB	Form Factor	Low Profile, 2.713 inches × 6.3 inches, single slot
Graphics	Graphics Controller	NVS™ 510 GPU Core Clock: 797 Mhz Memory Clock: 891 Mhz CUDA® Cores: 192
	Bus Type	PCI Express x16, Generation 2.0
	Memory	2GB DDR3
	Connectors	Four mini-DisplayPort. Four mini-DisplayPort to DisplayPort adapters included. (DisplayPort to DVI-D, DisplayPort to VGA, DisplayPort to HDMI, and DisplayPort to Dual-Link DVI adapters available as separate accessories)
	Maximum Resolution	Mini-DisplayPort connectors support ultra-high-resolution panels (up to 3840 x 2160 @ 60Hz)
		NOTE: This card supports up to four displays. For Windows XP, only 2 active displays are supported.



	Image Quality Features	10-bit internal display processing, including hardware support for 10-bit scan-out
	Display Output	DisplayPort with Multi-Stream Technology (MST) and High Bit Rate 2 (HBR2) support.
		Digital Display Support
		 DisplayPort Output Drives four DisplayPort enabled digital display at resolutions up to 3840 × 2160 at 60 Hz with reduced blanking, when connected natively using the 4 DisplayPort connectors on the NVS[™] 510 graphics card. DisplayPort Multi-Stream Topology (MST) Technology: Supports various combinations of display resolutions and number of displays when using DisplayPort multi stream topology technology - up to a maximum of 4 monitors at a resolution of 1920 × 1200 at 60 Hz with reduced blanking.
		 2. DVI-D Output Drives four digital displays at resolutions up to 1920 × 1200 at 60 Hz with reduced blanking using DisplayPort to DVI-D single-link cable adaptors. Drives four digital displays at resolutions up to 2560× 1600 at 60 Hz with reduced blanking using DisplayPort to DVI-D dual-link cable adaptors.
		3. HDMI Output - The NVS™ 510 graphics board is capable of driving four high definition (HD) panels up to resolutions of 1920 × 1080P at 60 Hz using DisplayPort to HDMI cable adaptors.
		Analog Display Support
		1. VGA display output - Drives four analog displays at resolutions up to 1920 × 1200 at 60 Hz using DisplayPort to VGA cable adaptors.
	Supported Graphics APIs	Full Microsoft DirectX 11, Shader Model 5.0 support Full OpenGL 4.3 support
	Available Graphics Drivers	Windows 7 Professional (64-bit and 32-bit) Windows XP Professional (64-bit and 32-bit) Red Hat [®] Enterprise Linux [®] (RHEL) 6 Desktop/Workstation SUSE Linux [®] Enterprise Desktop 11 (64-bit and 32-bit)
		HP qualified drivers may be preloaded or available from the HP support Web site:
		http://welcome.hp.com/country/us/en/support.html
	Power Consumption	33.4 Watts
	Note	Heatsink cooler design is active.
AMD FirePro™ W2100 2GB Graphics	Form Factor	Low Profile, half length (full-height bracket included)
	Graphics Controller	AMD FirePro™ W2100 professional graphics based on Oland GPU. GPU: 320 Stream Processors organized into 5 Compute Units GPU Frequency: 630Mhz Power: 26W Cooling: Active



Bus Type	PCI Express® x8, Generation 3.0
Memory	2GB DDR3 memory Memory Bandwidth: up to 28.8 GB/s Memory Width: 128 bit
Connectors	2x Display Port 1.2 connectors
	Factory Configured: No video cable adapter included After market option kit: No video cable adapter included
	Additional DisplayPort-to-VGA or DisplayPort-to-DVI adapters are available as Factory Configuration or Option Kit accessories.
Maximum Resolution	DisplayPort 1.2: - up to 4096x2160 x 24 bpp @ 60Hz
	Dual Link DVI(I) (requires adapter cable): - up to 2560 x 1600 x 32 bpp @ 60Hz
	Single Link-DVI(I)(requires adapter cable): - up to 1920 x 1200 x 32 bpp @ 60Hz
	VGA (requires adapter cable): - up to 1920 x 1200 x 32 bpp @ 60Hz
Image Quality Features	Advanced support for 8-bit, 10-bit, and 16-bit per RGB color component. High bandwidth scaler for high quality up and downscaling.
Display Output	2 x DisplayPort® 1.2a Maximum number of displays: 2
Shading Architecture	Shader Model 5.0
Supported Graphics APIs	OpenCL™ 1.2, DirectX [®] 11.2/12, OpenGL 4.4
	OpenGL 4.4 support with driver release 14.301.xxx OpenCL 1.2 conformance expected with drive release 14.301.xxx
Available Graphics Drivers	Windows 8.1 (64-bit and 32-bit) Windows 7 (64-bit and 32-bit) Linux®
	HP qualified drivers may be preloaded or available from the HP support Web site: http://welcome.hp.com/country/us/en/support.html
Notes	Depending on the card model, native DisplayPort [™] connectors and/or certified DisplayPort [™] active or passive adapters to convert your monitor's native input to your card's DisplayPort [™] or Mini-DisplayPort [™] connector(s) may be required. See www.amd.com/firepro for details.



