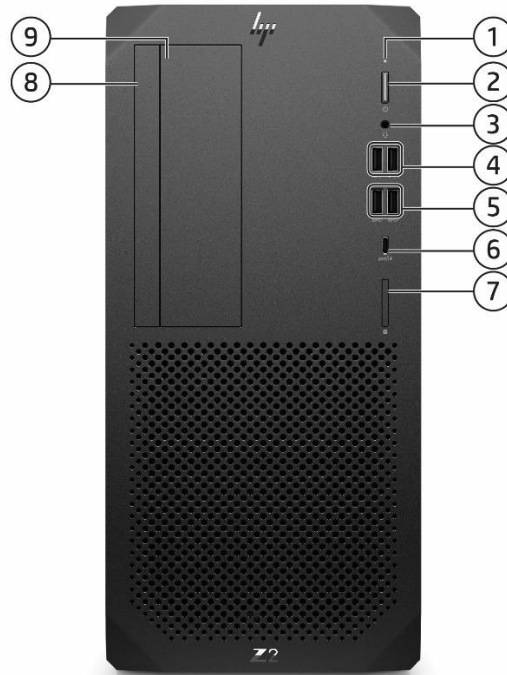


### Overview

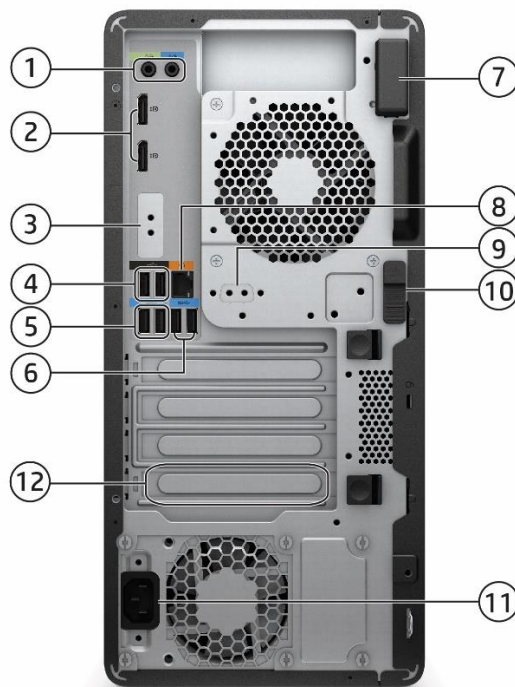
#### HP Z2 Tower G5 Workstation



**front**

- |                                                                                         |                                                                                                |
|-----------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------|
| 1. HDD Activity LED                                                                     | 6. 1 Type-C® SuperSpeed USB 10Gbps signaling rate port (optional, charge supports up to 5V/3A) |
| 2. Power button                                                                         | 7. SD card reader 4.0 (optional)                                                               |
| 3. Universal audio jack (with CTIA & OMTP headset support)                              | 8. Slim ODD bay                                                                                |
| 4. 2 Type-A SuperSpeed USB 5 Gbps signaling rate port (1 charge supports up to 5V/2.1A) | 9. External 5.25" bay                                                                          |
| 5. 2 Type-A SuperSpeed USB 10Gbps signaling rate port                                   |                                                                                                |

### Overview



#### rear

1. 1 Audio Line-in / Audio Line-out
2. 2 DisplayPort™ 1.4\*
3. Flex IO modules, choice of:  
VGA, HDMI 2.0b, DisplayPort™ 1.4\*, Dual Type-A SuperSpeed USB  
5Gbps signaling rate port, 2nd 1GbE LAN, Type-C® SuperSpeed USB  
10Gbps signaling rate port (Alt Mode)
4. 2 High-Speed USB 480Mbps signaling rate port
5. 2 Type-A SuperSpeed USB 10Gbps signaling rate port
6. 2 Type-A SuperSpeed USB 5Gbps signaling rate port
7. WLAN antenna (optional)
8. RJ-45
9. 2nd serial port (optional)
10. Release latch
11. Power connector
12. Type-C® Thunderbolt™ 3 Dual-port (optional)

#### Form Factor

Tower

#### Operating Systems

##### Preinstalled:

- Windows 10 Pro 64<sup>1</sup>
- Windows 10 Pro for Workstations 64<sup>1</sup>
- Windows 10 Home 64<sup>1</sup>
- Ubuntu 20.04 LTS<sup>2</sup>
- Linux®-ready<sup>3</sup>
- Red Hat® Enterprise Linux® Desktop Workstation (Paper license with 1-year support; no preinstalled OS)

##### Web-supported only:

- Windows 10 Enterprise 64<sup>1</sup>

##### Supported Version:

### Overview

- HP tested Windows 10, version 1809 on this platform. For testing information on newer versions of Windows 10, please see: <https://support.hp.com/document/c05195282>.
- Red Hat® Enterprise Linux® Workstation 8
- SUSE Linux® Enterprise Desktop 15

<sup>1</sup> Not all features are available in all editions or versions of Windows. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS update to take full advantage of Windows functionality. Windows 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See <http://www.windows.com>.

**NOTE:** Your product does not support Windows 8 or Windows 7. In accordance with Microsoft's support policy, HP does not support the Windows® 8 or Windows 7 operating system on products configured with Intel® and AMD® 7th generation and forward processors or provide any Windows® 8 or Windows 7 drivers on <http://www.support.hp.com>. A full list of HP products and the Windows 10 versions tested is available on the HP support website. <https://support.hp.com/us-en/document/c05195282>

All onboard Display support DP1.4/HBR2 when video output is via Intel Graphics.

<sup>2</sup> Not all features are available in all editions or versions of Ubuntu. Systems may require upgraded and/or separately purchased hardware, drivers, software or BIOS to take full advantage of Ubuntu functionality. Ubuntu may be automatically updated. ISP fees may apply, and additional requirements may apply over time for updates.

<sup>3</sup> For detailed Linux® OS/hardware support information, see: [http://www.hp.com/support/linux\\_hardware\\_matrix](http://www.hp.com/support/linux_hardware_matrix)

**NOTE:** In accordance with Microsoft's support policy, HP does not support the Windows® 7 operating system on products configured with Intel® 7th Generation and forward processors.

### Processors

| Name                             | Cores | Clock Speed (GHz) | Cache (MB) | Memory Speed (MT/s) | Hyper-Threading | Integrated Graphics     | Intel® Turbo Boost Technology <sup>3</sup> | Featuring Intel® vPro® Technology <sup>4</sup> | 16GB Intel® Optane™ memory <sup>2</sup> | TDP (W) |
|----------------------------------|-------|-------------------|------------|---------------------|-----------------|-------------------------|--------------------------------------------|------------------------------------------------|-----------------------------------------|---------|
| Intel® Core™ i9-10900K Processor | 10    | 3.7               | 20         | 2933                | Y               | Intel® UHD Graphics 630 | 5.2                                        | Y                                              | Y                                       | 125     |
| Intel® Core™ i9-10900 Processor  | 10    | 2.8               | 20         | 2933                | Y               | Intel® UHD Graphics 630 | 5.1                                        | Y                                              | Y                                       | 65      |
| Intel® Core™ i9-10900F Processor | 10    | 2.8               | 20         | 2933                | Y               | N/A                     | 5.1                                        | Y                                              | Y                                       | 65      |
| Intel® Core™ i9-10850K Processor | 10    | 3.6               | 20         | 2933                | Y               | Intel® UHD Graphics 630 | 5.2                                        | N/A                                            | Y                                       | 125     |
| Intel® Core™ i7-10700K Processor | 8     | 3.8               | 16         | 2933                | Y               | Intel® UHD Graphics 630 | 5.1                                        | Y                                              | Y                                       | 125     |
| Intel® Core™ i7-10700 processor  | 8     | 2.9               | 16         | 2933                | Y               | Intel® UHD Graphics 630 | 4.8                                        | Y                                              | Y                                       | 65      |
| Intel® Core™ i5-10600K processor | 6     | 4.1               | 12         | 2666                | Y               | Intel® UHD Graphics 630 | 4.8                                        | Y                                              | Y                                       | 125     |
| Intel® Core™ i5-10600 processor  | 6     | 3.3               | 12         | 2666                | Y               | Intel® UHD Graphics 630 | 4.8                                        | Y                                              | Y                                       | 65      |
| Intel® Core™ i5-10500 processor  | 6     | 3.1               | 12         | 2666                | Y               | Intel® UHD Graphics 630 | 4.5                                        | Y                                              | Y                                       | 65      |

### Overview

|                                               |    |      |    |      |   |                         |     |   |   |     |
|-----------------------------------------------|----|------|----|------|---|-------------------------|-----|---|---|-----|
| Intel® Core™ i5-10400 processor               | 6  | 2.9  | 12 | 2666 | Y | Intel® UHD Graphics 630 | 4.3 | Y | Y | 65  |
| Intel® Core™ i5-10400F processor <sup>6</sup> | 6  | 2.9  | 12 | 2666 | Y | N/A                     | 4.3 | Y | Y | 65  |
| Intel® Core™ i3-10320 processor <sup>6</sup>  | 4  | 3.8  | 8  | 2666 | Y | Intel® UHD Graphics 630 | 4.6 | Y | Y | 65  |
| Intel® Core™ i3-10300 processor               | 4  | 3.7  | 8  | 2666 | Y | Intel® UHD Graphics 630 | 4.4 | Y | Y | 65  |
| Intel® Core™ i3-10100 processor               | 4  | 3.60 | 6  | 2666 | Y | Intel® UHD Graphics 630 | 4.3 | Y | Y | 65  |
|                                               |    |      |    |      |   |                         |     |   |   |     |
| Intel® Xeon® W-1290P processor                | 10 | 3.7  | 20 | 2933 | Y | Intel® UHD Graphics     | 5.2 | Y | Y | 125 |
| Intel® Xeon® W-1290 processor <sup>6</sup>    | 10 | 3.2  | 20 | 2933 | Y | Intel® UHD Graphics     | 5.1 | Y | Y | 80  |
| Intel® Xeon® W-1270P processor <sup>6</sup>   | 8  | 3.8  | 16 | 2933 | Y | Intel® UHD Graphics     | 5.1 | Y | Y | 125 |
| Intel® Xeon® W-1270 processor                 | 8  | 3.4  | 16 | 2933 | Y | Intel® UHD Graphics     | 5.0 | Y | Y | 80  |
| Intel® Xeon® W-1250P processor                | 6  | 4.1  | 12 | 2666 | Y | Intel® UHD Graphics     | 4.8 | Y | Y | 125 |
| Intel® Xeon® W-1250 processor                 | 6  | 3.3  | 12 | 2666 | Y | Intel® UHD Graphics     | 4.7 | Y | Y | 80  |

1. Multicore is designed to improve performance of certain software products. Not all customers or software applications will necessarily benefit from use of this technology. Performance and clock frequency will vary depending on application workload and your hardware and software configurations. Intel's numbering, branding and/or naming is not a measurement of higher performance.

2. Intel® Optane™ memory system acceleration does not replace or increase the DRAM in your system.

3. The specifications shown in the Intel® Turbo Boost Technology column represent the maximum turbo frequency with one core active. Turbo boost stepping occurs in 100MHz increments. Processors that do not have turbo functionality are denoted as N/A. Intel® Turbo Boost performance varies depending on hardware, software and overall system configuration. See <http://www.intel.com/technology/turboboost> for more information

4. For full Intel® vPro™ functionality, Windows 10 Pro 64 bit, a vPro supported processor, vPro enabled chipset, vPro enabled wired LAN and/or WLAN card and TPM 2.0 are required. Some functionality requires additional 3rd party software in order to run. See <http://intel.com/vpro>

6. Available in Q4, 2020

|                                                                    |                                             |
|--------------------------------------------------------------------|---------------------------------------------|
| <b>Color</b>                                                       | Black                                       |
| <b>Convertibility</b>                                              | No                                          |
| <b>Expansion Slots</b> (see system board section for more details) | Slot 1:<br>PCIe Gen3 x16                    |
|                                                                    | Slot 2:<br>PCIe Gen3 x1 - with x4 Connector |
|                                                                    | Slot 3:<br>PCIe Gen3 x1 - with x4 Connector |

### Overview

|                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                              | Slot 4:<br>PCIe Gen3 x4 - with x16 Connector                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Expansion Bays</b> (see storage section for more details) | 2 internal 3.5" bays<br>1 external 5.25" bay<br>1 internal 2.5" bay (for SSD only)<br>1 dedicated 9.5mm slim optical disk drive bay                                                                                                                                                                                                                                                                                                                                                                                                                      |
| <b>Front I/O</b>                                             | 2 Type-A SuperSpeed USB 5Gbps signaling rate port, 2 Type-A SuperSpeed USB 10Gbps signaling rate port, 1 Type-C® SuperSpeed USB 10Gbps signaling rate port (optional), 1 SD card reader 4.0 (optional), 1 universal audio jack                                                                                                                                                                                                                                                                                                                           |
| <b>Internal I/O</b>                                          | 1 Hi-Speed USB 480Mbps signaling rate port                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
| <b>Rear I/O</b>                                              | 2 DisplayPort™ 1.4, 1 Audio Line in/out, 1 RJ-45, 2 Hi-Speed USB 480Mbps signaling rate port, 2 Type-A SuperSpeed USB 10Gbps signaling rate port, 2 Type-A SuperSpeed USB 5Gbps signaling rate port, 1 serial port (optional), 1 serial and PS/2 combo (optional), 1 Flex I/O port (choice of VGA, HDMI 2.0b, DisplayPort™ 1.4, Type-C® SuperSpeed USB 10Gbps signaling rate port (Alt mode), Dual Type-A SuperSpeed USB 5Gbps signaling rate port, 2 <sup>nd</sup> 1GbE LAN), Thunderbolt™ 3 (40Gbps signaling rate port, optional, cabled to PCIe AIC) |
| <b>Interfaces Supported</b>                                  | <b>NOTE: All DisplayPort™ support DP1.4/HBR2 when video output is via Intel Graphics.</b><br>SD Media Card Reader (optional)                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>On-board RAID Support</b>                                 | RAID 0<br>RAID 1                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
| <b>Chassis Dimensions (H x W x D)</b>                        | H: 14" [356mm]<br>W: 6.7" [169mm]<br>D: 15.2" [385mm]                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Packaged Dimensions</b>                                   | H: 20.39" (518mm)<br>W: 11.61" (295mm)<br>D: 19.29" (490mm)                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| <b>Rack Dimensions</b>                                       | 4U                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| <b>Weight</b>                                                | Exact weights depend upon configuration (System weight only).<br>Starting at 7kg (15.43lbs.)                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| <b>Temperature</b>                                           | Operating: 5° to 35° C (40° to 95° F)<br>Above 1524 m (5,000 feet) altitude, the maximum operating temperature is reduced by 1° C (1.8° F) for every 305 m (1,000 feet) increase in elevation<br>Non-operating: -40° to 60° C (-40° to 140° F)<br>Maximum rate of change: 10°C/hr                                                                                                                                                                                                                                                                        |
| <b>Humidity</b>                                              | Operating: 10% to 85% RH, non-condensing, 35° C maximum wet bulb<br>Non-operating: 10% to 90% RH, non-condensing, 35° C maximum wet bulb                                                                                                                                                                                                                                                                                                                                                                                                                 |
| <b>Maximum Altitude (non-pressurized)<sup>6</sup></b>        | Operating (with Rotational Hard Drives): 3,048 m (10,000 feet)<br>Operating (with only Solid-State Drives): 5,000 m (16,404 feet)<br>Non-operating: 12,192 m (40,000 feet)<br>Maximum operating temperature is reduced as altitude increases. See Temperature for details.                                                                                                                                                                                                                                                                               |
| <b>Power Supply</b>                                          | 700W wide-ranging, active Power Factor Correction, 92% Efficiency. 500W wide-ranging, active Power Factor Correction, 90% Efficiency. 350W wide-ranging, active Power Factor Correction, 92% Efficiency.                                                                                                                                                                                                                                                                                                                                                 |

**NOTE: The Power Supply Efficiency Report for the 700W 92% Efficiency, 500W 90% Efficiency and 350W 92% Efficiency Power Supply may be found at the following links:**

#### 700W PSU:

The power delivery system includes two 6+2-pin graphics power cables.

<https://www.plugloadsolutions.com/80PlusPowerSuppliesDetail.aspx?id=0&type=2>

### Overview

#### 500W PSU:

The power delivery system includes two 6+2-pin graphics power cables.

<https://www.plugloadsolutions.com/80PlusPowerSuppliesDetail.aspx?id=0&type=2>

#### 350W PSU:

The power delivery system does not include graphics power cables.

