Overview

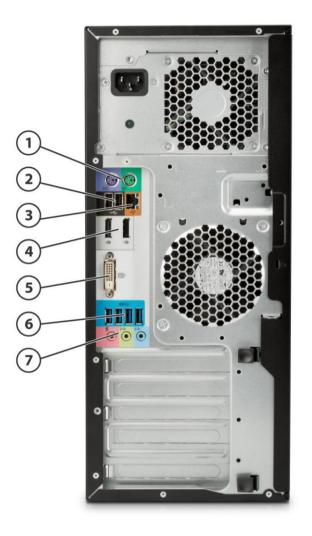
HP Z240 Tower Workstation



- 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 | |
| | 1 | |



| _ | | |
|---|-----|--|
| R | INC | |

| 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 |
|-----|--|-----|
|-----|--|-----|

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

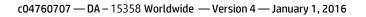
VGA display output:

• 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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