NVIDIA® Quadro® K420 2GB Graphics	Form Factor	Low Profile, single slot Dimensions: 2.713 inches × 6.3 inches Cooling: Active
	Graphics Controller	NVIDIA® Quadro® K420 GPU: GK107 with 192 CUDA® cores Power: 41W
	Bus Type	PCI Express x16, 2.0 compliant
	Memory	Size: 2GB DDR3 Clock: 891MHz Memory Bandwidth: 29GB/s Memory Width: 128 bit
	Connectors	One dual-link DVI-I connector One DisplayPort connector
		Factory Configured: No video cable adapter included After market option kit: One DP-to-DVI adapter included with card
		Additional DisplayPort-to-VGA or DisplayPort-to-DVI adapters are available as Factory Configuration or Option Kit accessories.
	Maximum Resolution	VGA (via adapter cable): - 2048 × 1536 × 32 bpp at 85 Hz
		Dual-link DVI - 2560 × 1600 × 32 bpp at 60 Hz (reduced blanking)
		Single-link DVI - 1920 × 1200 × 32 bpp at 60 Hz (reduced blanking)
		DisplayPort 1.2 - 3840 × 2160 × 30 bpp at 60 Hz
	Image Quality Features	12-bit internal display pipeline (hardware support for 12-bit scanout on supported panels, applications and connection)
		Stereoscopic 3D display support including NVIDIA® 3D Vision™ technology, 3D DLP, Interleaved, and passive stereo
	Display Output	Maximum number of displays: - 2 direct attached monitors - 4 using DP 1.2a with MST and HBR2 enabled monitors
		Maximum number of DisplayPort displays possible (may require MST and/or HBR2): - 4 1920x1200 - 2 2560x1600 - 1 3840x2160

Maximum number of monitors across all available Quadro® K420 outputs is



		4.
	Shading Architecture	Shader Model 5.0
	Supported Graphics APIs	DX11, OpenGL 4.4 Programming support for CUDA® C, CUDA® C++, DirectCompute 5.0, OpenCL, Python, and Fortran
	Available Graphics Drivers	Windows® 8.1 Windows 8 Windows 7 Linux® - Full OpenGL implementation, complete with NVIDIA® and ARB extensions
	Notes	 Factory configured Quadro K420 does not include any video adapters. Adapters must be ordered separately. Option kit Quadro K420 includes one DP to DVI-D adapter. Full Height Profile bracket installed. Low Profile bracket included in after market kit.
NVIDIA® Quadro® K620 2GB Graphics	Form Factor	Dimensions: 2.713" H x 6.3" L Single Slot, Low Profile Cooling: Active Weight: 133 grams
	Graphics Controller	NVIDIA® Quadro® K620 GPU: GM107 GPU with 384 CUDA® cores Power: 45 Watts
	Bus Type	PCI Express 2.0 x16
	Memory	Size: 2GB GDDR3 Memory Bandwidth: 29 GB/s Memory Width: 128-bit
	Connectors	1 DL-DVI(I) 1 DisplayPort
		Factory Configured: No video cable adapter included After market option kit: One DP-to-DVI adapter included with card
		Additional DVI-to-VGA, DisplayPort-to-VGA or DisplayPort-to-DVI adapters are available as Factory Configuration or Option Kit accessories.
	Maximum Resolution	DisplayPort 1.2: - up to 4096x2160 x 30 bpp @ 60Hz - supports High Bit Rate 2 (HBR2) and Multi-Stream Transport (MST)
		Dual Link DVI(I) output: - up to 2560 x 1600 x 32 bpp @ 60Hz
		Single Link-DVI(I) output: - up to 1920 x 1200 x 32 bpp @ 60Hz