<https://www.plugloadsolutions.com/80PlusPowerSuppliesDetail.aspx?id=0&type=2>

#### 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® W480 chipset

---

### Supported Components

#### Processors

|                                                           | Factory Configured | Option Kit | Option Kit Part Number | Support Notes |
|-----------------------------------------------------------|--------------------|------------|------------------------|---------------|
| <b>10th Generation Intel® Core Processors<sup>1</sup></b> |                    |            |                        |               |
| Intel® Core™ i9-10900K processor                          | Y                  | N          |                        |               |
| Intel® Core™ i9-10900 processor                           | Y                  | N          |                        |               |
| Intel® Core™ i9-10900F processor                          | Y                  | N          |                        | 1             |
| Intel® Core™ i9-10850K Processor                          | Y                  | N          |                        |               |
| Intel® Core™ i7-10700K processor                          | Y                  | N          |                        |               |
| Intel® Core™ i7-10700 processor                           | Y                  | N          |                        |               |
| Intel® Core™ i5-10600K processor                          | Y                  | N          |                        |               |
| Intel® Core™ i5-10600 processor                           | Y                  | N          |                        |               |
| Intel® Core™ i5-10500 processor                           | Y                  | N          |                        |               |
| Intel® Core™ i5-10400 processor                           | Y                  | N          |                        |               |
| Intel® Core™ i5-10400F processor                          | Y                  | N          |                        | 1             |
| Intel® Core™ i3-10320 processor                           | Y                  | N          |                        | 2             |
| Intel® Core™ i3-10300 processor                           | Y                  | N          |                        | 2             |
| Intel® Core™ i3-10100 processor                           | Y                  | N          |                        |               |
| <b>Intel® Xeon® W Processors</b>                          |                    |            |                        |               |
| Intel® Xeon® W-1290P processor                            | Y                  | N          |                        |               |
| Intel® Xeon® W-1290 processor                             | Y                  | N          |                        | 2             |
| Intel® Xeon® W-1270P processor                            | Y                  | N          |                        | 2             |
| Intel® Xeon® W-1270 processor                             | Y                  | N          |                        |               |
| Intel® Xeon® W-1250P processor                            | Y                  | N          |                        |               |
| Intel® Xeon® W-1250 processor                             | Y                  | N          |                        |               |

<sup>1</sup>These processors support only non-ECC memory

**NOTE 1:** No iGfx. A discrete graphics card must be purchased at the same time. Available in Q4, 2020

**NOTE 2:** Available in Q4, 2020

#### SATA Hard Drives

|                                                     | Factory Configured | Option Kit | Option Kit Part Number |
|-----------------------------------------------------|--------------------|------------|------------------------|
| 500GB SATA 7200 rpm 6Gb/s 3.5" HDD                  | Y                  | Y          | LQ036AA                |
| 1TB SATA 7200 rpm 6Gb/s 3.5" HDD                    | Y                  | Y          | LQ037AA                |
| 2TB SATA 7200 rpm 6Gb/s 3.5" HDD                    | Y                  |            |                        |
| 1TB SATA 7200 rpm 6Gb/s 3.5" HDD (Enterprise Class) | Y                  | Y          | W0R10AA                |
| 2TB SATA 7200 rpm 6Gb/s 3.5" HDD (Enterprise Class) | Y                  | Y          | 2Z274AA                |
| 4TB SATA 7200 rpm 6Gb/s 3.5" HDD (Enterprise Class) | Y                  | Y          | K4T76AA                |
| 8TB SATA 7200 rpm 6Gb/s 3.5" HDD (Enterprise Class) | Y                  | Y          | 2Z273AA                |
| 500GB SATA 7.2K SED SFF HDD                         | Y                  | Y          | D8N29AA                |

#### SATA Solid State Drives

|                         |   |  |            |
|-------------------------|---|--|------------|
| HP 256GB SATA 6Gb/s SSD | Y |  | A3D26AA    |
| HP 512GB SATA 6Gb/s SSD | Y |  | D8F30AA    |
| HP 1TB SATA 6Gb/s SSD   | Y |  | F3C96AA    |
| HP 2TB SATA 6Gb/s SSD   | Y |  | Y6P08AA/AT |

### Supported Components

|                                    |   |         |
|------------------------------------|---|---------|
| HP 256GB SATA 6Gb/s SED Opal 2 SSD | Y | G7U67AA |
| HP 512GB SATA 6Gb/s SED Opal 2 SSD | Y | N8T26AA |

#### PCIe Solid State Drives

#### PCIe SSDs for HP Workstations

|                                                |   |   |            |
|------------------------------------------------|---|---|------------|
| HP ZTurbo 1TB TLC Z2 G5 TWR/SFF SSDKit         | Y | Y | 141L5AA/AT |
| HP ZTurbo 256GB SED Z2 G5 TWR/SFF SSDKit       | Y | Y | 141L8AA/AT |
| HP ZTurbo 256GB TLC Z2 G5 TWR/SFF SSDKit       | Y | Y | 141L7AA/AT |
| HP ZTurbo 2TB TLC Z2 G5 TWR/SFF SSDKit         | Y | Y | 141M1AA/AT |
| HP ZTurbo 512GB SED Z2 G5 TWR/SFF SSDKit       | Y | Y | 141M3AA/AT |
| HP ZTurbo 512GB TLC Z2 G5 TWR/SFF SSDKit       | Y | Y | 141M5AA/AT |
| HP Z Turbo 2TB SED OPAL2 TLC M.2 Z2 G5 TWR SSD | Y | Y | 2Y7W5AA    |
| HP 2TB PCIe NVME TLC M.2 Z2 G5 TWR/SFF SSD     | Y | Y | 35F73AA    |

**NOTE:** For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 35GB is reserved for system recovery software.



### Supported Components

#### Hard Drive Controllers

|                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Factory Configured | Option Kit |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------|------------|
| <b>Integrated SATA Controller (Z2 G5)</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                    |            |
| Integrated SATA Controller, RAID 0,1 supported: 4x 6 Gb/s ports                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Y                  |            |
| <b>Factory integrated RAID on motherboard for SATA drives</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                    |            |
| RAID 0 Data Configuration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Y                  |            |
| RAID 1 Data Configuration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Y                  |            |
| <b>Factory integrated RAID on motherboard for Z Turbo Drive</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                    |            |
| RAID 0 Boot or Data Configuration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Y                  |            |
| RAID 1 Boot or Data Configuration                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | Y                  |            |
| <p><b>NOTE:</b> SATA hardware RAID is not supported on Linux® systems. The Linux® kernel, with built-in software RAID, provides excellent functionality and performance. It is a good alternative to hardware-based RAID. All drives must be identical in type and capacity. Boot volume/RAID array must be less than 2 TB</p> <p><b>NOTE:</b> Requires identical drives (speeds, capacity, and interface).</p> <p><b>NOTE:</b> The HP Z2 Tower G5 Workstation is capable of configuring up to 2 Z Turbo Drives. By default, the Z Turbo Drive configured will be installed in the M.2 storage slot on the system's motherboard.</p> <p><b>NOTE:</b> For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36GB (for Windows 10) of system disk is reserved for system recovery software.</p> <p><b>NOTE:</b> The HP Z2 Tower G5 Workstation is capable of configuring up to 2 Z Turbo Drives. By</p> |                    |            |

#### Graphics

|                                                             | Factory Configured | Option Kit | Option Kit Part Number  | Supported # of cards |
|-------------------------------------------------------------|--------------------|------------|-------------------------|----------------------|
| <b>Graphics Cable Adapters</b>                              |                    |            |                         |                      |
| HP USB-C to DisplayPort Adapter                             | Y                  | Y          | 4SH08AA                 |                      |
| HP USB-C to HDMI Adapter                                    | Y                  | Y          | 4SH07AA                 |                      |
| HP USB-C to VGA Adapter                                     | Y                  | Y          | 4SH06AA                 |                      |
| HP DisplayPort To DVI-D Adapter                             | Y                  | Y          | FH973AA                 |                      |
| HP DisplayPort To VGA Adapter                               | Y                  | Y          | AS615AA                 |                      |
| HP DisplayPort To HDMI True 4k Adapter                      | Y                  | Y          | 2JA63AA                 |                      |
| HP Single miniDP-to-DP Adapter Cable                        | Y                  | Y          | 2MY05AA                 |                      |
| <b>Entry 3D</b>                                             |                    |            |                         |                      |
| NVIDIA® Quadro® P400 2GB Graphics                           | Y                  | Y          | 1ME43AA/AT <sup>1</sup> | 2                    |
| NVIDIA® Quadro® P620 2GB Graphics                           | Y                  | Y          | 3ME25AA/AT <sup>1</sup> | 2                    |
| NVIDIA T600 4 GB GDDR6 LP Blower Fan 4mDP PCIe x16 Graphics | Y                  | Y          | 340K9AA                 | 2                    |
| <b>Mid-range 3D</b>                                         |                    |            |                         |                      |
| AMD Radeon™ Pro WX 3200 4GB Graphics                        | Y                  | Y          | 6YT68AA/AT <sup>1</sup> | 2                    |
| NVIDIA® Quadro® P1000 4GB Graphics                          | Y                  | Y          | 1ME01AA/AT <sup>1</sup> | 2                    |
| NVIDIA® Quadro® P2200 5GB Graphics                          | Y                  | Y          | 6YT67AA/AT              | 2                    |
| NVIDIA® Quadro® T1000 4 GB 4mDP Graphics                    | Y                  | Y          | 20X22AA/AT              | 2                    |
| <b>High End 3D</b>                                          |                    |            |                         |                      |
| NVIDIA® Quadro® RTX 4000 8GB Graphics                       | Y                  | Y          | 5JV89AA/AT              | 1                    |
| AMD Radeon™ Pro W5500 8GB Graphics <sup>2</sup>             | Y                  | Y          | 9GC16AA/AT              | 1                    |

### Supported Components

|                                                 |   |   |            |   |
|-------------------------------------------------|---|---|------------|---|
| AMD Radeon™ Pro W5700 8GB Graphics <sup>2</sup> | Y | Y | 9GC15AA/AT | 1 |
| <b>Ultra High-End 3D</b>                        |   |   |            |   |
| NVIDIA® Quadro® RTX 5000 16GB Graphics          | Y | Y | 5JH81AA/AT | 1 |
| NVIDIA® Quadro® RTX 6000 24GB Graphics          | Y | Y | 5JH80AA/AT | 1 |

<sup>1</sup> Option kits include 2x miniDP-to-DP adapters

<sup>2</sup> Available in Q4, 2020

### Memory

|                                        | Factory Configured | Option Kit | Option Kit Part Number | Support Notes |
|----------------------------------------|--------------------|------------|------------------------|---------------|
| HP 4GB (1x4GB) DDR4-3200 nECC UDIMM    | Y                  |            |                        | 2, 3          |
| HP 8GB (2x4GB) DDR4-3200 nECC UDIMM    | Y                  |            |                        | 3             |
| HP 8GB (1x8GB) DDR4-3200 nECC UDIMM    | Y                  |            |                        | 2, 3          |
| HP 8GB (1x8GB) DDR4-3200 ECC UDIMM     | Y                  |            |                        | 1, 2, 3, 4    |
| HP 16GB (2x8GB) DDR4-3200 nECC UDIMM   | Y                  |            |                        | 3             |
| HP 16GB (2x8GB) DDR4-3200 ECC UDIMM    | Y                  |            |                        | 1, 3, 4       |
| HP 16GB (1x16GB) DDR4-3200 nECC UDIMM  | Y                  |            |                        | 2, 3          |
| HP 16GB (1x16GB) DDR4-3200 ECC UDIMM   | Y                  |            |                        | 1, 2, 3, 4    |
| HP 24GB (3x8GB) DDR4-3200 nECC UDIMM   | Y                  |            |                        | 3             |
| HP 24GB (3x8GB) DDR4-3200 ECC UDIMM    | Y                  |            |                        | 1, 3, 4       |
| HP 32GB (4x8GB) DDR4-3200 nECC UDIMM   | Y                  |            |                        | 3             |
| HP 32GB (4x8GB) DDR4-3200 ECC UDIMM    | Y                  |            |                        | 1, 3, 4       |
| HP 32GB (2x16GB) DDR4-3200 nECC UDIMM  | Y                  |            |                        | 3             |
| HP 32GB (2x16GB) DDR4-3200 ECC UDIMM   | Y                  |            |                        | 1, 3, 4       |
| HP 32GB (1x32GB) DDR4-3200 nECC UDIMM  | Y                  |            |                        | 2, 3          |
| HP 32GB (1x32GB) DDR4-3200 ECC UDIMM   | Y                  |            |                        | 1, 2, 3, 4    |
| HP 64GB (4x16GB) DDR4-3200 nECC UDIMM  | Y                  |            |                        | 3             |
| HP 64GB (4x16GB) DDR4-3200 ECC UDIMM   | Y                  |            |                        | 1, 3, 4       |
| HP 64GB (2x32GB) DDR4-3200 nECC UDIMM  | Y                  |            |                        | 3             |
| HP 64GB (2x32GB) DDR4-3200 ECC UDIMM   | Y                  |            |                        | 1, 3, 4       |
| HP 128GB (4x32GB) DDR4-3200 nECC UDIMM | Y                  |            |                        | 3             |
| HP 128GB (4x32GB) DDR4-3200 ECC UDIMM  | Y                  |            |                        | 1, 3, 4       |

### NOTES:

1 Intel® Xeon processors can support either ECC or non-ECC memory; Intel® Core™ only support non-ECC memory.

2 Two channels of DDR4 memory are supported. To realize full performance at least one DIMM must be inserted into each channel.

3 Max transfer rates up to 2933 MT/s

### AMO

|                                     |   |   |            |      |
|-------------------------------------|---|---|------------|------|
| HP 4GB (1x4GB) DDR4-3200 nECC UDIMM | Y | Y | 141J1AA/AT |      |
| HP 8GB (1x8GB) DDR4-3200 nECC UDIMM | Y | Y | 141J4AA/AT |      |
| HP 8GB (1x8GB) DDR4-3200 ECC UDIMM  | Y | Y | 141J3AA/AT | 1, 4 |

### Supported Components

|                                       |   |   |            |      |
|---------------------------------------|---|---|------------|------|
| HP 16GB (1x16GB) DDR4-3200 nECC UDIMM | Y | Y | 141H3AA/AT |      |
| HP 16GB (1x16GB) DDR4-3200 ECC UDIMM  | Y | Y | 141H2AA/AT | 1, 4 |
| HP 32GB (1x32GB) DDR4-3200 nECC UDIMM | Y | Y | 141H9AA/AT |      |
| HP 32GB (1x32GB) DDR4-3200 ECC UDIMM  | Y | Y | 141H7AA/AT | 1, 4 |

1 Intel® Xeon® processors can support either ECC or non-

ECC memory; Intel® Core™ processors only support non-ECC memory.

2 Two channels of DDR4 memory are supported. To realize full performance at least one DIMM must be inserted into each channel.

3 The CPUs determine the speed at which the memory is clocked. If a 2666 MT/s capable CPU is used in the system, the maximum speed the memory will run at is 2666 MT/s regardless of the specified speed of the memory.

4 ECC or nECC memory availability depends on processor configuration.

### Optical and Removable Storage

|                                      | Factory Configured | Option Kit | Option Kit Part Number |
|--------------------------------------|--------------------|------------|------------------------|
| HP 9.5mm Slim DVD Writer             | Y                  | N          |                        |
| HP DX175 Removable HDD Frame/Carrier | Y                  | Y          | 1ZX71AA                |
| HP DX175 Removable HDD Spare Carrier | Y                  | Y          | 1ZX72AA                |
| HP SD card reader Z2 TWR             | Y                  | Y          | 141K3AA/AT             |
| HP 9.5mm Slim BDXL Blu-Ray Writer    | Y                  | N          |                        |
| HP 9.5mm Slim DVD-ROM Drive          | Y                  | N          |                        |

NOTE: 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.

NOTE: HD-DVD disks cannot be played on the DVD-ROM Drive. No support for DVD RAM.