AMD FirePro™ W5100 4GB Graphics	Form Factor Graphics Controller	Full height, single slot (6.75" X 4.376") AMD FirePro W5100 graphics
	Notes	 HP qualified drivers may be preloaded or available from the HP support Web site: http://welcome.hp.com/country/us/en/support.html 1. Factory configured Quadro K620 does not include a video cable adapter. Video cable adapters must be ordered separately. 2. Quadro K620 offered as an Option Kit (AMO) includes one DP-to- DVI video cable adapter. Additonal cables must be ordered separately. 3. Full Height Profile bracket installed. Low Profile bracket included in after-market kit.
	Available Graphics Drivers	Windows® 8.1 Windows 8 Windows 7 Linux® - Full OpenGL implementation, complete with NVIDIA® and ARB extensions
	Supported Graphics APIs	OpenGL 4.4 DirectX 11 API support includes: CUDA® C, CUDA® C++, DirectCompute 5.0, OpenCL, Java, Python, and Fortran
	Shading Architecture	Maximum number of monitors across all available Quadro® K620 outputs is 4. Shader Model 5.0
		Maximum number of DisplayPort displays possible (may require MST and/or HBR2): - 4 1920x1200 - 2 2560x1600 - 1 4096x2160
	Display Output	Maximum number of displays: - 2 direct attached monitors - 4 using DP 1.2a with MST and HBR2 enabled monitors
	Image Quality Features	12-bit internal display pipeline (hardware support for 12-bit scanout on supported panels, applications and connection) Stereoscopic 3D display support including NVIDIA® 3D Vision™ technology, 3D DLP, Interleaved, and passive stereo
		VGA (via adapter cable): - 2048 × 1536 × 32 bpp at 85 Hz



	GPU Frequency: 930Mhz GPU: 768 Stream Processors organized into 12 Compute Units Power: <75 Watts Cooling: Active
Bus Type	PCI Express® x16, Generation 3.0
Memory	4GB GDDR5 memory Memory Bandwidth: up to 96 GB/s Memory Width: 128 bit
Connectors	4x Display Port 1.2 connectors with HBR2 and MST support.
	Factory Configured: No video cable adapter included After market option kit: No video cable adapter included
	Additional DisplayPort-to-VGA or DisplayPort-to-DVI adapters are available as Factory Configuration or Option Kit accessories.
Maximum Resolution	DisplayPort: - 4096x2160 @24bpp 60Hz
	Dual Link DVI: - 2560x1600 (requires DP to DL-DVI adapter)
	Single Link DVI: - 1920x1200 (requires DP to DVI adapter)
	VGA: - 1920x1200 (requires DP to VGA adapter)
Image Quality Features	Advanced support for 8-bit, 10-bit, and 16-bit per RGB color component. High bandwidth scaler for high quality up and downscaling
Display Output	Max number of monitors supported using DisplayPort 1.2a: - 4 direct attached monitors - 6 using DP 1.2a with MST and HBR2 enabled monitors
	Monitor chaining from a single DisplayPort (subject to a max of 6 total monitors across all outputs, requires use of DisplayPort enabled monitors supporting MST and HBR2): - one 4096x2160 display - two 2560x1600 displays - four 1920x1200 displays
Shading Architecture	Shader Model 5.0
Supported Graphics APIs	OpenGL 4.4 OpenCL 1.2 and 2.0 DirectX 11.2 / 12 AMD Mantle
Available Graphics	Windows 8.1 / 8 (64-bit and 32-bit)



	Drivers	Windows® 7 (64-bit and 32-bit) Linux		
		HP qualified drivers may be preloaded or available from the HP support Web site: http://welcome.hp.com/country/us/en/support.html		
	Notes	 AMD Eyefinity technology supports up to six DisplayPort[™] monitors on an enabled graphics card. Supported display quantity, type and resolution vary by model and board design; confirm specifications with manufacturer before purchase. To enable more than two displays, or multiple displays from a single output, additional hardware such as DisplayPort-ready monitors or DisplayPort 1.2 MST-enabled hubs may be required. A maximum of two active adapters is recommended for consumer systems. See http://www.amd.com/eyefinityfaq for full details. Configurations of two FirePro W5100 graphics cards in HP Z440 Workstation require the HP Z440 Fan and Front Card Guide Kit, configurable from the factory (CTO PN: G8T99AV) or as an Aftermarket Option (AMO PN: J9P80AA). 		
NVIDIA® Quadro® K2200 4GB Graphics	Form Factor	Dimensions: 4.376" H x 7.97" L Single Slot, Full Height Cooling: Active Weight: 240 grams		
	Graphics Controller	NVIDIA® Quadro® K2200 Graphics Card GPU: GM107 with 640 CUDA® cores Power: 68 Watts		
	Bus Type	PCI Express 2.0 x16		
	Memory	Size: 4GB GDDR5 Memory Bandwidth: 80 GB/s Memory Width: 128-bit		
	Connectors	1 DL-DVI(I) 2 DisplayPort 1.2a		
		Factory Configured Option: No video cable adapter included Option Kit: One DP-to-DVI adapter included with card		
		Additional DVI-to-VGA, DisplayPort-to-VGA or DisplayPort-to-DVI adapters are available as accessories		
	Maximum Resolution	DisplayPort: - up to 4096 x 2160 x 30 bpp @ 60Hz - supports High Bit Rate 2 (HBR2) and Multi-Stream Transport (MST)		
		DL-DVI(I) output: - up to 2560 x 1600 x 32 bpp @ 60Hz		
		Single Link-DVI(I) output: - up to 1920 x 1200 x 32 bpp @ 60Hz		