### Supported Components

#### Input Devices

|                                                    | Factory Configured | Option Kit | Option Kit Part Number |
|----------------------------------------------------|--------------------|------------|------------------------|
| HP Premium Wireless Keyboard                       | Y                  | Y          | Z9N41AA/AT             |
| HP USB 320K Keyboard                               | Y                  | Y          | 9SR37AA                |
| HP USB Business Slim Wired SmartCard CCID Keyboard | Y                  | N          |                        |
| HP USB Premium Wired Keyboard PROMO                | Y                  | Y          | Z9N40AT                |
| HP 320M Wired Mouse                                | Y                  | Y          | 9VA80AA                |
| HP USB Premium Mouse                               | Y                  | Y          | 1JR32AA                |
| HP Wireless Premium Mouse                          | Y                  | Y          | 1JR31AA                |
| 3Dconnexion CADMouse                               | N                  | Y          | M5C35AA                |
| 3DConnexion 3 Button Wired CAD Mouse Pro           | N                  | Y          | 2H5H5AA                |
| HP Promo PS/2 Mouse                                | N                  | Y          | QY775AT                |
| HP Wired Desktop 320MK Mouse and Keyboard          | N                  | Y          | 9SR36AA                |

#### Other Hardware

|                                          | Factory Configured | Option Kit | Option Kit Part Number |
|------------------------------------------|--------------------|------------|------------------------|
| HP Thunderbolt 3 PCIe Card Z2 Tower      | Y                  | Y          | 141M7AA                |
| HP Z2 Internal Serial Port and PS/2 Port | Y                  | Y          | 141K9AA/AT             |
| HP Z2 Power Cord Kit                     | Y                  | Y          | 1N1D5AA                |
| HP Z2 2nd serial port adapter            | Y                  | Y          | 141K8AA/AT             |
| HP Z2 Tower Dust Filter                  | Y                  | Y          | 141L2AA/AT             |
| HP Z2 Tower Dust Filter and bezel        | Y                  | Y          | 141L3AA/AT             |
| HP 800/600/400 G3 Serial/ PS/2 Adapter   | Y                  | Y          | 1VD82AA                |
| HP PCIe x1 Parallel Port Card            | N                  | Y          | N1M40AA                |
| HP DP Flex Port 2020                     | Y                  | Y          | 141J7AA/AT             |
| HP 1GbE LAN Flex Port 2020               | Y                  | Y          | 141J6AA/AT             |
| HP Dual USB-A 3.2 Gen1 Flex 2020         | Y                  | Y          | 141J8AA/AT             |
| HP Front USB-C 3.2 Gen2 2020 TWR         | Y                  | Y          | 141K0AA                |
| HP HDMI Flex Port 2020                   | Y                  | Y          | 141K1AA/AT             |
| HP USB-C 3.2 Gen2 Alt Flex Port 2020     | Y                  | Y          | 141K6AA/AT             |
| HP VGA Flex Port 2020                    | Y                  | Y          | 141K7AA/AT             |
| HP Z2 Tower PCIe Card Holder/Blower Kit  |                    | Y          | 2B1D4AA                |

#### Networking and Communications

|                                                                                  | Factory Configured | Option Kit | Option Kit Part Number |
|----------------------------------------------------------------------------------|--------------------|------------|------------------------|
| Integrated Intel® I219LM PCIe GbE Controller (Intel® vPro® with Intel® AMT 12.0) | Y                  | N          |                        |
| Aquantia AQN-108 1-Port 5GbE NIC                                                 | Y                  | Y          | 1PM63AA                |
| HP 10GbE SFP+ SR Transceiver                                                     | Y                  | Y          | C3N53AA                |
| Intel Ethernet I350-T4 4-Port 1Gb NIC                                            | N                  | Y          | W8X25AA                |
| Intel X550 10GBASE-T Dual Port NIC                                               | Y                  | Y          | 1QL46AA                |
| Intel X710-DA2 10GbE SFP+ DP NIC                                                 | Y                  | Y          | 1QL47AA                |
| Intel® AX201 802.11 a/b/g/n/ac/ax WLAN + Bluetooth 5.0 M.2 NIC                   | Y                  | N          |                        |
| HP Flex 1GbE Fiber LC Single Port                                                | Y                  | Y          | 20J15AA                |

**NOTE 1:** The integrated network connection is required to support Intel® vPro™ Technology.

### Supported Components

**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

#### Racking and Physical Security

|                                                                  | Factory Configured | Option Kit | Option Kit Part Number |
|------------------------------------------------------------------|--------------------|------------|------------------------|
| HP Z2 Mini and Z2/Z4/Z6 TWR Depth Adjustable Fixed Rail Rack Kit | Y                  | Y          | 2A8Y5AA                |

#### Software

|                                                   | Factory Configured | Option Kit | Support Notes |
|---------------------------------------------------|--------------------|------------|---------------|
| HP Performance Advisor                            | Y                  | N          | 1             |
| HP PC Hardware Diagnostics UEFI (Windows OS only) | Y                  | N          | 2             |
| HP PC Hardware Diagnostics Windows                | Y                  | N          |               |
| ZCentral Remote Boost                             | Y                  | N          |               |
| HP Sure Sense                                     | Y                  | N          |               |
| HP Notifications                                  | Y                  | N          |               |
| HP Desktop Support Utility                        | Y                  | N          |               |
| HP Documentation                                  | Y                  | N          |               |
| HP Image Assistant                                | N                  | N          |               |
| HP Support Assistant                              | N                  | N          |               |

1. Supports, and preinstalled with Windows 10 only. Also available as a free download from <http://www.hp.com/go/performanceadvisor>

2.Windows OS only

### Supported Components

**Operating Systems**    Windows 10 Pro 64  
                                 Windows 10 Pro 64 Workstation  
                                 Windows 10 Home 64  
                                 Ubuntu 20.04 LTS  
                                 Linux Ready  
                                 Red Hat Enterprise Linux (RHEL) Workstation – Paper license (1 yr)

1. For detailed OS/hardware support information for Linux, see:  
[http://www.hp.com/support/linux\\_hardware\\_matrix](http://www.hp.com/support/linux_hardware_matrix)

### Supported Components

#### HP BIOS

Key features of the HP BIOS include:

- Deployment and manageability – HP BIOS provides several technologies that help integrate the HP Z2 G5 Workstation into the enterprise, such as PXE, remote recovery, remote configuration, remote control, and BIOS (F10) Setup support for 14 languages.
- Network firmware updates – Update your BIOS via the cloud or standardize on a BIOS version hosted on an Enterprise network.
- Stability – HP BIOS supports the HP stable product roadmap by releasing only critical BIOS changes to the factory and advanced change notification.
- Class 3 UEFI specification version 2.6
- Absolute Persistence agent – For tracking and tracing services, available in select countries, separate software and purchase of a subscription is required.
- Thermal and power management – The HP BIOS provides and enables thermal and power management technologies so component temperatures are managed for high reliability and to assist in operating the HP Workstation computer in any enterprise environment.
- Acoustic performance – Industry leading acoustic emissions across the range of operating conditions.
- Serviceability – HP BIOS provides diagnostic and detailed service information.
- Upgrades and recovery – HP BIOS provides numerous ways to upgrade HP Workstation computers, including BIOS updates from within Windows (HP Firmware Update and Recovery), HP Client Manager, and fail-safe recovery. In addition, the HP BIOS Configuration Utility enables replication of BIOS settings within Windows while the Replicated Setup feature provides the same capability within BIOS (F10) Setup. The BIOS Configuration Utility is available from the HP support website.
- HP BIOS uses PKI signing of the BIOS for trusted BIOS upgrades and recovery.

#### Additional HP BIOS Features:

- Power-On password – Helps prevent an unauthorized user from powering on the system.
- Administrator password – Also known as the BIOS Setup password, this helps prevent unauthorized changes to the system configuration. If the administrator password is not known, the BIOS cannot be updated and changes cannot be made to BIOS settings using BIOS Setup or under the OS.
- S4/S5 Maximum Power Savings setting supports EU Lot6 requirement and allows the computer to power down below 0.5W in S4/S5 (when turned off). When S4/S5 Maximum Power Savings feature is enabled below features are turned off:
  - Power to expansion connectors / slots
  - Wake events other than power buttons (such as wake on LAN)
  - USB charging ports

#### HP Sure Start Gen6

- BIOS Integrity checking – Sure Start protection ensures that only trusted BIOS code is executed and not rootkits, viruses and malware. Verification is done upon boot up, shutdown and while the system is on.
- Sure Start is set by default to automatically repair the BIOS if corrupted or compromised but is policy driven for better manageability. Start is set by default to automatically repair the BIOS if corrupted or compromised but is policy driven for better manageability.
- Protecting beyond BIOS – Integrity checking and repair is extended to other data that should be protected such as network configuration parameters, platform specific information (i.e. system IDs), secure boot credentials, and other code the system needs to boot.

### Supported Components

- Audit enabled – System Audit via Sure Start Event Logs capture data such as incident, repair date and time for troubleshooting and investigating

HP Sure Start Gen6 is available on select HP PCs and requires Windows 10.

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### SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS

#### BIOS

HP BIOSphere Gen6<sup>39</sup>  
BIOS Update via Network  
HP Secure Erase<sup>40</sup>  
Absolute Persistence Module<sup>41</sup>  
Pre-boot Authentication  
HP Wake on WLAN  
HP DriveLock & Automatic DriveLock

#### Software

HP Support Assistant  
HP Image Assistant  
HP Desktop Support Utility  
HP Documentation  
HP Notifications  
HP PC Hardware Diagnostics UEFI  
HP PC Hardware Diagnostics Windows  
HP Performance Advisor<sup>24</sup>  
ZCentral Remote Boost<sup>28</sup>  
HP Smart Support<sup>42</sup>

#### Manageability Features

HP Driver Packs<sup>22</sup>  
HP System Software Manager (SSM)  
HP BIOS Config Utility (BCU)  
HP Manageability Integration Kit Gen4<sup>23</sup>

#### Client Security Software

HP Client Security Manager Gen6<sup>25</sup> including:  
(including Credential Manager, HP Password Manager<sup>26</sup>, HP Spare Key)  
HP Sure Run Gen3<sup>35</sup>  
HP Power On Authentication  
Microsoft Defender<sup>27</sup>

#### Security Management

HP Sure Click<sup>38</sup>  
HP Sure Start Gen6  
HP Sure Sense<sup>29</sup>  
HP Sure Recover Gen3<sup>36</sup>

[22] HP Driver Packs not preinstalled, however available for download at <http://www.hp.com/go/clientmanagement>.

[23] HP Manageability Integration Kit can be downloaded from  
<http://www8.hp.com/us/en/ads/clientmanagement/overview.html>

[24] HP Performance Advisor Software - HP Performance Advisor is ready and waiting to help you get the most out of your HP Workstation from day one—and every day after. Learn more or download at:  
<https://www8.hp.com/us/en/workstations/performance-advisor.html>



### Supported Components

[25] HP Client Security Manager Gen6 requires Windows and is available on the select HP Elite and Pro PCs.

[26] HP Password Manager requires Internet Explorer or Chrome or FireFox. Some websites and applications may not be supported. User may need to enable or allow the add-on / extension in the internet browser.

[27] Microsoft Defender Opt in and internet connection required for updates.

[28] HP Z Central Remote Boost Software does not come preinstalled on Z Workstations but can be downloaded and run on all Z desktop and laptops without license purchase. With non-Z sender devices, purchase of perpetual individual license or perpetual floating license per simultaneously executing versions and purchase of ZCentral Remote Boost Software Support is required. Zcentral Remote Boost requires Windows, RHEL (7 or 8), UBUNTU 18.04 LTS, or HP ThinPro 7 operating systems. MacOS (10.13 or newer) operating system is only supported on the receiver side. Requires network access. The software is available for download at [hp.com/ZCentralRemoteBoost](http://hp.com/ZCentralRemoteBoost).

[29] HP Sure Sense requires Windows 10 Pro or Enterprise. See product specifications for availability.

[35] HP Sure Run is available on HP Workstation products equipped with 8th generation Intel® or AMD® processors.

[36] HP Sure Recover Gen3 is available on select HP PCs and requires an open network connection. You must back up important files, data, photos, videos, etc. before using HP Sure Recover to avoid loss of data.

[38] HP Sure Click requires Windows 10 Pro or Enterprise. See [https://bit.ly/2PrLT6A\\_SureClick](https://bit.ly/2PrLT6A_SureClick) for complete details.

[39] HP BIOSphere Gen6 Features may vary depending on the platform and configurations.

[40] HP Secure Erase for the methods outlined in the National Institute of Standards and Technology Special Publication 800-88 "Clear" sanitation method. HP Secure Erase does not support platforms with Intel® Optane™.

[41] Absolute agent is shipped turned off, and will be activated when customers activate a purchased subscription.

Subscriptions can be purchased for terms ranging multiple years. Service is limited, check with Absolute for availability outside the U.S. The Absolute Recovery Guarantee is a limited warranty. Certain conditions apply. For full details visit: <http://www.absolute.com/company/legal/agreements/computrace-agreement>. Data Delete is an optional service provided by Absolute Software. If utilized, the Recovery Guarantee is null and void. In order to use the Data Delete service, customers must first sign a Pre-Authorization Agreement and either obtain a PIN or purchase one or more RSA SecurID tokens from Absolute Software.

[42] HP Smart Support is available to commercial customers through your HP Service Representative and HP Factory Configuration Services; or it can be downloaded at: <http://www.hp.com/smart-support>. HP Smart Support automatically collects the telemetry necessary upon initial boot of the product to deliver device-level configuration data and health insights.

### System Technical Specifications

#### System Board

|                                         |                                                                                                                                                       |
|-----------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>System Board Form Factor</b>         | Customized PCB                                                                                                                                        |
| <b>Processor Socket</b>                 | Single LGA-1200                                                                                                                                       |
| <b>CPU Bus Speed</b>                    | DMI                                                                                                                                                   |
| <b>Chipset</b>                          | Intel® PCH W480                                                                                                                                       |
| <b>Super I/O Controller</b>             | Nuvoton SIO18                                                                                                                                         |
| <b>Memory Expansion Slots</b>           | 4 DDR4 memory slots                                                                                                                                   |
| <b>Memory Type Supported</b>            | DDR4, UDIMM (Unbuffered), ECC& non-ECC                                                                                                                |
| <b>Memory Modes</b>                     | Non-Interleaved for single channel. Interleaved when both channels are populated.                                                                     |
| <b>Memory Speed Supported</b>           | 2933MT/s DDR4                                                                                                                                         |
| <b>Memory Protection</b>                | ECC available on data                                                                                                                                 |
| <b>Maximum Memory</b>                   | 128GB                                                                                                                                                 |
| <b>Memory Configuration (Supported)</b> | 4GB, 8GB 16GB and 32GB non-ECC/8GB, 16GB and 32GB ECC unbuffered DIMMs are supported. ECC and non-ECC memory DIMMs cannot be mixed in the same system |

#### PCI Express Connectors

- 1 PCI Express Gen3 slot x16 mechanical/ x16 electrical (full height, full length)
- 1 PCI Express Gen3 slot x4 mechanical/ x1 electrical (full height, full length, open-ended)
- 1 PCI Express Gen3 slot x4 mechanical/ x1 electrical (full height, full length, open-ended)
- 1 PCI Express Gen3 slot x16 mechanical/ x4 electrical (full height, full length)
- 2 M.2 2280 Storage (PCIe Gen3 x4)
- 1 M.2 2230 WLAN (PCIe Gen3 x1+ Intel CNVi)

#### Supported Drive Interfaces

In the PCIe Gen3 (x16 electrical/x16 mechanical) slot, it intent to supported HP certified added in card.

##### SATA

Integrated (4) Serial ATA interfaces (6Gb/s SATA). RAID 0 and 1 supported. Factory integrated RAID for Microsoft Windows only.