	VGA (via adapter cable): - 2048 × 1536 × 32 bpp at 85 Hz	
Image Quality Features	12-bit internal display pipeline (hardware support for 12-bit scanout on supported panels, applications and connection)	
	Stereoscopic 3D display support including NVIDIA® 3D Vision™ technology, 3D DLP, Interleaved, and passive stereo	
Display Output	Maximum number of displays - 3 direct attached monitors - 4 using DP 1.2a with MST and HBR2 enabled monitors	
	Maximum number of DisplayPort displays possible (may require MST and/or HBR2): - 4 1920x1200 - 4 2560x1600 - 2 4096x2160	
	Maximum number of monitors across all available Quadro K2200 outputs is 4.	
Shading Architecture	Shader Model 5.0	
Supported Graphics APIs	OpenGL 4.4 DirectX 11.1	
	API support includes: CUDA® C, CUDA® C++, DirectCompute 5.0, OpenCL, Java, Python, and Fortran	
Available Graphics Drivers	Windows® 8.1 Windows 8 Windows 7 Linux® - Full OpenGL implementation, complete with NVIDIA® and ARB extensions	
	HP qualified drivers may be preloaded or available from the HP support Web site: http://welcome.hp.com/country/us/en/support.html	
Notes	 Quadro K2200 offered as Factory Configured Option does not include a video cable adapter. Video cable adapters must be ordered separately. Quadro K2200 offered as an Option Kit includes one DP-to-DVI video cable adapter. Additional cables must be ordered 	
	 separately. A total maximum of 4 active monitors are supported across all display output types. This may be accomplished by using daisy chained DisplayPort 1.2 displays (displays must support MST and HBR2). 	



AMD FirePro™ W7100 8GB Graphics	Form Factor	Full height, single slot (9.5" X 4.376")
	Graphics Controller	AMD FirePro™ W7100 graphics GPU: 1792 Stream Processors organized into 28 Compute Units Power: <75 Watts Cooling: Active
	Bus Type	PCI Express® x16, Generation 3.0
	Memory	8GB GDDR5 memory Memory Bandwidth: up to 176 GB/s Memory Width: 256 bit
	Connectors	4x Display Port 1.2a connectors with HBR2 and MST support.
		Factory Configured: No video cable adapter included After market option kit: No video cable adapter included
		Additional DisplayPort-to-VGA or DisplayPort-to-DVI adapters are available as Factory Configuration or Option Kit accessories.
	Maximum Resolution	DisplayPort: - 4096x2160 @24bpp 60Hz
		Dual Link DVI: - 2560x1600 (requires DP to DL-DVI adapter)
		Single Link DVI: - 1920x1200 (requires DP to DVI adapter)
		VGA: - 1920x1200 (requires DP to VGA adapter)
	Image Quality Features	Advanced support for 8-bit, 10-bit, and 16-bit per RGB color component. High bandwidth scaler for high quality up and downscaling
	Display Output	Max number of monitors supported using DisplayPort 1.2a: - 4 direct attached monitors
		- 6 using DP 1.2a with MST and HBR2 enabled monitors
		Monitor chaining from a single DisplayPort (subject to a max of 6 total monitors across all outputs, requires use of DisplayPort enabled monitors supporting MST and HBR2): - one 4096x2160 display - two 2560x1600 displays - four 1920x1200 displays
	Shading Architecture	Shader Model 5.0
	Supported Graphics APIs	OpenGL 4.4 OpenCL 1.2 and 2.0 DirectX 11.2 / 12 AMD Mantle