##### Serial Attached SCSI

None

##### Integrated Graphics

Intel® UHD Graphics 630 (on Core i3/i5/i7/i9-10xxx processors); Intel® Integrated Graphics P630 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 12, OpenGL 4.5 and OpenCL 2.1 on Intel® UHD Graphics P630;

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### System Technical Specifications

|                                                            |                                                                                                                                                        |                                                                                                                                                                                                                                       |
|------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                            |                                                                                                                                                        | 3 DP 1.4 graphics ports integrated in motherboard; Supports up to three simultaneous displays across DisplayPort™/HDMI*/DVI outputs.                                                                                                  |
|                                                            |                                                                                                                                                        | Max. resolution supported on DP 1.4 ports: 4096x2304 @ 60Hz,                                                                                                                                                                          |
|                                                            |                                                                                                                                                        | 24bpp                                                                                                                                                                                                                                 |
|                                                            | <b>Network Controller</b>                                                                                                                              | Integrated Ethernet PHY Connection I219LM. Management capabilities: WOL, PXE 2.1 and AMT 12                                                                                                                                           |
|                                                            | <b>Serial</b>                                                                                                                                          | Yes- requires optional Serial Port Adapter Kit                                                                                                                                                                                        |
|                                                            | <b>2nd Serial</b>                                                                                                                                      | Yes- requires optional Serial Port Adapter Kit                                                                                                                                                                                        |
|                                                            | <b>HD Integrated Audio</b>                                                                                                                             | Yes                                                                                                                                                                                                                                   |
| <b>USB Connector(s)</b>                                    | <b>Front</b>                                                                                                                                           | 2 Type-A SuperSpeed USB 5Gbps signaling rate port (1 charge supports up to 5V/2.1A); 2 Type-A SuperSpeed USB 10Gbps signaling rate port; 1 Type-C® SuperSpeed USB 10Gbps signaling rate port (optional, charge supports up to 5V/3A)  |
|                                                            | <b>Rear</b>                                                                                                                                            | 2 High-speed USB 480Mbps signaling rate port; 2 Type-A SuperSpeed USB 5Gbps signaling rate port; 2 Type-A SuperSpeed USB 10Gbps signaling rate port; 1 Type-C® SuperSpeed USB 10Gbps signaling rate Alt mode port (optional via Flex) |
|                                                            | <b>Internal</b>                                                                                                                                        | 1 High-Speed USB 480Mbps signaling rate port                                                                                                                                                                                          |
| <b>HD Integrated Audio</b>                                 | Yes                                                                                                                                                    |                                                                                                                                                                                                                                       |
| <b>Flash ROM</b>                                           | Yes                                                                                                                                                    |                                                                                                                                                                                                                                       |
| <b>CPU Fan Header</b>                                      | Yes                                                                                                                                                    |                                                                                                                                                                                                                                       |
| <b>Memory Fan Header</b>                                   | None                                                                                                                                                   |                                                                                                                                                                                                                                       |
| <b>Chassis Fan Header</b>                                  | 1 Rear System Chassis Fan Header, 1 Graphic chassis Fan Header.                                                                                        |                                                                                                                                                                                                                                       |
| <b>Front PCI Fan Header</b>                                | None                                                                                                                                                   |                                                                                                                                                                                                                                       |
| <b>Front Control Panel/Speaker Header</b>                  | Yes                                                                                                                                                    |                                                                                                                                                                                                                                       |
| <b>CMOS Battery Holder - Lithium</b>                       | Yes                                                                                                                                                    |                                                                                                                                                                                                                                       |
| <b>Integrated Trusted Platform Module</b>                  | Integrated TPM 2.0<br>Convertible to FIPS 140-2 Certified mode through firmware v7.85<br>The TPM module disabled where restricted by law, i.e. Russia. |                                                                                                                                                                                                                                       |
| <b>Power Supply Headers</b>                                | Yes                                                                                                                                                    |                                                                                                                                                                                                                                       |
| <b>Power Switch, Power LED &amp; Hard Drive LED Header</b> | Yes                                                                                                                                                    |                                                                                                                                                                                                                                       |
| <b>Clear Password Jumper</b>                               | None                                                                                                                                                   |                                                                                                                                                                                                                                       |
| <b>Keyboard/Mouse</b>                                      | USB or PS/2 (option)                                                                                                                                   |                                                                                                                                                                                                                                       |
| <b>Power Supply</b>                                        | 700W EPA92, 500W EPA90 and 350W EPA92                                                                                                                  |                                                                                                                                                                                                                                       |

[1]Maximum memory capacities assume 64-bit operating systems, such as Genuine Windows® 10 Professional 64 bit, Red Hat Linux 64-bit. 32-bit Windows Operating Systems support up to 4 GB.

[2]M.2 storage supports compatible devices up to 80mm

### System Technical Specifications

#### PCIe Hold-down / Blower Kit Specification

Please refer to section Supported Components - Graphics for supported cards list.

| Performance Class | Product Name              | Slots space Required | Max Card Count | Number of Cards Require PCIe Hold-down / Blower Kit |
|-------------------|---------------------------|----------------------|----------------|-----------------------------------------------------|
| <b>High</b>       | NVIDIA® Quadro® RTX™ 6000 | 2                    | 1              | 1                                                   |
|                   | NVIDIA® Quadro® RTX™ 5000 | 2                    | 1              | 1                                                   |
|                   | NVIDIA® Quadro® RTX™ 4000 | 2                    | 1              | 1                                                   |
|                   | AMD Radeon™ Pro W5700     | 2                    | 1              | 1                                                   |
| <b>Mid-Range</b>  | AMD Radeon™ Pro W5500     | 1                    | 1              | 1                                                   |
|                   | NVIDIA® Quadro® P2200     | 1                    | 2              | 1                                                   |
|                   | NVIDIA® Quadro® P1000     | 1                    | 2              | 2                                                   |
|                   | AMD Radeon™ Pro WX 3200   | 1                    | 2              | 2                                                   |
|                   | NVIDIA® Quadro® T1000     | 1                    | 2              | 2                                                   |
| <b>Entry</b>      | NVIDIA® Quadro® P620      | 1                    | 2              | 2                                                   |
|                   | NVIDIA® Quadro® P400      | 1                    | 2              | 3                                                   |

**NOTE:** The PCIe Hold-down / Blower Kit is automatically included when the 700W chassis is configured.

### System Technical Specifications

| System Configurations      |                         |                                          |              |             |              |             |              |
|----------------------------|-------------------------|------------------------------------------|--------------|-------------|--------------|-------------|--------------|
| Example Configuration #1   | Processor Info          | CPU I Core i5-10400 2.9GHz 6C65W         |              |             |              |             |              |
|                            | Memory Info             | 8GB (1x 8GB) 2666 MHz DDR4 non-ECC       |              |             |              |             |              |
|                            | Graphics Info           | Intel® UHD Integrated Graphics 630       |              |             |              |             |              |
|                            | Disks/Optical/Floppy    | 1x SATA 1TB 7.2k rpm / 1x 9.5mm Slim ODD |              |             |              |             |              |
|                            | PSU                     | 350W                                     |              |             |              |             |              |
|                            | Other                   |                                          |              |             |              |             |              |
| Energy Consumption (Watts) |                         | 115 VAC                                  |              | 230 VAC     |              | 100 VAC     |              |
|                            |                         | LAN Enabled                              | LAN Disabled | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled |
|                            | Windows long Idle (S0)  | 12.3                                     |              | 10.872      |              | 11.564      |              |
|                            | Windows short Idle (S0) | 13.599                                   |              | 12.504      |              | 13.423      |              |
|                            | Windows Busy Typ (S0)   | 94.399                                   |              | 92.031      |              | 96.542      |              |
|                            | Windows Busy Max (S0)   | 112.35                                   |              | 109.536     |              | 114.513     |              |
|                            | Sleep (S3)              | 0.774                                    | 0.805        | 0.766       | 0.803        | 0.759       | 0.808        |
|                            | Off (S5)                | 0.505                                    | 0.504        | 0.51        | 0.51         | 0.512       | 0.508        |
|                            | Zero Power Mode (EuP)   | 0.21                                     |              | 0.221       |              | 0.276       |              |
| Heat Dissipation (Btu/hr)  |                         | 115 VAC                                  |              | 230 VAC     |              | 100 VAC     |              |
|                            |                         | LAN Enabled                              | LAN Disabled | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled |
|                            | Windows Idle (S0)       | 41.967                                   |              | 37.095      |              | 39.456      |              |
|                            | Windows short Idle (S0) | 46.399                                   |              | 42.663      |              | 45.799      |              |
|                            | Windows Busy Typ (S0)   | 322.089                                  |              | 314.009     |              | 329.401     |              |
|                            | Windows Busy Max (S0)   | 383.338                                  |              | 373.736     |              | 390.718     |              |
|                            | Sleep (S3)              | 2.64                                     | 2.746        | 2.613       | 2.739        | 2.589       | 2.756        |
|                            | Off (S5)                | 1.723                                    | 1.719        | 1.74        | 1.74         | 1.746       | 1.733        |
|                            | Zero Power Mode (EuP)   | 0.716                                    |              | 0.754       |              | 0.941       |              |
| Example Configuration #2   | Processor Info          | CPU I Core i7-10700 2.9GHz 8C65W         |              |             |              |             |              |
|                            | Memory Info             | 16GB (2x 8GB) 2666 MHz DDR4 non-ECC      |              |             |              |             |              |
|                            | Graphics Info           | P2200 Graphics                           |              |             |              |             |              |
|                            | Disks/Optical/Floppy    | 1x SATA 256GB SSD / 1x 9.5mm Slim ODD    |              |             |              |             |              |
|                            | PSU                     | 500W                                     |              |             |              |             |              |
|                            | Other                   |                                          |              |             |              |             |              |
| Energy Consumption (Watts) |                         | 115 VAC                                  |              | 230 VAC     |              | 100 VAC     |              |
|                            |                         | LAN Enabled                              | LAN Disabled | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled |
|                            | Windows long Idle (S0)  | 13.976                                   |              | 13.668      |              | 13.856      |              |
|                            | Windows short Idle (S0) | 15.331                                   |              | 15.818      |              | 15.322      |              |
|                            | Windows Busy Typ (S0)   | 165.25                                   |              | 147.41      |              | 167.52      |              |
|                            | Windows Busy Max (S0)   | 197.41                                   |              | 183.52      |              | 190.23      |              |
|                            | Sleep (S3)              | 0.843                                    | 0.883        | 0.839       | 0.871        | 0.851       | 0.865        |
|                            | Off (S5)                | 0.509                                    | 0.506        | 0.511       | 0.509        | 0.512       | 0.508        |
|                            | Zero Power Mode (EuP)   | 0.21                                     |              | 0.222       |              | 0.224       |              |
|                            |                         | 115 VAC                                  |              | 230 VAC     |              | 100 VAC     |              |

### System Technical Specifications

| Heat Dissipation<br>(Btu/hr) |                         | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled |
|------------------------------|-------------------------|-------------|--------------|-------------|--------------|-------------|--------------|
|                              | Windows Idle (S0)       | 47.686      |              | 46.635      |              | 47.276      |              |
|                              | Windows short Idle (S0) | 52.309      |              | 53.971      |              | 52.278      |              |
|                              | Windows Busy Typ (S0)   | 563.883     |              | 502.912     |              | 571.578     |              |
|                              | Windows Busy Max (S0)   | 673.562     |              | 626.171     |              | 649.065     |              |
|                              | Sleep (S3)              | 2.876       | 3.012        | 2.862       | 2.917        | 2.903       | 2.951        |
|                              | Off (S5)                | 1.73        | 1.726        | 1.743       | 1.736        | 1.746       | 1.733        |
|                              | Zero Power Mode (EuP)   | 0.716       |              | 0.757       |              | 0.764       |              |

### System Technical Specifications

|                                 |                             |                                   |
|---------------------------------|-----------------------------|-----------------------------------|
| <b>Example Configuration #3</b> | <b>Processor Info</b>       | CPU Xeon W-1270P 3.8GHz 8C125W    |
|                                 | <b>Memory Info</b>          | 128GB (4x 32GB) 2666 MHz DDR4 ECC |
|                                 | <b>Graphics Info</b>        | RTX6000 Graphics                  |
|                                 | <b>Disks/Optical/Floppy</b> | 1x SATA 1TB SSD Z Turbo           |
|                                 | <b>PSU</b>                  | 700W                              |
|                                 | <b>Other</b>                |                                   |

| <b>Energy Consumption (Watts)</b> |                         | 115 VAC     |              | 230 VAC     |              | 100 VAC     |              |
|-----------------------------------|-------------------------|-------------|--------------|-------------|--------------|-------------|--------------|
|                                   |                         | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled |
|                                   | Windows long Idle (S0)  | 17.623      |              | 17.283      |              | 17.552      |              |
|                                   | Windows short Idle (S0) | 19.313      |              | 18.848      |              | 18.846      |              |
|                                   | Windows Busy Typ (S0)   | 245.58      |              | 238.68      |              | 248.88      |              |
|                                   | Windows Busy Max (S0)   | 275.45      |              | 266.79      |              | 272.89      |              |
|                                   | Sleep (S3)              | 0.958       | 0.869        | 0.981       | 0.836        | 0.965       | 0.852        |
|                                   | Off (S5)                | 0.628       | 0.506        | 0.623       | 0.512        | 0.624       | 0.509        |
|                                   | Zero Power Mode (EuP)   | 0.225       |              | 0.23        |              | 0.24        |              |

| <b>Heat Dissipation (Btu/hr)</b> |                         | 115 VAC     |              | 230 VAC     |              | 100 VAC     |              |
|----------------------------------|-------------------------|-------------|--------------|-------------|--------------|-------------|--------------|
|                                  |                         | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled |
|                                  | Windows Idle (S0)       | 60.129      |              | 58.969      |              | 70.611      |              |
|                                  | Windows short Idle (S0) | 65.895      |              | 64.309      |              | 76.974      |              |
|                                  | Windows Busy Typ (S0)   | 837.918     |              | 814.376     |              | 987.296     |              |
|                                  | Windows Busy Max (S0)   | 939.835     |              | 910.287     |              | 1029.821    |              |
|                                  | Sleep (S3)              | 6.762       | 6.489        | 6.707       | 6.213        | 6.796       | 6.752        |
|                                  | Off (S5)                | 2.238       | 1.729        | 1.76        | 1.743        | 2.125       | 1.746        |
|                                  | Zero Power Mode (EuP)   | 0.771       |              | 0.794       |              | 0.75        |              |

|                                 |                             |                                 |
|---------------------------------|-----------------------------|---------------------------------|
| <b>Example Configuration #4</b> | <b>Processor Info</b>       | CPU Xeon W-1250 3.3GHz 6C80W    |
|                                 | <b>Memory Info</b>          | 16GB (2x 8GB) 2666 MHz DDR4 ECC |
|                                 | <b>Graphics Info</b>        | RTX5000 Graphics                |
|                                 | <b>Disks/Optical/Floppy</b> | 1x SATA 1TB SSD Z Turbo         |
|                                 | <b>PSU</b>                  | 700W                            |
|                                 | <b>Other</b>                |                                 |

| <b>Energy Consumption (Watts)</b> |                         | 115 VAC     |              | 230 VAC     |              | 100 VAC     |              |
|-----------------------------------|-------------------------|-------------|--------------|-------------|--------------|-------------|--------------|
|                                   |                         | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled |
|                                   | Windows long Idle (S0)  | 17.623      |              | 17.283      |              | 17.552      |              |
|                                   | Windows short Idle (S0) | 19.313      |              | 18.848      |              | 18.846      |              |
|                                   | Windows Busy Typ (S0)   | 245.58      |              | 238.68      |              | 248.88      |              |
|                                   | Windows Busy Max (S0)   | 275.45      |              | 266.79      |              | 272.89      |              |
|                                   | Sleep (S3)              | 0.958       | 0.869        | 0.981       | 0.836        | 0.965       | 0.852        |
|                                   | Off (S5)                | 0.628       | 0.506        | 0.623       | 0.512        | 0.624       | 0.509        |
|                                   | Zero Power Mode (EuP)   | 0.225       |              | 0.23        |              | 0.24        |              |

### System Technical Specifications

| Heat Dissipation<br>(Btu/hr) |                         | 115 VAC     |              | 230 VAC     |              | 100 VAC     |              |
|------------------------------|-------------------------|-------------|--------------|-------------|--------------|-------------|--------------|
|                              |                         | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled | LAN Enabled | LAN Disabled |
|                              | Windows Idle (S0)       | 60.129      |              | 58.969      |              | 59.887      |              |
|                              | Windows short Idle (S0) | 65.895      |              | 64.309      |              | 64.302      |              |
|                              | Windows Busy Typ (S0)   | 837.918     |              | 814.376     |              | 849.178     |              |
|                              | Windows Busy Max (S0)   | 939.835     |              | 910.287     |              | 931.101     |              |
|                              | Sleep (S3)              | 3.268       | 2.965        | 3.347       | 2.852        | 3.292       | 2.907        |
|                              | Off (S5)                | 2.258       | 1.726        | 2.125       | 1.749        | 2.129       | 1.736        |
|                              | Zero Power Mode (EuP)   | 0.767       |              | 0.784       |              | 0.818       |              |



### System Technical Specifications

|                                                                                          |                                                                                      |
|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------|
| <b>Operating Voltage Range</b>                                                           | 90-269 VAC                                                                           |
| <b>Rated Voltage Range</b>                                                               | 100-240 VAC                                                                          |
| <b>Rated Line Frequency</b>                                                              | 50-60 Hz                                                                             |
| <b>Operating Line Frequency Range</b>                                                    | 47-66 Hz                                                                             |
| <b>Rated Input Current</b>                                                               | 8.2A @ 100-240V (700W PSU)<br>6A @ 100-240V (500W PSU)<br>4.2A @ 100-240V (350W PSU) |
| <b>Heat Dissipation</b>                                                                  | Typical: 444 btu/hr (112 kcal/hr)<br>Maximum: 1484 btu/hr (374 kcal/hr)              |
| <b>Power Supply Fan</b>                                                                  | 70mm x 70mm x 25mm 4-wire PWM                                                        |
| <b>ENERGY STAR® certified</b><br>(Config Dependent)                                      | Yes                                                                                  |
| <b>CECP Compliant @ 220V</b>                                                             | Yes                                                                                  |
| <b>FEMP Standby Power Compliant</b>                                                      | Yes, with Wake-on-LAN disabled: <1W in S4/S5 - Power Off                             |
| <b>Built-in Self Test (BIST) LED</b>                                                     | Yes                                                                                  |
| <b>Surge Tolerant Full Ranging Power Supply</b><br>(withstands power surges up to 2000V) | Yes                                                                                  |
| <b>Hood Lock Header</b>                                                                  | Yes                                                                                  |
| <b>ErP Lot 6- Tier 1 Compliance @ 230V</b> (<1W in S4/S5 - Power Off)                    | Yes                                                                                  |
| <b>ErP Lot 6- Tier 2 Compliance @ 230V</b> (<0.5W in S4/S5 - Power Off)                  | Yes                                                                                  |

| <b>Declared Noise Emissions</b> (Entry-level, Mid-level, and High-end configurations; tested on floor) |                                               |                                                              |                                                    |
|--------------------------------------------------------------------------------------------------------|-----------------------------------------------|--------------------------------------------------------------|----------------------------------------------------|
| <b>System Configuration</b><br>(Entry level)                                                           | <b>Processor Info</b>                         | I5-10600 COMET LAKE G-0 6c 65W MS2 vPro® QS QTLR             |                                                    |
|                                                                                                        | <b>Memory Info</b>                            | 4*Samsung 32GB 2933 nECC DIMM <sup>1</sup>                   |                                                    |
|                                                                                                        | <b>Graphics Info</b>                          | Intel® UHD                                                   |                                                    |
|                                                                                                        | <b>Disks/Optical/PSU</b>                      | Samsung PM871b 1TB 6Gb/s SSD / No Optical / Chicony 700W PSU |                                                    |
| <b>Declared Noise Emissions</b><br>(in accordance with ISO 7779 and ISO 9296)                          |                                               | <b>Sound Power</b> (LWAd, bels)                              | <b>Deskside Sound Pressure</b><br>(LpAm, decibels) |
|                                                                                                        | <b>Idle</b>                                   | 3.24                                                         | 13.7                                               |
|                                                                                                        | <b>Hard drive Operating</b><br>(random reads) | 3.44                                                         | 16.9                                               |
|                                                                                                        | <b>Hard drive Operating</b><br>(active mode)  | 3.62                                                         | 15.7                                               |
| <b>System Configuration</b><br>(Entry level)                                                           | <b>Processor Info</b>                         | W-1250 COMET LAKE WS G-0 6c LGA 80W WE1 vPro® QS QTMD        |                                                    |
|                                                                                                        | <b>Memory Info</b>                            | 4* Samsung 32GB 2933 nECC DIMM <sup>1</sup>                  |                                                    |
|                                                                                                        | <b>Graphics Info</b>                          | NVIDIA® RTX5000                                              |                                                    |
|                                                                                                        | <b>Disks/Optical /PSU</b>                     | 2*WD 2TB 7200RPM SATA HSS / No Optical / Lite-on 500W PSU    |                                                    |

### System Technical Specifications

|                                                                               |                                               |                                                                 |                                                    |
|-------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------------------|----------------------------------------------------|
| <b>Declared Noise Emissions</b><br>(in accordance with ISO 7779 and ISO 9296) |                                               | <b>Sound Power</b> (LWAd, bels)                                 | <b>Deskside Sound Pressure</b><br>(LpAm, decibels) |
|                                                                               | <b>Idle</b>                                   | 3.47                                                            | 18.2                                               |
|                                                                               | <b>Hard drive Operating</b><br>(random reads) | 3.75                                                            | 20.4                                               |
|                                                                               | <b>Hard drive Operating</b><br>(active mode)  | 3.41                                                            | 22.2                                               |
| <b>System Configuration</b><br><b>(Entry level)</b>                           | <b>Processor Info</b>                         | I9-10900 COMET LAKE WS P-1 10c LGA 2.8GHz 65W P2 vPro® QUBN     |                                                    |
|                                                                               | <b>Memory Info</b>                            | 4*Samsung 4*Samsung 32GB 2933 nECC DIMM <sup>1</sup>            |                                                    |
|                                                                               | <b>Graphics Info</b>                          | Intel® UHD                                                      |                                                    |
|                                                                               | <b>Disks/Optical /PSU</b>                     | 1 TB SATA 6Gb/s SSD / No Optical / Chicony 700W PSU             |                                                    |
| <b>Declared Noise Emissions</b><br>(in accordance with ISO 7779 and ISO 9296) |                                               | <b>Sound Power</b> (LWAd, bels)                                 | <b>Deskside Sound Pressure</b><br>(LpAm, decibels) |
|                                                                               | <b>Idle</b>                                   | 3.24                                                            | 13.5                                               |
|                                                                               | <b>Hard drive Operating</b><br>(random reads) | 3.39                                                            | 15.8                                               |
|                                                                               | <b>Hard drive Operating</b><br>(active mode)  | 3.49                                                            | 15.9                                               |
| <b>System Configuration</b><br><b>(Mid-level)</b>                             | <b>Processor Info</b>                         | W-1290 COMET LAKE WS P-1 10c 3.2G LGA 80W WE3 vPro® QSK QS QUBT |                                                    |
|                                                                               | <b>Memory Info</b>                            | 4* Samsung 32GB 2933 nECC DIMM <sup>1</sup>                     |                                                    |
|                                                                               | <b>Graphics Info</b>                          | NVIDIA® RTX5000                                                 |                                                    |
|                                                                               | <b>Disks/Optical /PSU</b>                     | 2*WD 2TB 7200RPM SATA HSS / No Optical / Lite-on 500W PSU       |                                                    |
| <b>Declared Noise Emissions</b><br>(in accordance with ISO 7779 and ISO 9296) |                                               | <b>Sound Power</b> (LWAd, bels)                                 | <b>Deskside Sound Pressure</b><br>(LpAm, decibels) |
|                                                                               | <b>Idle</b>                                   | 3.55                                                            | 16.9                                               |
|                                                                               | <b>Hard drive Operating</b><br>(random reads) | 3.72                                                            | 19.9                                               |
|                                                                               | <b>Hard drive Operating</b><br>(active mode)  | 3.43                                                            | 21.5                                               |
| <b>System Configuration</b><br><b>(High-end)</b>                              | <b>Processor Info</b>                         | I9-10900K COMET LAKE WS P-1 10c LGA 3.7GHz 125W P2K vPro® QUBQ  |                                                    |
|                                                                               | <b>Memory Info</b>                            | 4* Samsung 32GB 2933 nECC DIMM <sup>1</sup>                     |                                                    |
|                                                                               | <b>Graphics Info</b>                          | NVIDIA® RTX5000                                                 |                                                    |
|                                                                               | <b>Disks/Optical/PSU</b>                      | 2*WD 2TB 7200RPM SATA HSS / No Optical / Lite-on 500W PSU       |                                                    |
| <b>Declared Noise Emissions</b><br>(in accordance with ISO 7779 and ISO 9296) |                                               | <b>Sound Power</b> (LWAd, bels)                                 | <b>Deskside Sound Pressure</b><br>(LpAm, decibels) |
|                                                                               | <b>Idle</b>                                   | 3.50                                                            | 18.3                                               |
|                                                                               | <b>Hard drive Operating</b><br>(random reads) | 3.88                                                            | 20.6                                               |
|                                                                               | <b>Hard drive Operating</b><br>(active mode)  | 3.88                                                            | 20.8                                               |
| <a href="#">Note 1: Transfer rates up to 2933MT/s.</a>                        |                                               |                                                                 |                                                    |

### Environmental Requirements

#### Temperature

Operating: 5° to 35° C (40° to 95° F)  
 Above 1524 m (5,000 feet) altitude, the maximum operating temperature is reduced by 1° C (1.8° F) for every 305 m (1,000 feet) increase in elevation  
 Non-operating: -40° to 60° C (-40° to 140° F)  
 Maximum rate of change: 10°C/hr

#### Humidity

Operating: 10% to 85% RH, non-condensing, 35° C maximum wet bulb

### System Technical Specifications

|                               |                                                                                                                                                                                                                                                                                                                                                           |
|-------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Maximum Altitude</b>       | Non-operating: 10% to 90% RH, non-condensing, 35° C maximum wet bulb<br>Operating (with Rotational Hard Drives): 3,048 m (10,000 feet)<br>Operating (with only Solid-State Drives): 5,000 m (16,404 feet)<br>Non-operating: 12,192 m (40,000 feet)<br>Maximum operating temperature is reduced as altitude increases. See <b>Temperature</b> for details. |
| <b>Shock (non-repetitive)</b> | Operating ½-sine: 40g, 2-3ms (~62 cm/sec)<br>Non-operating ½-sine: 160 cm/s, 2-3 ms (~105 g)<br>Non-operating square: 422 cm/s, 20 g                                                                                                                                                                                                                      |
| <b>Vibration</b>              | Operating random: 0.5 g (rms), 5-300 Hz, up to 0.0025 g²/Hz<br>Non-operating random: 2.0 g (rms), 5-500 Hz, up to 0.0150 g²/Hz                                                                                                                                                                                                                            |

### Physical Security and Serviceability

|                                                |                                                                                                                                                                                                                                                                                    |
|------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Access Panel</b>                            | Tool-less<br>Includes system board and memory information                                                                                                                                                                                                                          |
| <b>Optical Drive</b>                           | Tool-less, except for Screw-In carrier                                                                                                                                                                                                                                             |
| <b>Hard Drives</b>                             | Tool-less, except for 2.5" bay                                                                                                                                                                                                                                                     |
| <b>Expansion Cards</b>                         | Tool-less                                                                                                                                                                                                                                                                          |
| <b>Processor Socket</b>                        | Tool-less, except for the processor heatsink                                                                                                                                                                                                                                       |
| <b>Blue User Touch Points</b>                  | Yes, on tool-less internal chassis mechanisms                                                                                                                                                                                                                                      |
| <b>Color-coordinated Cables and Connectors</b> | Yes                                                                                                                                                                                                                                                                                |
| <b>Memory</b>                                  | Tool-less                                                                                                                                                                                                                                                                          |
| <b>System Board</b>                            | Screw-In                                                                                                                                                                                                                                                                           |
| <b>Padlock Support</b>                         | Yes (optional): Locks side cover and secures chassis from theft<br>0.22-in diameter padlock loop at rear of system                                                                                                                                                                 |
| <b>Cable Lock Support</b>                      | Yes, Kensington Cable Lock (optional): Locks side cover and secures chassis from theft<br>3 mm x 7 mm slot at rear of system                                                                                                                                                       |
| <b>Universal Chassis Clamp Lock Support</b>    | 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<br>Threaded feature at rear of system                                                                      |
| <b>Solenoid Lock and Hood Sensor</b>           | Yes (optional)<br>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. |
| <b>Rear Port Control Cover</b>                 | No                                                                                                                                                                                                                                                                                 |
| <b>CPUs and Heatsinks</b>                      | 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                                                                                                                                                 |
| <b>Internal Speaker</b>                        | Yes                                                                                                                                                                                                                                                                                |
| <b>Power Supply Fans</b>                       | 70mm x 70mm x 25mm 4-wire PWM (non-serviceable)                                                                                                                                                                                                                                    |
| <b>Access Panel Key Lock</b>                   | No                                                                                                                                                                                                                                                                                 |
| <b>Integrated Chassis Handles</b>              | Rear Recessed Handle                                                                                                                                                                                                                                                               |
| <b>Power Supply</b>                            | Requires T-15 Torx or flat blade screwdriver                                                                                                                                                                                                                                       |
| <b>PCI Card Retention</b>                      | Yes, rear (all), middle (optional), front (full-length cards with extender)                                                                                                                                                                                                        |

### Service, Support, and Warranty

### System Technical Specifications

On-site Warranty and Service<sup>1</sup>: Three-years, limited warranty and service offering delivers on-site, next business-day<sup>2</sup> service for parts and labor and includes free telephone support<sup>3</sup> 8am - 5pm. Global coverage<sup>2</sup> ensures that any product purchased in one country and transferred to another, non-restricted country will remain fully covered under the original warranty and service offering. 24/7 operation will not void the HP warranty.

**NOTE 1:** Terms and conditions may vary by country. Certain restrictions and exclusions apply.

**NOTE 2:** On-site service may be provided pursuant to a service contract between HP and an authorized HP third-party provider, and is not available in certain countries. Global service response times are based on commercially reasonable best effort and may vary by country.

**NOTE 3:** Technical telephone support applies only to HP-configured, HP and HP-qualified, third-party hardware and software.

Toll-free calling and 24x7 support service may not be available in some countries.

HP Care Pack Services extend service contracts beyond the standard warranties. Service starts from date of hardware purchase.

To choose the right level of service for your HP product, use the HP Care Pack Services Lookup Tool at:

<http://www.hp.com/go/lookuptool>. Service levels and response times for HP Care Packs may vary depending on your geographic location.

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### System Technical Specifications

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#### Social and Environmental Responsibility

**Eco-Label Certifications & Declarations** This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

- ENERGY STAR® (energy-saving features available on select configurations-Windows only)
- US Federal Energy Management Program (FEMP)
- China Energy Conservation Program
- IT ECO declaration

**Batteries** This battery(s) in this product comply with EU Directive 2006/66/EC

Batteries used in the product do not contain:  
Mercury greater than 1ppm by weight  
Cadmium greater than 20ppm by weight

Battery size: CR2032 (coin cell)  
Battery type: Lithium

**Restricted Material Usage** 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>  
HP Inc. 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.

**End-of-Life Management and Recycling** HP Inc. offers end-of-life HP product return and recycling programs in many geographic 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.

**HP Inc. Corporate Environmental Information** For more information about HP's commitment to the environment:  
Living Progress Report <http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html>

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>

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### 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

Intel Core i3-10100 3.6 4C 65W processor  
Intel Core i5-10500 3.1 6C 65W processor  
Intel Core i5-10600 3.3 6C 65W processor  
Intel Core i7-10700 2.9 8C 65W processor  
Intel Xeon W-1250 3.3 6C 80W processor  
Intel Xeon W-1250P 4.1 6C 125W processor

#### Hard Drives

#### Product #

#### Offering

1TB 7200RPM SATA 3.5 HDD

#### Graphics

#### Product #

#### Offering

AMD Radeon™ Pro WX 3200 4GB

### Technical Specifications - Processors

#### 10th Generation Intel Core Processors

Intel® Core™ i9-10900K Processor  
Intel® Core™ i9-10900 Processor  
Intel® Core™ i9-10900F Processor<sup>1</sup>  
Intel® Core™ i9-10850K Processor  
Intel® Core™ i7-10700K Processor  
Intel® Core™ i7-10700 processor  
Intel® Core™ i5-10600K processor  
Intel® Core™ i5-10600 processor  
Intel® Core™ i5-10500 processor  
Intel® Core™ i5-10400 processor  
Intel® Core™ i5-10400F Processor<sup>1</sup>  
Intel® Core™ i3-10320 processor<sup>1</sup>  
Intel® Core™ i3-10300 processor<sup>1</sup>  
Intel® Core™ i3-10100 processor

#### Intel Xeon W Processors

Intel Xeon W-1290P processor  
Intel Xeon W-1290 processor<sup>1</sup>  
Intel Xeon W-1270P processor<sup>1</sup>  
Intel Xeon W-1270 processor  
Intel Xeon W-1250P processor  
Intel Xeon W-1250 processor

**NOTE 1:** Available in Q4, 2020

### Technical Specifications - Hard Drives

#### SATA Hard Drives for HP Workstations

#### 500GB SATA 7200 rpm 6Gb/s 3.5" HDD

|                                                                                    |                                      |
|------------------------------------------------------------------------------------|--------------------------------------|
| <b>Capacity</b>                                                                    | 500GB                                |
| <b>Protocol</b>                                                                    | SATA                                 |
| <b>Form Factor</b>                                                                 | 3.5"                                 |
| <b>Controller</b>                                                                  | AHCI                                 |
| <b>Height</b>                                                                      | 1 in; 2.54 cm                        |
| <b>Width</b>                                                                       | <b>Media Diameter</b> 3.5 in; 8.9 cm |
|                                                                                    | <b>Physical Size</b> 4 in; 10.17 cm  |
| <b>Interface</b>                                                                   | Serial ATA (6.0Gb/s), NCQ enabled    |
| <b>Synchronous Transfer Rate (Maximum)</b>                                         | Up to 600MB/s *                      |
| <b>Buffer</b>                                                                      | 32MB                                 |
| <b>Seek Time</b> (typical reads, includes controller overhead, including settling) | <b>Single Track</b> 2 ms *           |
|                                                                                    | <b>Average</b> 11 ms *               |
|                                                                                    | <b>Full Stroke</b> 21 ms *           |
| <b>Rotational Speed</b>                                                            | 7,200 rpm                            |
| <b>Logical Blocks</b>                                                              | 976,773,168                          |
| <b>Operating Temperature</b>                                                       | 41° to 131° F (5° to 55° C)          |