	Available Graphics Drivers	Windows 8.1 / 8 (64-bit and 32-bit) Windows® 7 (64-bit and 32-bit) Linux®	
		HP qualified drivers may be preloaded or available from the HP support Web site: http://welcome.hp.com/country/us/en/support.html	
Note	 AMD Eyefinity technology supports up to six DisplayPort[™] monitors on an enabled graphics card. Supported display quantity, type and resolution vary by model and board design; confirm specifications with manufacturer before purchase. To enable more than two displays, or multiple displays from a single output, additional hardware such as DisplayPort-ready monitors or DisplayPort 1.2 MST-enabled hubs may be required. See www.amd.com/eyefinityfaq for full details. OpenGL 4.4 support available with driver 14.301.xxx or later. OpenCL 2.0 support planned in driver updates for early 2015. For HP Z440 Workstation configurations, the HP Z4 Fan and Front Card Guide Kit, which is available both CTO (G8T99AV) and AMO (J9P80AA), is required. 		
NVIDIA® Quadro® M4000 8GB Graphics	Form Factor	Dimensions: 4.4" H x 9.5" L Single Slot, Full Height Cooling: Active Weight: 475 grams (without extender)	
	Graphics Controller	NVIDIA Quadro M4000 GPU: GM204 with 1664 CUDA cores Power: 120 Watts	
	Bus Type	PCI Express 3.0 x16	
	Memory	Size: 8GB GDDR5 Memory Bandwidth: 192 GB/s Memory Width: 256-bit	
	Connectors	4 DisplayPort 1.2a Factory configured Option: No video cable adapter included After market option kit: No video cable adapter included	
		Additional DisplayPort-to-VGA or DisplayPort-to-DVI adapters are available as accessories	
	Maximum Resolution	DisplayPort: - single DisplayPort up to 4096 x 2160 x 30 bpp @ 60Hz - supports High Bit Rate 2 (HBR2) and Multi-Stream Transport (MST)	
		DL-DVI(I) output: - up to 2560 x 1600 x 32 bpp @ 60Hz	
		Single Link-DVI(I) output:	



Technical Specifications - Graphics		
	- up to 1920 x 1200 x 32 bpp @ 60Hz	
	VGA (via adapter cable): - 2048 × 1536 × 32 bpp at 85 Hz	
Image Quality Features	12-bit internal display pipeline (hardware support for 12-bit scanout on supported panels, applications and connection)	
	NVIDIA® 3D Vision™ technology, 3D DLP, Interleaved, and other 3D stereo format support	
	Full OpenGL quad buffered stereo support	
	Support for large-scale, ultra-high resolution visualization using the NVIDIA® SVS platform which includes NVIDIA® Mosaic, NVIDIA® Sync and NVIDIA® Warp/Blend technologies	
Display Output	Maximum number of displays - 4 direct attached monitors - 4 using DP 1.2a with MST and HBR2 enabled monitors	
	Maximum number of DisplayPort displays possible: - 4 1920x1200 - 4 2560x1600	
	- 4 4096x2160 - 2 5120x2880 (requires dual DP input capable 5k displays)	
	Maximum number of monitors across all available Quadro M4000 outputs is 4.	
Shading Architecture	Shader Model 5.0	
Supported Graphics APIs	OpenGL 4.5 DirectX 12	
	API support includes: CUDA C, CUDA C++, DirectCompute 5.0, OpenCL, Java, Python, and Fortran	
Available Graphics Drivers	Microsoft Windows 10 Microsoft Windows 8.1 Microsoft Windows 8	
	Microsoft Windows 7 Linux - Full OpenGL implementation, complete with NVIDIA and ARB extensions	
	HP qualified drivers may be preloaded or available from the HP support Web site: http://welcome.hp.com/country/us/en/support.html	
Notes	1. Configurations using the Quadro M4000 graphics card in HP Z440 Workstation require the HP Z440 Fan and Front Card Guide Kit, configurable from the factory (CTO PN: G8T99AV) or as an Aftermarket Option (AMO PN: J9P80AA).	

HP 9.5mm Slim	Description	9.5mm height, tray-load		
SuperMulti DVD Writer	Mounting Orientation	Either horizontal or vertical		
	Interface Type	SATA/ATAPI		
	Dimensions (WxHxD)	128 x 9.5 x 127mm		
	Supported Media Types	DVD-RAM		
		DVD+R		
		DVD+RW		
		DVD+R DL DVD-R DL		
		DVD-R		
		DVD-RW		
		CD-R		
	Disc Capacity	CD-RW DVD-ROM	8.5 GB DL or 4.7 GB standard	
	Access Times	Full Stroke DVD	< 200 ms (seek)	
		Full Stroke CD	< 200 ms (seek)	
	Maximum Data Transfer	CD ROM Read	CD-ROM, CD-R Up to 24X	
	Rates	CD NOM NEau	CD-RW Up to 24X	
			·	
		DVD ROM Read	DVD-RAM Up to 8X	
			DVD+RW Up to 8X	
			DVD-RW Up to 8X DVD+R DL Up to 8X	
			DVD-R DL Up to 8X	
			DVD-ROM Up to 8X	
			DVD-ROM DL Up to 8X DVD+R Up to 8X	
			DVD-R Up to 8X	
	Power	Source	SATA DC power receptacle	
		DC Power Requirements	5 VDC ± 5%-100 mV ripple p-p	
		DC Current	5 VDC -< 800 mA typical, <1600 mA maximum	
	Operating Environmental (all conditions non- condensing)	-	41° to 122° F (5° to 50° C)	
		Relative Humidity	10% to 80%	
		Maximum Wet Bulb Temperature	84° F (29° C)	
	Operating Systems	Windows 8.1, Windows 8 32-bit and 64-bit, Windows 7 Professional 32-bit		
	Supported	and 64-bit, Windows Vista Business 64*, Windows Vista Business 32*, Windows Vista		
		Home Basic 32*, Windows 2000, Windows XP Professional or Windows XP		
		Home 32*.		
		Red Hat Enterprise Linux(RH SUSE Linux Enterprise Desk	HEL) WS4**, 5, 6 Desktop/Workstation top 10 & 11	
		No driver is required for this device. Native support is provided by the		
		operating system.	······································	
	Kit Contents	9.5mm Slim SuperMulti DVE SATA data/power cable, insi) Writer, 5.25" ODD Bay adapter/carrier, slim	
		JATA uala/power lable, IIIS		