*\*Actual performance may vary.*

#### 1TB SATA 7200 rpm 6Gb/s 3.5" HDD

|                                                                                    |                                      |
|------------------------------------------------------------------------------------|--------------------------------------|
| <b>Capacity</b>                                                                    | 1TB                                  |
| <b>Protocol</b>                                                                    | SATA                                 |
| <b>Form Factor</b>                                                                 | 3.5"                                 |
| <b>Controller</b>                                                                  | AHCI                                 |
| <b>Height</b>                                                                      | 1 in; 2.54 cm                        |
| <b>Width</b>                                                                       | <b>Media Diameter</b> 3.5 in; 8.9 cm |
|                                                                                    | <b>Physical Size</b> 4 in; 10.17 cm  |
| <b>Interface</b>                                                                   | Serial ATA (6.0Gb/s), NCQ enabled    |
| <b>Synchronous Transfer Rate (Maximum)</b>                                         | Up to 600 MB/s *                     |
| <b>Buffer</b>                                                                      | 64MB                                 |
| <b>Seek Time</b> (typical reads, includes controller overhead, including settling) | <b>Single Track</b> 2 ms *           |
|                                                                                    | <b>Average</b> 11 ms *               |
|                                                                                    | <b>Full Stroke</b> 21 ms *           |
| <b>Rotational Speed</b>                                                            | 7,200 rpm                            |
| <b>Logical Blocks</b>                                                              | 1,953,525,168                        |
| <b>Operating Temperature</b>                                                       | 41° to 131° F (5° to 55° C)          |

*\*Actual performance may vary.*

#### 2TB SATA 7200 rpm 6Gb/s 3.5" HDD

|                    |                                      |
|--------------------|--------------------------------------|
| <b>Capacity</b>    | 2TB                                  |
| <b>Protocol</b>    | SATA                                 |
| <b>Form Factor</b> | 3.5"                                 |
| <b>Controller</b>  | AHCI                                 |
| <b>NAND Type</b>   | 3D TLC                               |
| <b>Endurance</b>   | 400TBW (TB Written)                  |
| <b>Height</b>      | 1 in; 2.54 cm                        |
| <b>Width</b>       | <b>Media Diameter</b> 3.5 in; 8.9 cm |



### Technical Specifications - Hard Drives

|                                                           |                                                                             |                                    |              |                |
|-----------------------------------------------------------|-----------------------------------------------------------------------------|------------------------------------|--------------|----------------|
| 1TB SATA 7200 rpm<br>6Gb/s 3.5" HDD<br>(Enterprise Class) | Interface                                                                   | Physical Size                      |              | 4 in; 10.17 cm |
|                                                           | Synchronous Transfer Rate (Maximum)                                         | Serial ATA (6.0 Gb/s), NCQ Enabled |              |                |
|                                                           | Buffer                                                                      | Up to 600MB/s *                    |              |                |
|                                                           | Seek Time (typical reads, includes controller overhead, including settling) | 64MB                               | Single Track | 2.0 ms *       |
|                                                           |                                                                             |                                    | Average      | 11 ms *        |
|                                                           |                                                                             |                                    | Full Stroke  | 21 ms *        |
|                                                           | Rotational Speed                                                            | 7,200 rpm                          |              |                |
|                                                           | Logical Blocks                                                              | 3,907,029,168                      |              |                |
|                                                           | Operating Temperature                                                       | 41° to 131° F (5° to 55° C)        |              |                |
|                                                           | *Actual performance may vary.                                               |                                    |              |                |
|                                                           | Capacity                                                                    | 1TB                                |              |                |
|                                                           | Height                                                                      | 1 in; 2.54 cm                      |              |                |
|                                                           | Protocol                                                                    | SATA                               |              |                |
|                                                           | Form Factor                                                                 | 3.5"                               |              |                |
| Controller                                                | AHCI                                                                        |                                    |              |                |
| Width                                                     | Media Diameter                                                              | 3.5 in; 8.9 cm                     |              |                |
|                                                           | Physical Size                                                               | 4 in; 10.17 cm                     |              |                |
| 1TB SATA 7200 rpm<br>6Gb/s 3.5" HDD<br>(Enterprise Class) | Interface                                                                   | Serial ATA (6.0 Gb/s), NCQ Enabled |              |                |
|                                                           | Synchronous Transfer Rate (Maximum)                                         | Up to 600MB/s *                    |              |                |
|                                                           | Buffer                                                                      | 128MB                              |              |                |
|                                                           | Seek Time (typical reads, includes controller overhead, including settling) | Single Track                       | 0.32ms*      |                |
|                                                           |                                                                             | Average                            | 7.45ms*      |                |
|                                                           |                                                                             | Full Stroke                        | 14.2ms*      |                |
|                                                           | Rotational Speed                                                            | 7,200 rpm                          |              |                |
|                                                           | Logical Blocks                                                              | 3,907,029,168                      |              |                |
|                                                           | Operating Temperature                                                       | 41° to 140° F (5° to 60° C)        |              |                |
|                                                           | *Actual performance may vary.                                               |                                    |              |                |
|                                                           | Capacity                                                                    | 1TB                                |              |                |
|                                                           | Protocol                                                                    | SATA                               |              |                |
|                                                           | Form Factor                                                                 | 3.5"                               |              |                |
|                                                           | Controller                                                                  | AHCI                               |              |                |
| Reliability (MTBF)                                        | 2.0M hours                                                                  |                                    |              |                |
| Rated Power On Hours                                      | 8760/yr                                                                     |                                    |              |                |
| Annualized Failure Rate (based on Rated POH)              | <0.62%                                                                      |                                    |              |                |
| Rated for 24/7/365 operation                              |                                                                             |                                    |              |                |
| Physical Size (Height)                                    | 1 in; 2.54 cm                                                               |                                    |              |                |
| Physical Size (Width)                                     | 4 in; 10.17 cm                                                              |                                    |              |                |
| Media Diameter                                            | 3.5 in; 8.9 cm                                                              |                                    |              |                |
| Interface                                                 | Serial ATA (6Gb/s), NCQ enabled                                             |                                    |              |                |

### Technical Specifications - Hard Drives

|                                                                                    |                                                                                    |                             |                |
|------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|-----------------------------|----------------|
| 2TB SATA 7200 rpm<br>6Gb/s 3.5" HDD<br>(Enterprise Class)                          | <b>Synchronous Transfer Rate</b> (Maximum)                                         | Up to 600MB/s*              |                |
|                                                                                    | <b>Buffer</b>                                                                      | 128MB                       |                |
|                                                                                    | <b>Cache</b>                                                                       | Adaptive                    |                |
|                                                                                    | <b>Seek Time</b> (typical reads, includes controller overhead, including settling) | <b>Single Track</b>         | 0.32ms*        |
|                                                                                    |                                                                                    | <b>Average</b>              | 7.45ms*        |
|                                                                                    |                                                                                    | <b>Full Stroke</b>          | 14.2ms*        |
|                                                                                    | <b>Rotational Speed</b>                                                            | 7,200 rpm                   |                |
|                                                                                    | <b>Operating Temperature</b>                                                       | 41° to 131° F (5° to 55° C) |                |
|                                                                                    | <b>Performance</b>                                                                 | <b>Sequential Read</b>      | up to 226MB/s* |
|                                                                                    |                                                                                    | <b>Sequential Write</b>     | up to 226MB/s* |
|                                                                                    | <b>Enterprise Class Features</b>                                                   | High Reliability            |                |
|                                                                                    | *Actual performance may vary.                                                      |                             |                |
|                                                                                    | <b>Capacity</b>                                                                    | 2TB                         |                |
|                                                                                    | <b>Protocol</b>                                                                    | SATA                        |                |
| <b>Form Factor</b>                                                                 | 3.5"                                                                               |                             |                |
| <b>Controller</b>                                                                  | AHCI                                                                               |                             |                |
| <b>Reliability (MTBF)</b>                                                          | 2.0M hours                                                                         |                             |                |
| <b>Rated Power On Hours</b>                                                        | 8760/yr                                                                            |                             |                |
| <b>Annualized Failure Rate</b> (based on Rated POH)                                | <0.62%                                                                             |                             |                |
| <b>Rated for 24/7/365 Operation</b>                                                |                                                                                    |                             |                |
| <b>Physical Size</b> (Height)                                                      | 1 in; 2.54 cm                                                                      |                             |                |
| <b>Physical Size</b> (Width)                                                       | 4 in; 10.17 cm                                                                     |                             |                |
| <b>Media Diameter</b>                                                              | 3.5 in; 8.9 cm                                                                     |                             |                |
| <b>Interface</b>                                                                   | Serial ATA (6Gb/s), NCQ enabled                                                    |                             |                |
| <b>Synchronous Transfer Rate</b> (Maximum)                                         | Up to 600MB/s*                                                                     |                             |                |
| <b>Buffer</b>                                                                      | 128MB                                                                              |                             |                |
| <b>Seek Time</b> (typical reads, includes controller overhead, including settling) | <b>Single Track</b>                                                                | 0.7ms*                      |                |
|                                                                                    | <b>Average</b>                                                                     | 8.5ms*                      |                |
|                                                                                    | <b>Full Stroke</b>                                                                 | 15.7ms*                     |                |
| <b>Operating Temperature</b>                                                       | 41° to 131° F (5° to 55° C)                                                        |                             |                |
| <b>Performance</b>                                                                 | <b>Sequential Read</b>                                                             | up to 226MB/s*              |                |
|                                                                                    | <b>Sequential Write</b>                                                            | up to 226MB/s*              |                |
| <b>Enterprise Class Features</b>                                                   | High Reliability                                                                   |                             |                |
| *Actual performance may vary.                                                      |                                                                                    |                             |                |
| 4TB SATA 7200 rpm<br>6Gb/s 3.5" HDD<br>(Enterprise Class)                          | <b>Capacity</b>                                                                    | 4TB                         |                |
|                                                                                    | <b>Protocol</b>                                                                    | SATA                        |                |
|                                                                                    | <b>Form Factor</b>                                                                 | 3.5"                        |                |
|                                                                                    | <b>Controller</b>                                                                  | AHCI                        |                |
|                                                                                    | <b>Reliability</b>                                                                 | 2.0M hours                  |                |

### Technical Specifications - Hard Drives

|                                                           |                                                                                      |                                   |                            |
|-----------------------------------------------------------|--------------------------------------------------------------------------------------|-----------------------------------|----------------------------|
| 8TB SATA 7200 rpm<br>6Gb/s 3.5" HDD<br>(Enterprise Class) | Rated Power On Hours                                                                 | 8760/yr                           |                            |
|                                                           | Annualized Failure Rate<br>(based on Rated POH)                                      | <0.62%                            |                            |
|                                                           | Rated for 24/7/365<br>Operation                                                      |                                   |                            |
|                                                           | Physical Size (Height)                                                               | 1 in; 2.54 cm                     |                            |
|                                                           | Physical Size (Width)                                                                | 4 in; 10.17 cm                    |                            |
|                                                           | Media Diameter                                                                       | 3.5 in; 8.9 cm                    |                            |
|                                                           | Physical Size                                                                        | 4 in; 10.17 cm                    |                            |
|                                                           | Interface                                                                            | Serial ATA (6Gb/s), NCQ enabled   |                            |
|                                                           | Synchronous Transfer<br>Rate (Maximum)                                               | Up to 600MB/s*                    |                            |
|                                                           | Buffer                                                                               | 256MB                             |                            |
|                                                           | Seek Time (typical reads,<br>includes controller<br>overhead, including<br>settling) | Single Track                      | 0.7ms*                     |
|                                                           |                                                                                      | Average                           | 8.5ms*                     |
|                                                           |                                                                                      | Full Stroke                       | 15.7ms*                    |
|                                                           | Operating Temperature                                                                | 41° to 131° F (5° to 55° C)       |                            |
|                                                           | Performance                                                                          | Sequential Read                   | up to 226MB/s*             |
|                                                           |                                                                                      | Sequential Write                  | up to 226MB/s*             |
|                                                           | Enterprise Class Features                                                            | High Reliability                  |                            |
|                                                           | <a href="#">*Actual performance may vary.</a>                                        |                                   |                            |
| 500GB SATA 7.2K SED<br>2.5" HDD                           | Capacity                                                                             | 500GB                             |                            |
|                                                           | Protocol                                                                             | SATA                              |                            |
|                                                           | Form Factor                                                                          | 3.5"                              |                            |
|                                                           | Controller                                                                           | AHCI                              |                            |
|                                                           | Reliability                                                                          | 2.0M hours                        |                            |
|                                                           | Width                                                                                | Media Diameter                    | 3.5 in; 8.9 cm             |
|                                                           |                                                                                      | Physical Size                     | 4 in; 10.17 cm             |
|                                                           | Interface                                                                            | Serial ATA (6.0Gb/s), NCQ enabled |                            |
|                                                           | Synchronous Transfer<br>Rate (Maximum)                                               | Up to 600MB/s [1]                 |                            |
|                                                           | Buffer                                                                               | 256MB                             |                            |
|                                                           | Seek Time (typical reads,<br>includes controller<br>overhead, including<br>settling) | Single Track                      | 0.7ms*                     |
|                                                           |                                                                                      | Average                           | 8.5ms*                     |
|                                                           |                                                                                      | Full Stroke                       | 15.7ms*                    |
|                                                           | Rotational Speed                                                                     | 7,200 rpm                         |                            |
|                                                           | Operating Temperature                                                                | 32° to 140° F (0° to 60° C)       |                            |
|                                                           | Performance                                                                          | Sequential Read                   | up to 226MB/s <sup>1</sup> |
|                                                           |                                                                                      | Sequential Write                  | up to 226MB/s <sup>1</sup> |
|                                                           | Enterprise Class Features                                                            | High Reliability                  |                            |
| <a href="#">*Actual performance may vary.</a>             |                                                                                      |                                   |                            |

### Technical Specifications - Hard Drives

|                                               |                                                                                    |                                   |                  |
|-----------------------------------------------|------------------------------------------------------------------------------------|-----------------------------------|------------------|
|                                               | <b>Form Factor</b>                                                                 | 2.5"                              |                  |
|                                               | <b>Height</b>                                                                      | 0.275 in; 0.7 cm                  |                  |
|                                               | <b>Width</b>                                                                       | Media Diameter                    | 2.5 in; 6.36 cm  |
|                                               |                                                                                    | Physical Size                     | 2.75 in; 6.99 cm |
|                                               | <b>Interface</b>                                                                   | Serial ATA (6.0Gb/s), NCQ enabled |                  |
|                                               | <b>Synchronous Transfer Rate (Maximum)</b>                                         | Up to 600MB/s*                    |                  |
|                                               | <b>Buffer</b>                                                                      | 64MB                              |                  |
|                                               | <b>Seek Time</b> (typical reads, includes controller overhead, including settling) | <b>Single Track</b>               | 1ms*             |
|                                               |                                                                                    | <b>Average</b>                    | 4.2ms*           |
|                                               |                                                                                    | <b>Full Stroke</b>                | 25ms (Typical)*  |
|                                               | <b>Rotational Speed</b>                                                            | 7,200 rpm                         |                  |
|                                               | <b>Operating Temperature</b>                                                       | 32° to 131° F (0° to 60° C)       |                  |
|                                               | <b>Self-Encrypting Drive Support</b>                                               | Yes                               |                  |
|                                               | <a href="#">*Actual performance may vary.</a>                                      |                                   |                  |
| <b>HP 256GB SATA 6Gb/s SSD</b>                | <b>Capacity</b>                                                                    | 256GB                             |                  |
|                                               | <b>Protocol</b>                                                                    | SATA                              |                  |
|                                               | <b>Form Factor</b>                                                                 | 2.5"                              |                  |
|                                               | <b>Height</b>                                                                      | 0.28 in; 0.7 cm                   |                  |
|                                               | <b>Width</b>                                                                       | <b>Physical Size</b>              |                  |
|                                               | <b>Synchronous Transfer Rate (Maximum)</b>                                         | Up to 550MB/s (Sequential Read)*  |                  |
|                                               | <b>Operating Temperature</b>                                                       | 32° to 158° F (0° to 70° C)       |                  |
|                                               | <a href="#">*Actual performance may vary.</a>                                      |                                   |                  |
| <b>HP 512GB SATA 6Gb/s SSD</b>                | <b>Capacity</b>                                                                    | 512GB                             |                  |
|                                               | <b>Protocol</b>                                                                    | SATA                              |                  |
|                                               | <b>Form Factor</b>                                                                 | 2.5"                              |                  |
|                                               | <b>Height</b>                                                                      | 0.28 in; 0.7 cm                   |                  |
|                                               | <b>Width</b>                                                                       | <b>Physical Size</b>              |                  |
|                                               | <b>Interface</b>                                                                   | 6Gb/s SATA                        |                  |
|                                               | <b>Synchronous Transfer Rate (Maximum)</b>                                         | Up to 550MB/s (Sequential Read)*  |                  |
|                                               | <b>Operating Temperature</b>                                                       | 32° to 158° F (0° to 70° C)       |                  |
| <a href="#">*Actual performance may vary.</a> |                                                                                    |                                   |                  |
| <b>HP 1TB SATA 6Gb/s SSD</b>                  | <b>Capacity</b>                                                                    | 1TB                               |                  |
|                                               | <b>Protocol</b>                                                                    | SATA                              |                  |
|                                               | <b>Form Factor</b>                                                                 | 2.5"                              |                  |
|                                               | <b>Height</b>                                                                      | 0.28 in; 0.7 cm                   |                  |
|                                               | <b>Width</b>                                                                       | <b>Physical Size</b>              |                  |
|                                               | <b>Interface</b>                                                                   | SATA 6Gb/s                        |                  |
|                                               | <b>Synchronous Transfer Rate (Maximum)</b>                                         | Up to 550MB/s (Sequential Read)*  |                  |
|                                               | <b>Operating Temperature</b>                                                       | 32° to 158° F (0° to 70° C)       |                  |
| <a href="#">*Actual performance may vary.</a> |                                                                                    |                                   |                  |

### Technical Specifications - Hard Drives

|                                          |                                     |                                  |                 |
|------------------------------------------|-------------------------------------|----------------------------------|-----------------|
| 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 (Sequential Read)* |                 |
|                                          | Operating Temperature               | 32° to 158° F (0° to 70° C)      |                 |
|                                          | *Actual performance may vary.       |                                  |                 |
| HP 2TB SATA 6Gb/s SSD                    | Capacity                            | 2TB                              |                 |
|                                          | Protocol                            | SATA                             |                 |
|                                          | Form Factor                         | 2.5"                             |                 |
|                                          | Height                              | 0.28 in; 0.7 cm                  |                 |
|                                          | Width                               | Physical Size                    |                 |
|                                          | Interface                           | SATA 6Gb/s                       |                 |
|                                          | Synchronous Transfer Rate (Maximum) | Up to 550MB/s (Sequential Read)* |                 |
| HP 256GB SATA 6Gb/s SED Opal 2 SSD       | Capacity                            | 256GB                            |                 |
|                                          | Protocol                            | SATA                             |                 |
|                                          | Form Factor                         | 2.5"                             |                 |
|                                          | Height                              | 0.28 in; 0.7 cm                  |                 |
|                                          | Width                               | Physical Size                    |                 |
|                                          | Interface                           | SATA 6Gb/s                       |                 |
|                                          | Synchronous Transfer Rate (Maximum) | Up to 550MB/s (Sequential Read)* |                 |
| HP 512GB SATA 6Gb/s SED Opal 2 SSD       | Capacity                            | 512GB                            |                 |
|                                          | Protocol                            | SATA                             |                 |
|                                          | Form Factor                         | 2.5"                             |                 |
|                                          | Endurance                           | 400TBW (TB Written)              |                 |
|                                          | Reliability                         | 1.5M Hours                       |                 |
|                                          | Height                              | 0.28 in; 0.7 cm                  |                 |
|                                          | Width                               | Physical Size                    |                 |
| HP Z Turbo Drv 256GB TLC PCIe SSD (Z2G5) | Capacity                            | 256GB                            |                 |
|                                          | Protocol                            | PCIe                             |                 |
|                                          | Interface                           | PCIe                             |                 |
|                                          | Synchronous Transfer Rate (Maximum) | Up to 550MB/s (Sequential Read)* |                 |
|                                          | Operating Temperature               | 32° to 158° F (0° to 70° C)      |                 |
|                                          | Self-Encrypting Drive Support       | OPAL2                            |                 |
|                                          | *Actual performance may vary.       |                                  |                 |

### Technical Specifications - Hard Drives

|                                                 |                                      |                                           |            |
|-------------------------------------------------|--------------------------------------|-------------------------------------------|------------|
|                                                 | <b>Form Factor</b>                   | M.2 in native Slot on motherboard         |            |
|                                                 | <b>Controller</b>                    | NVMe                                      |            |
|                                                 | <b>NAND Type</b>                     | 3D TLC                                    |            |
|                                                 | <b>Endurance</b>                     | 75TBW (TB Written)                        |            |
|                                                 | <b>Reliability</b>                   | 1.5M Hours                                |            |
|                                                 | <b>Interface</b>                     | PCI Express 3.0 x4 electrical             |            |
|                                                 | <b>Operating Temperature</b>         | 32° to 158° F (0° to 70° C)               |            |
|                                                 | <b>Performance</b>                   | <b>Sequential Read</b>                    | 2800MB/s*  |
|                                                 |                                      | <b>Sequential Write</b>                   | 1100MB/s*  |
|                                                 |                                      | <b>Random Read</b>                        | 250K IOPS* |
|                                                 |                                      | <b>Random Write</b>                       | 180K IOPS* |
|                                                 | <i>*Actual performance may vary.</i> |                                           |            |
| <b>HP 256GB SATA 6Gb/s SED Opal 2 SSD</b>       | <b>Capacity</b>                      | 256GB                                     |            |
|                                                 | <b>Protocol</b>                      | PCIe                                      |            |
|                                                 | <b>Form Factor</b>                   | M.2 in native slot on motherboard         |            |
|                                                 | <b>Controller</b>                    | NVMe                                      |            |
|                                                 | <b>NAND Type</b>                     | 3D TLC                                    |            |
|                                                 | <b>Endurance</b>                     | 200TBW (TB Written)                       |            |
|                                                 | <b>Reliability (MTBF)</b>            | 1.5M hours                                |            |
|                                                 | <b>Interface</b>                     | PCI Express 3.0 x4 electrical x4 physical |            |
|                                                 | <b>Operating Temperature</b>         | 32° to 158° F (0° to 70° C)               |            |
|                                                 | <b>Performance</b>                   | <b>Sequential Read</b>                    | 3500 MB/s* |
|                                                 |                                      | <b>Sequential Write</b>                   | 2200 *     |
|                                                 |                                      | <b>Random Read</b>                        | 240K IOPS* |
|                                                 |                                      | <b>Random Write</b>                       | 480K IOPS* |
|                                                 | <i>*Actual performance may vary.</i> |                                           |            |
| <b>HP Z Turbo Drv 512GB TLC PCIe SSD (Z2G5)</b> | <b>Capacity</b>                      | 512GB                                     |            |
|                                                 | <b>Protocol</b>                      | PCIe                                      |            |
|                                                 | <b>Form Factor</b>                   | M.2 in native Slot on motherboard         |            |
|                                                 | <b>Controller</b>                    | NVMe                                      |            |
|                                                 | <b>NAND Type</b>                     | 3D TLC                                    |            |
|                                                 | <b>Endurance</b>                     | 150TBW (TB Written)                       |            |
|                                                 | <b>Reliability (MTBF)</b>            | 1.5M hours                                |            |
|                                                 | <b>Interface</b>                     | PCI Express 3.0 x4 electrical             |            |
|                                                 | <b>Operating Temperature</b>         | 32° to 158° F (0° to 70° C)               |            |
|                                                 | <b>Performance</b>                   | <b>Sequential Read</b>                    | 2800MB/s*  |
|                                                 |                                      | <b>Sequential Write</b>                   | 1600MB/s*  |
|                                                 |                                      | <b>Random Read</b>                        | 260K IOPS* |
|                                                 |                                      | <b>Random Write</b>                       | 260K IOPS* |
|                                                 | <i>*Actual performance may vary.</i> |                                           |            |
| <b>HP Z Turbo Drv 1TB TLC PCIe SSD (Z2G5)</b>   | <b>Capacity</b>                      | 1TB                                       |            |
|                                                 | <b>Protocol</b>                      | PCIe                                      |            |
|                                                 |                                      |                                           |            |

### Technical Specifications - Hard Drives

|                              |                                   |            |
|------------------------------|-----------------------------------|------------|
| <b>Form Factor</b>           | M.2 in native Slot on motherboard |            |
| <b>Controller</b>            | NVMe                              |            |
| <b>NAND Type</b>             | 3D TLC                            |            |
| <b>Endurance</b>             | 300TBW (TB Written)               |            |
| <b>Reliability</b>           | 1.5M Hours                        |            |
| <b>Interface</b>             | PCI Express 3.0 x4 electrical     |            |
| <b>Operating Temperature</b> | 32° to 158° F (0° to 70° C)       |            |
| <b>Performance</b>           | <b>Sequential Read</b>            | 3000MB/s*  |
|                              | <b>Sequential Write</b>           | 1700MB/s*  |
|                              | <b>Random Read</b>                | 360K IOPS* |
|                              | <b>Random Write</b>               | 330K IOPS* |

\*Actual performance may vary.

#### HP Z Turbo Drv 2TB TLC PCIe SSD (Z2G5)

|                              |                                   |            |
|------------------------------|-----------------------------------|------------|
| <b>Capacity</b>              | 2TB                               |            |
| <b>Protocol</b>              | PCIe                              |            |
| <b>Form Factor</b>           | M.2 in native Slot on motherboard |            |
| <b>Controller</b>            | NVMe                              |            |
| <b>NAND Type</b>             | 3D TLC                            |            |
| <b>Endurance</b>             | 600TBW (TB Written)               |            |
| <b>Reliability</b>           | 1.5M Hours                        |            |
| <b>Interface</b>             | PCI Express 3.0 x4 electrical     |            |
| <b>Operating Temperature</b> | 32° to 158° F (0° to 70° C)       |            |
| <b>Performance</b>           | <b>Sequential Read</b>            | 3000MB/s*  |
|                              | <b>Sequential Write</b>           | 2100MB/s*  |
|                              | <b>Random Read</b>                | 320K IOPS* |
|                              | <b>Random Write</b>               | 265K IOPS* |

\*Actual performance may vary.

#### HP Z Turbo Drv 256GB TLC PCIe SED OPAL2 (Z2G5)

|                              |                                   |            |
|------------------------------|-----------------------------------|------------|
| <b>Capacity</b>              | 256GB                             |            |
| <b>Protocol</b>              | PCIe                              |            |
| <b>Form Factor</b>           | M.2 in native Slot on motherboard |            |
| <b>Controller</b>            | NVMe                              |            |
| <b>NAND Type</b>             | 3D TLC                            |            |
| <b>Endurance</b>             | 75TBW (TB Written)                |            |
| <b>Reliability</b>           | 1.5M Hours                        |            |
| <b>Interface</b>             | PCI Express 3.0 x4 electrical     |            |
| <b>Operating Temperature</b> | 32° to 158° F (0° to 70° C)       |            |
| <b>Performance</b>           | <b>Sequential Read</b>            | 2800MB/s*  |
|                              | <b>Sequential Write</b>           | 1100MB/s*  |
|                              | <b>Random Read</b>                | 250K IOPS* |
|                              | <b>Random Write</b>               | 180K IOPS* |

**Self-Encrypting Drive Support** OPAL2

\*Actual performance may vary.

### Technical Specifications - Hard Drives

|                                                               |                                      |                                   |
|---------------------------------------------------------------|--------------------------------------|-----------------------------------|
| <b>HP Z Turbo Drv 512GB<br/>TLC PCIe SED<br/>OPAL2 (Z2G5)</b> | <b>Capacity</b>                      | 512GB                             |
|                                                               | <b>Protocol</b>                      | PCIe                              |
|                                                               | <b>Form Factor</b>                   | M.2 in native Slot on motherboard |
|                                                               | <b>Controller</b>                    | NVMe                              |
|                                                               | <b>NAND Type</b>                     | 3D TLC                            |
|                                                               | <b>Endurance</b>                     | 150TBW (TB Written)               |
|                                                               | <b>Reliability</b>                   | 1.5M Hours                        |
|                                                               | <b>Interface</b>                     | PCI Express 3.0 x4 electrical     |
|                                                               | <b>Operating Temperature</b>         | 32° to 158° F (0° to 70° C)       |
|                                                               | <b>Performance</b>                   | <b>Sequential Read</b> 2800MB/s*  |
|                                                               |                                      | <b>Sequential Write</b> 1600MB/s* |
|                                                               |                                      | <b>Random Read</b> 260K IOPS*     |
|                                                               |                                      | <b>Random Write</b> 260K IOPS*    |
|                                                               | <b>Self-Encrypting Drive Support</b> | OPAL2                             |
|                                                               | *Actual performance may vary.        |                                   |

|                                                             |                                      |                                   |
|-------------------------------------------------------------|--------------------------------------|-----------------------------------|
| <b>HP Z Turbo Drv 1TB<br/>TLC PCIe SED<br/>OPAL2 (Z2G5)</b> | <b>Capacity</b>                      | 1TB                               |
|                                                             | <b>Protocol</b>                      | PCIe                              |
|                                                             | <b>Form Factor</b>                   | M.2 in native Slot on motherboard |
|                                                             | <b>Controller</b>                    | NVMe                              |
|                                                             | <b>NAND Type</b>                     | 3D TLC                            |
|                                                             | <b>Endurance</b>                     | 300TBW (TB Written)               |
|                                                             | <b>Reliability</b>                   | 1.5M Hours                        |
|                                                             | <b>Interface</b>                     | PCI Express 3.0 x4 electrical     |
|                                                             | <b>Operating Temperature</b>         | 32° to 158° F (0° to 70° C)       |
|                                                             | <b>Performance</b>                   | <b>Sequential Read</b> 3000MB/s*  |
|                                                             |                                      | <b>Sequential Write</b> 1700MB/s* |
|                                                             |                                      | <b>Random Read</b> 360K IOPS*     |
|                                                             |                                      | <b>Random Write</b> 330K IOPS*    |
|                                                             | <b>Self-Encrypting Drive Support</b> | OPAL2                             |
|                                                             | *Actual performance may vary.        |                                   |

|                                                             |                              |                                   |
|-------------------------------------------------------------|------------------------------|-----------------------------------|
| <b>HP Z Turbo Drv 2TB<br/>TLC PCIe SED<br/>OPAL2 (Z2G5)</b> | <b>Capacity</b>              | 2TB                               |
|                                                             | <b>Protocol</b>              | PCIe                              |
|                                                             | <b>Form Factor</b>           | M.2 in native Slot on motherboard |
|                                                             | <b>Controller</b>            | NVMe                              |
|                                                             | <b>NAND Type</b>             | 3D TLC                            |
|                                                             | <b>Endurance</b>             | 600TBW (TB Written)               |
|                                                             | <b>Reliability</b>           | 1.5M Hours                        |
|                                                             | <b>Interface</b>             | PCI Express 3.0 x4 electrical     |
|                                                             | <b>Operating Temperature</b> | 32° to 158° F (0° to 70° C)       |
|                                                             | <b>Performance</b>           | <b>Sequential Read</b> 3000MB/s*  |
|                                                             |                              | <b>Sequential Write</b> 2100MB/s* |



Technical Specifications - Hard Drives

|                                      |                     |            |
|--------------------------------------|---------------------|------------|
|                                      | <b>Random Read</b>  | 320K IOPS* |
|                                      | <b>Random Write</b> | 265K IOPS* |
| <b>Self-Encrypting Drive Support</b> | OPAL2               |            |

\*Actual performance may vary.

### Technical Specifications - Graphics

|                                               |                                   |                                                                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Integrated Intel® UHD Graphics (Z2 G5)</b> | <b>Form Factor</b>                | Integrated in select Intel® Xeon® E, Intel® Core™ i7, and Intel® Core™ i5 processors.                                                                                                                                                                                                                                                                                       |
|                                               |                                   | Check specific platform specifications for selections.                                                                                                                                                                                                                                                                                                                      |
|                                               | <b>Graphics Controller</b>        | Intel® UHD Graphics                                                                                                                                                                                                                                                                                                                                                         |
|                                               | <b>Memory</b>                     | Unified Memory Architecture (UMA) frame buffer. Graphics memory is shared with system memory. Size selectable between 64 MB to 1024 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® DVM 5.0), to provide an optimal balance between graphics and system memory use. |
|                                               | <b>Connectors</b>                 | Check system platform specifications where Intel® UHD Graphics are available.                                                                                                                                                                                                                                                                                               |
|                                               | <b>Maximum Resolution</b>         | Display Port: 4096 x 2160<br>HDMI: 4096 x 2160<br>DVI: 1920x1200<br>VGA: 2048x1536                                                                                                                                                                                                                                                                                          |
|                                               | <b>Shading Architecture</b>       | <b>NOTE:</b> For HDMI, DVI and VGA outputs, separate adapters may be required.<br>Shader Model 6 compiler support                                                                                                                                                                                                                                                           |
|                                               | <b>Supported Graphics APIs</b>    | OpenGL 4.54<br>DirectX 12                                                                                                                                                                                                                                                                                                                                                   |
|                                               | <b>Available Graphics Drivers</b> | Windows 10                                                                                                                                                                                                                                                                                                                                                                  |

|                                          |                                   |                                                                                                                                                                                                     |
|------------------------------------------|-----------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>NVIDIA® Quadro® P400 2GB Graphics</b> | <b>Form Factor</b>                | Single Slot, Low Profile (2.713" H x 5.7" L)                                                                                                                                                        |
|                                          | <b>Graphics Controller</b>        | NVIDIA® Quadro® P400 Graphics Card<br>Max Power: 30 Watts<br>Cooling Solution: Active fan heatsink                                                                                                  |
|                                          | <b>Bus Type</b>                   | PCI Express 3.0 x16                                                                                                                                                                                 |
|                                          | <b>Memory</b>                     | Size: 2 GB GDDR5                                                                                                                                                                                    |
|                                          | <b>Maximum Resolution</b>         | DisplayPort™ 1.4:<br>- up to 3x 5120 x 2880 x 24 bpp @ 60Hz<br>- supports Multi-Stream Transport (MST)                                                                                              |
|                                          | <b>Display Output</b>             | 3 mDP (Mini DisplayPort™) 1.4 Connectors                                                                                                                                                            |
|                                          | <b>Shading Architecture</b>       | Full Microsoft DirectX 12 Shader Model 5.1                                                                                                                                                          |
|                                          | <b>Supported Graphics APIs</b>    | OpenGL 4.5<br>DirectX 12<br>Vulkan 1.0<br>API support includes:<br>CUDA, OpenCL 1.x                                                                                                                 |
|                                          | <b>Available Graphics Drivers</b> | Microsoft Windows 10 64-bit<br>Linux® 64-bit (selected Enterprise distributions)                                                                                                                    |
|                                          |                                   | HP qualified drivers may be preloaded or available from the HP support Web site:<br><a href="http://welcome.hp.com/country/us/en/support.html">http://welcome.hp.com/country/us/en/support.html</a> |

### Technical Specifications - Graphics

#### Notes

\*P400, P620 and P1000 only have mini-DisplayPort™ (mDP) video ports.