HP 9.5mm Slim DVD-ROM Drive	Description Mounting Orientation Interface Type Dimensions (WxHxD) Disc Capacity	9.5mm height, tray-load Either horizontal or vertical SATA / ATAPI 128 x 9.5 x 127mm DVD-ROM	Single layer: Up to 4.7 GB Double layer: Up to 8.5 GB
	Access Times	DVD-ROM Single Layer CD-ROM Mode 1 Full Stroke DVD Full Stroke CD	< 110 ms (typical) < 110 ms (typical) < 230 ms (typical) < 220 ms (typical)
	Power	Source DC Power Requirements DC Current	SATA DC power receptacle 5 VDC ± 5%-100 mV ripple p-p 5 VDC – <800mA typical, < 1600 mA maximum
	Operating Environmental (all conditions non- condensing)	Temperature Relative Humidity Maximum Wet Bulb Temperature	41° to 122° F (5° to 50° C) 10% to 80% 84° F (29° C)
	Operating Systems Supported	Windows 8.1, Windows 8 32-bit and 64-bit, Windows 7 Professional 32-bit and 64-bit, Windows Vista Business 64*, Windows Vista Business 32*, Windows Vista Home Basic 32*, Windows 2000, Windows XP Professional or Windows XP Home 32*. Red Hat Enterprise Linux(RHEL) WS4**, 5, 6 Desktop/Workstation SUSE Linux Enterprise Desktop 10 & 11	
	Kit Contents	operating system.	s device. Native support is provided by the e, 5.25" ODD Bay adapter/carrier, slim SATA on guide
HP 9.5mm Slim BDXL Blu- Ray Writer	Description Mounting Orientation Interface Type	9.5mm height, tray-load Either horizontal or vertical SATA/ATAPI	

Interface Type Dimensions (WxHxD) Supported Media Types

Either horizontal or ver SATA/ATAPI 128 x 9.5 x 127mm BD-ROM BD-R BD-RE DVD-RAM DVD+R DVD+RW DVD+R DL DVD-R DL DVD-R DVD-R DVD-RW CD-R



CD-RW

Disc Capacity	DVD-ROM	8.5 GB DL or 4.7 GB standard
Dist capacity	Blu-ray	25 GB (single-layer)
	Dlu-luy	50 GB (dual-layer)
		100/128 GB (BDXL)
Access Times	Full Stroke DVD	< 230 ms (seek)
	Full Stroke CD	< 220 ms (seek)
	Blu-ray	< 230 ms (seek) (Full Stroke Blu-ray)
	Startup Time	(Time to drive ready from tray loading) BD-ROM (SL/DL) 255 / 285 BD-R (SL/DL) 255 / 285 BD-RE (SL/DL) 255 / 285 DVD-ROM (SL/DL) 185 / 185 DVD-R (SL/DL) 255 / 255 DVD-RW 255 DVD+R (SL/DL) 255 / 255 DVD+R (SL/DL) 255 / 255 DVD+RW 255 DVD+RW 255 DVD-RAM 455 CD-ROM 155
Maximum Data Transfer Rates	CD ROM Read	CD-ROM, CD-R Up to 24X CD-RW Up to 24X
	DVD ROM Read	DVD-RAM Up to 8X
		DVD+RW Up to 8X
		DVD-RW Up to 8X DVD+R DL Up to 8X
		DVD-R DL Up to 8X
		DVD-ROM Up to 8X
		DVD-ROM DL Up to 8X
		DVD+R Up to 8X DVD-R Up to 8X
	Blu-ray	BD-ROM Up to 6X
	2.4.1.49	BD-ROM DL Up to 6X
		BD-R Up to 6X
		BD-R DL Up to 6X BD-R Up to 6X
		BD-RE SL/DL Up to 6X
Power	Source	SATA DC power receptacle
	DC Power Requirements	5 VDC ± 5%-100 mV ripple p-p
	DC Current	5 VDC -900 mA typical, 2000mA maximum
Operating Environmental	-	41° to 122° F (5° to 50° C)
(all conditions non- condensing)	Relative Humidity	10% to 80%
condensing/	Maximum Wet Bulb Temperature	84° F (29° C)
Operating Systems Supported	 Windows 8.1, Windows 8 32-bit and 64-bit, Windows 7 Professional 3 and 64-bit, Windows Vista Business 64*, Windows Vista Business 32*, Windows V Home Basic 32*, Windows 2000, Windows XP Professional or Window Home 32*. Red Hat Enterprise Linux(RHEL) WS4**, 5, 6 Desktop/Workstation 	
	SUSE Linux Enterprise Des	ktop 10 & 11



		No driver is required for this device. Native support is provided by the operating system.	
	Kit Contents	9.5mm Slim BDXL Blu-Ray Writer, 5.25" ODD Bay adapter/carrier, slim SATA data/power cable, installation guide	
	NOTES	As Blu-ray is a new format containing new technologies, certain disc, digital connection, compatibility and/or performance issues may arise, and do not constitute defects in the product. Flawless playback on all systems is not guaranteed. In order for some Blu-ray titles to play, they may require a DVI or HDMI digital connection and your display may require HDCP support. HD-DVD movies cannot be played on this workstation.	
HP SD Media Card Reader	Description	Supports hardware ECC (Error Correction Code) function Supports hardware CRC (Cyclic Redundancy Check) function Supports MS 4-bit parallel transfer mode Supports MS-PRO 4-bit parallel transfer mode Supports MS PRO-HG Duo 4-bit parallel transfer mode Supports SD 4-bit parallel transfer mode Supports UHS-104 SD 4-bit card (version 3.0) Supports CF v6.0 with PIO mode 6 and Ultra DMA 7 mode	
	Interface Type	USB 3.0 High-speed interface Note: If there is a USB2 connection, USB2 transfer speeds are supported.	
	Dimensions (WxHxD)	Dedicated slot in front bezel (orderable option)	
	Supported Media Types	Secure Digital Card (SD) Secure Digital High Capacity (SDHC) SD Extended Capacity Memory Card (SDXC) SD Ultra High Speed II(SD UHSII) These additional media types are supported with a card adapter. Memory Stick Micro (M2) miniSD miniSD High Capacity Micro SD Memory Card (MicroSD) Micro SD High Capacity Memory Card (MicroSDHC)	
	Operating Systems Supported	Test Parameters/Conditions - Power applied, unit operating on system ±5% Windows 8 Pro (64-bit)* Windows 8.1 (64-bit)* Windows 8 (64-bit)* Windows 7 Ultimate (32-bit)** Windows 7 Ultimate (64-bit)** Windows 7 Professional (32-bit)** Windows 7 Professional (64-bit)** Windows 7 Home Basic** Windows 7 Home Premium (32-bit)** Windows 7 Home Premium (64-bit)** Windows Vista Business 64 Windows Vista Business 32 Windows Vista Home Basic 32 Windows XP Professional Windows XP Home 32	



	No driver is required for this device. Native support is provided by the operating system.
	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.microsoft.com.
	See http://www.microsoft.com/windows/windows-7/ for details.
Kit Contents	Media card reader, 5.25" bracket/rails/bezel, Install Guide, IO & Security Software and Documentation CD
	USB-IF, WHQL, Compliant with USB Mass Storage Class Bulk only Transport Specification Rev. 1.0,
	Compliant Intel Front Panel I/O Connectivity Design Guide V. 1.3, FCC, CE, BSMI, C-Tick, VCCI, MIC, cUL, TUVT
	0.35 lbs (0.16 kg)



Technical Specifications - Controller Cards

HP Thunderbolt™ PCIe 1-	Data Transfer Rate	Supports up to 20 Gb/s (20,000 Mb/s)
port I/O Card	Devices Supported	Thunderbolt™ certified devices
	Bus Type	PCIe card, full or half height PCIe slots
	Ports	One Thunderbolt™ 2 external 20-Pin output connectors (Rear) One full size DisplayPort input connector (Rear)
	Internal Connectors	One 5-Pin header connector
	System Requirements	Windows 7 Professional 64-bit, Windows 8.1 64-bit, Intel® i5 series or higher processor, 4-GB RAM, 20-GB Hard Drive, available PCIe slot.
	Temperature - Operating	50° to 131° F (10° to 55° C)
	Temperature - Storage	-22° to 140° F (-30° to 60° C)
	Relative Humidity - Operating	20% to 80%
	Compliances	FCC Part 15B, cULus 60950, CE Mark EN55022B(1995)/EN55024-1998 STD, Taiwan BSMI CNS13438, Korea MIC
	Operating Systems Supported	Windows 7 Professional 64-bit, Windows 8.1 64-bit.
	Kit Contents	HP Thunderbolt™ 2 PCIe 1-port I/O Card, full height and half height bulkhead bracket, DisplayPort cable, GPIO (General-Purpose Input/Output) cables(2), Installation documentation and warranty card.

Technical Specifications - Networking and Communications

Integrated Intel® I219LM PCIe GbE Controller (Intel® uPro Musich Intel®	Connector	RJ-45
	Controller	Intel [®] I217LM GbE platform LAN connect networking controller
(Intel® vPro™ with Intel® AMT 11.0)	Memory	3 KB Tx and 3KB Rx FIFO packet buffer memory
	Data Rates Supported	10/100/1000 Mbps
	Compliance	802.1as/1588, 802.1p, 802.1Q, 802.3, 802.3ab, 802.3az, 802.3i, 802.3u, 802.3z
	Bus Architecture	PCI Express and SMBus
	Data Transfer Mode	PCIe-based interface for active state operation (S0 state) and SMBus for host and management traffic (Sx low power state)
	Power Requirement	Requires 3.3V (integrated regulators for core Vdc)
	Boot ROM Support	Yes
	Network Transfer Mode	Full-duplex; Half-duplex (not supported for the 1000BASE-T transceiver)
	Network Transfer Rate	10BASE-T (half-duplex) 10 Mbps 10BASE-T (full-duplex) 20 Mbps 100BASE-TX (half-duplex) 100 Mbps 100BASE-TX (full-duplex) 200 Mbps 1000BASE-T (full-duplex) 2000 Mbps
	Management Capabilities	vPro, WOL, auto MDI crossover, PXE, iSCSI Boot, Muti-port teaming, RSS, ACPI, Advanced cable diagnostic, loopback modes, AMT 9.0 support, Circuit Breaker, VLAN, Multicast Listener Discovery (MLD)

HP X520 10GbE Dual Port Adapter	Hardware Certifications	FCC B, UL, CE, VCCI, BSMI, CTICK, KCC
HP 10GbE SFP+ SR Transceiver	Operating Temperature	0°C to 45°C (32°F to 113°F)
	Operating Humidity	0% to 85%, noncondensing
	Dimensions (H × W × D)	0.47(h) x 0.54(w) x 2.19(d)inches (1.19 x 1.38 x 5.57 cm)
Intel® 8260 802.11 a/b/g/n/ac PCIe WLAN NIC	Operating Humidity	Operating 10% to 90% (non-condensing) Non-operating 5% to 95% (non-condensing)
	Dimensions (H x W x D)	Native HMC: 26.8 x 30.0 x 2.4 mm Carrier Card Assembly 3.3 x 4.7 in (84 x 119 mm)
	Kit Contents	PCIe x1 card with full height bracket, rf antenna, antenna cable, separate low profile bracket, software CD and warranty.



QuickSpecs

Summary of Changes

Date of change:	Version History:		Description of change:
October 8, 2015	From v1 to v2	Changed	Expansions Slots in OverviewMemory nomenclature, Z Turbo Drive 512 PCI Express version. NVIDIA NVS 310 memory size, NVIDIA Quadro K420 memory size, NVIDIA M4000 Specs; SD Media card reader dimensions, kit contents and media type; HP Slim DVD-ROM Drive, HP 9.5mm Slim SuperMulti DVD Writer and HP 9.5mm Slim BDXL Blu-Ray Writer Descriptions
November 11, 2015	From v2 to v3	Added	Intel [®] Xeon [®] processor E3-v5 family, M.2 slot (PCIe Gen3 x4), Intel HD Graphics P530, NVIDIA NVS 310 1GB Graphics, HP 9.5mm Slim SuperMulti DVD Writer, HP 9.5mm Slim DVD-ROM Drive, HP 9.5mm Slim BDXL Blu-Ray Writer, Z240 TWR Bezel w/ Dust Filter option
		Changed	Processors Note Intel Integrated Graphics P530 for Xeon processors, M.2 support note
		Removed	NVIDIA NVS 310 512MB Graphics, HP DVD ROM Slim-Tray Drive, HP DVD RW SuperMulti Slim-Tray Drive, HP Blu-ray Writer Slim-Tray Drive
January 1, 2016	From v3 to v4	Added	RHEL, SUSE versions OS under Overview Updated Available Processors table under Overview section. Core I/Pentium Processors section Updated Stable & Consistent Offerings section
		Changed	CPU specs and availability under Supported Components

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