**Note 1:** AMO kits for P400, P1000 and Adapters

- Two mDP-to-DP Adapters are included in the P400, P620 and P1000 AMO kits.
- If more mDP-to-DP Adapters are needed, Adapters can be ordered separately:
  - 2MY05AA HP Single miniDP-to-DP Adapter Cable
  - 2KW87A6 - HP (Bulk 12) miniDP-to-DP Adapter Cables

#### NVIDIA® Quadro® P620 2GB Graphics

#### Form Factor Graphics Controller

Single slot, Low Profile (2.713" H x 5.7" L)

NVIDIA® Quadro® P620

Max. Power: 40W

Cooling Solution: Active fan heatsink

#### Bus Type

PCI Express x16

#### Memory

Size: 2GB DDR5

#### Maximum Resolution

DisplayPort™ 1.4:

- up to 4x 5120 x 2880 x 24 bpp @ 60Hz
- supports Multi-Stream Transport (MST)

#### Shading Architecture

Full Microsoft DirectX 12 Shader Model 5.1

#### Display Outputs

4 mDP (Mini DisplayPort™) 1.4 Connectors

#### Supported Graphics APIs

OpenGL 4.5

DirectX 12

Vulkan 1.0

API support includes:

CUDA, OpenCL 1.x

#### Available Graphics Drivers

Microsoft Windows 10 64-bit

Linux® 64-bit (selected Enterprise distributions)

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>

#### Notes

\*P400, P620 and P1000 only have mini-DisplayPort™ (mDP) video ports.

**Note 1:** AMO kits for P400, P620, P1000 and Adapters

- Two mDP-to-DP Adapters are included in the P400, P620 and P1000 AMO kits.
- If more mDP-to-DP Adapters are needed, Adapters can be ordered separately:
  - 2MY05AA HP Single miniDP-to-DP Adapter Cable
  - 2KW87A6 - HP (Bulk 12) miniDP-to-DP Adapter Cables

#### NVIDIA® T600 4GB Graphics

#### Form Factor

Dimensions: 2.713" H x 5.7" L

Single Slot, Low Profile

#### Graphics Controller

NVIDIA® T600 Graphics Card

GPU: 640 CUDA cores

Power: 40 Watts

Cooling: Active

#### Bus Type

PCI Express 3.0 x16

### Technical Specifications - Graphics

|                                   |                                                                                                            |
|-----------------------------------|------------------------------------------------------------------------------------------------------------|
| <b>Memory</b>                     | Size: 4 GB GDDR6<br>Memory Interface: 128-bit<br>Memory Bandwidth: 160 GB/s                                |
| <b>Connectors</b>                 | 4x mDP                                                                                                     |
| <b>Maximum Resolution</b>         | 7680 x 4320 @ 60Hz                                                                                         |
| <b>Display Output</b>             | 4x mDP                                                                                                     |
| <b>Supported Graphics APIs</b>    | OpenGL 4.5<br>DirectX 12<br>Vulkan 1.0<br>API support includes:<br>CUDA C, CUDA C++, DirectCompute, OpenCL |
| <b>Available Graphics Drivers</b> | Windows 10<br>Linux                                                                                        |

HP qualified drivers may be preloaded or available from the HP support Web site:

<http://welcome.hp.com/country/us/en/support.html>

#### AMD Radeon™ Pro WX 3200 4GB Graphics

|                                   |                                                                                                                  |
|-----------------------------------|------------------------------------------------------------------------------------------------------------------|
| <b>Form Factor</b>                | Low-Profile Single Slot (2.75 "H x 6.6" L)                                                                       |
| <b>Graphics Controller</b>        | Radeon™ Pro WX 3200<br>Power: 56 Watts<br>Cooling Solution: Active fan heatsink                                  |
| <b>Memory</b>                     | 4GB GDDR5 memory                                                                                                 |
| <b>Maximum Resolution</b>         | DisplayPort™ 1.4:<br>- up to 4x 4096 x 2160 x 24 bpp @ 60Hz<br>- supports Multi-Stream Transport (MST)           |
| <b>Shading Architecture</b>       | Full Microsoft DirectX 12 Shader Model 5.1                                                                       |
| <b>Display Outputs</b>            | 4 mDP (Mini DisplayPort™) 1.4 Connectors                                                                         |
| <b>Supported Graphics APIs</b>    | DirectX® 12<br>OpenGL® 4.6<br>OpenCL™ 2.0<br>Vulkan™ 1.0                                                         |
| <b>Available Graphics Drivers</b> | Windows 10 64-bit<br>(Windows® 7 64-bit available from AMD)<br>Linux® 64-bit (selected Enterprise distributions) |

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. HDR content requires that the system be configured with a fully HDR-ready content chain, including: graphics card, monitor/TV, graphics driver and application. Video content must be graded in HDR and viewed with an HDR-ready player. Windowed mode content requires operating system support.
2. WX 3200 only has mini-DisplayPort™ (mDP) video ports. Two mDP-to-DP Adapters are included in the WX 3200 AMO kit. If more mDP-to-DP Adapters are needed, Adapters can be ordered separately:
  - 2MY05AA HP Single miniDP-to-DP Adapter Cable

### Technical Specifications - Graphics

- [2KW87A6 - HP \(Bulk 12\) miniDP-to-DP Adapter Cables](#)

|                                                                                                                                                                                                     |                                |                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------|
| <b>AMD Radeon™ Pro W5500<br/>8GB Graphics</b>                                                                                                                                                       | <b>Form Factor</b>             | Single slot, full-height, 9.5" length                                                                  |
|                                                                                                                                                                                                     | <b>Graphics Controller</b>     | Radeon™ Pro W5500<br>Power: 120 Watts<br>Cooling Solution: Active Fan Heatsink                         |
|                                                                                                                                                                                                     | <b>Memory</b>                  | 8GB GDDR6                                                                                              |
|                                                                                                                                                                                                     | <b>Maximum Resolution</b>      | DisplayPort™ 1.4:<br>- up to 4x 5120 x 2880 x 24 bpp @ 60Hz<br>- supports Multi-Stream Transport (MST) |
|                                                                                                                                                                                                     | <b>Display Outputs</b>         | DisplayPort™ 1.4 Connectors<br>FreeSync support                                                        |
|                                                                                                                                                                                                     | <b>Shading Architecture</b>    | Full Microsoft DirectX 12 Shader Model 5.1                                                             |
|                                                                                                                                                                                                     | <b>Supported Graphics APIs</b> | DirectX® 12 (12_1)<br>OpenGL® 4.6<br>OpenCL™ 2.0<br>Vulkan™ 1.1                                        |
| <b>Available Graphics Drivers</b>                                                                                                                                                                   |                                | Windows 10 64-bit<br>Linux® 64-bit (selected Enterprise distributions)                                 |
| HP qualified drivers may be preloaded or available from the HP support Web site:<br><a href="http://welcome.hp.com/country/us/en/support.html">http://welcome.hp.com/country/us/en/support.html</a> |                                |                                                                                                        |

|                                                                                                                                                                                                     |                                |                                                                                                        |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------|
| <b>NVIDIA® Quadro® P1000<br/>4GB Graphics</b>                                                                                                                                                       | <b>Form Factor</b>             | Single Slot, Low Profile, Dimensions: 2.713" H x 5.7" L<br>Cooling: Active                             |
|                                                                                                                                                                                                     | <b>Graphics Controller</b>     | NVIDIA® Quadro® P1000<br>47 Watts<br>Cooling Solution: Active Fan Heatsink                             |
|                                                                                                                                                                                                     | <b>Bus Type</b>                | PCI Express 3.0 x16                                                                                    |
|                                                                                                                                                                                                     | <b>Maximum Resolution</b>      | DisplayPort™ 1.4:<br>- up to 4x 5120 x 2880 x 24 bpp @ 60Hz<br>- supports Multi-Stream Transport (MST) |
|                                                                                                                                                                                                     | <b>Display Output</b>          | 4 mDP 1.4 Connectors                                                                                   |
|                                                                                                                                                                                                     | <b>Shading Architecture</b>    | Full Microsoft DirectX 12 Shader Model 5.1                                                             |
|                                                                                                                                                                                                     | <b>Supported Graphics APIs</b> | OpenGL 4.5<br>DirectX 12<br>Vulkan 1.0<br>API support includes:<br>CUDA, OpenCL 1.x                    |
| <b>Available Graphics Drivers</b>                                                                                                                                                                   |                                | Microsoft Windows 10<br>Linux® 64-bit (selected Enterprise distributions)                              |
| HP qualified drivers may be preloaded or available from the HP support Web site:<br><a href="http://welcome.hp.com/country/us/en/support.html">http://welcome.hp.com/country/us/en/support.html</a> |                                |                                                                                                        |

### Technical Specifications - Graphics

#### Notes

\*P400, P620 and P1000 only have mini-DisplayPort™ (mDP) video ports.

**Note 1:** AMO kits for P400, P620, P1000 and Adapters

- Two mDP-to-DP Adapters are included in the P400, P620 and P1000 AMO kits.
- If mDP-to-DP Adapters are needed, Adapters can be ordered separately:
  - 2KW86A6 - HP (Bulk 4) miniDP-to-DP Adapter Cables
  - 2KW87A6 - HP (Bulk 12) miniDP-to-DP Adapter Cables

#### NVIDIA® Quadro® P2200 5GB Graphics

##### Form Factor

Single Slot, Full Height (4.4"H x 7.9"L)  
Weight: 260 grams

##### Graphics Controller

NVIDIA® Quadro® P2200  
Power: 75 Watts  
Cooling Solution: Active Fan Heatsink

##### Bus Type

PCI Express 3.0 x16

##### Memory

5GB GDDR5X

##### Maximum Resolution

DisplayPort™ 1.4:  
- up to 4x 5120 x 2880 x 24 bpp @ 60Hz  
- supports Multi-Stream Transport (MST)

##### Display Output

4 DisplayPort™ 1.4

##### Shading Architecture

Full Microsoft DirectX 12 Shader Model 5.1

##### Supported Graphics APIs

OpenGL® 4.5  
DirectX® 12  
Vulkan 1.0  
API support includes:  
CUDA, OpenCL 1.x

##### Available Graphics Drivers

Microsoft Windows 10  
Linux®-64-bit (selected Enterprise distributions)

HP qualified drivers may be preloaded or available from the HP support Web site:

<http://welcome.hp.com/country/us/en/support.html>

#### NVIDIA® T1000 4GB Graphics

##### Form Factor

Dimensions: 2.713" H x 6.137" L  
Single Slot  
Weight: xx

##### Graphics Controller

NVIDIA® T1000 Graphics Card  
Power: 50W  
Cooling: Active

##### Bus Type

PCI Express 3.0 x16

##### Memory

Size: 4GB GDDR6  
Memory Bandwidth: Up to 160 GB/s  
Memory Width: 128-bit

##### Connectors

4x mini DisplayPort™ 1.4a

##### Maximum Resolution

7680 x 4320 @ 120Hz

##### Display Output

Maximum number of displays: 4 displays

##### Architecture

NVIDIA® Turing™

##### Supported Graphics APIs

DirectX®12.1  
OpenGL® 4.6

### Technical Specifications - Graphics

#### Available Graphics Drivers

OpenCL™ 1.2  
 Vulkan™ 1.2  
 Microsoft Windows 10  
 Windows 8.1  
 Microsoft Windows 7 Professional 64bit  
 Linux® - Full OpenGL® implementation, complete with NVIDIA® Quadro® 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>

#### AMD Radeon™ Pro W5700 8GB Graphics

#### Form Factor

Full-Height Dual Slot (10.5" Length)

#### Graphics Controller

Radeon™ Pro W5700  
 Power: 210 Watts  
 Cooling Solution: Active Fan Heatsink

#### Memory

8GB GDDR6

#### Maximum Resolution

DisplayPort™ 1.4:  
 - up to 4x 5120 x 2880 x 24 bpp @ 60Hz  
 - supports Multi-Stream Transport (MST)

#### Display Output

4 DisplayPort™ 1.4 Outputs  
 FreeSync support

#### Supported Graphics APIs

DirectX® 12 (12\_1)  
 OpenGL® 4.6  
 OpenCL™ 2.0  
 Vulkan™ 1.0

#### Available Graphics Drivers

Windows 10 64-bit  
 Linux® 64-bit (selected Enterprise distributions)

HP qualified drivers may be preloaded or available from the HP support Web site:

<http://welcome.hp.com/country/us/en/support.html>

#### NVIDIA® Quadro® RTX 4000 8GB Graphics

#### Form Factor

Full-Height Single Slot (4.4" Height x 9.5" Length)

#### Graphics Controller

NVIDIA® Quadro® RTX 4000  
 Power: 160 Watts  
 Cooling Solution: Active Fan Heatsink

#### Memory

8GB GDDR6

#### Maximum Resolution

DisplayPort™ 1.4:  
 - up to 4x 5120 x 2880 x 24 bpp @ 60Hz  
 - supports Multi-Stream Transport (MST)

#### Display Outputs<sup>1</sup>

3x DisplayPort™1.4a and VirtualLink<sup>2</sup>

#### Supported Graphics APIs

DirectX®12, OpenGL® 4.5, OpenCL™ 1.0, Vulkan™ 1.0  
 Additional API support includes: CUDA OpenCL™ 1.x

#### Available Graphics Drivers

Windows® 10 64-bit  
 Linux® 64-bit (selected Enterprise distributions)

### Technical Specifications - 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- Supports up to a total of 4 displays
  - 2- VirtualLink's USB-C™ (data) cannot be disabled at a hardware level
-



### Technical Specifications - Graphics

|                                                                                                                                                                                                                                                                                                                                                                                                      |                                   |                                                                                                        |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------|
| <b>NVIDIA® Quadro® RTX 5000 16GB Graphics</b>                                                                                                                                                                                                                                                                                                                                                        | <b>Form Factor</b>                | Full-Height Dual Slot (4.4" Height x 10.5" Length)                                                     |
|                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Graphics Controller</b>        | NVIDIA® QUADRO® RTX 5000<br>Power: 265 Watts<br>Cooling Solution: Active Fan Heatsink                  |
|                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Memory</b>                     | 16GB GDDR6                                                                                             |
|                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Maximum Resolution</b>         | DisplayPort™ 1.4:<br>- up to 4x 5120 x 2880 x 24 bpp @ 60Hz<br>- supports Multi-Stream Transport (MST) |
|                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Display Outputs</b>            | 4x DisplayPort™ 1.4 and VirtualLink <sup>2</sup>                                                       |
|                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Supported Graphics APIs</b>    | DirectX®12, OpenGL® 4.5<br>Additional API support includes: CUDA, OpenCL™                              |
|                                                                                                                                                                                                                                                                                                                                                                                                      | <b>Available Graphics Drivers</b> | Windows® 10 64-bit<br>Linux® 64-bit (selected Enterprise distributions)                                |
| <p>HP qualified drivers may be preloaded or available from the HP support Web site:<br/> <a href="http://welcome.hp.com/country/us/en/support.html">http://welcome.hp.com/country/us/en/support.html</a></p> <p>Factory Configured: No adapters included<br/>           After market option kit: No adapters included</p> <p>*VirtualLink's USB-C™ (data) cannot be disabled at a hardware level</p> |                                   |                                                                                                        |

|                                                                                                                                                                                                              |                                   |                                                                                                        |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|--------------------------------------------------------------------------------------------------------|
| <b>NVIDIA® Quadro® RTX 6000 24GB Graphics</b>                                                                                                                                                                | <b>Form Factor</b>                | Full-Height Dual Slot (4.4" Height x 10.5" Length)                                                     |
|                                                                                                                                                                                                              | <b>Graphics Controller</b>        | NVIDIA® QUADRO® RTX 6000<br>Power: 295 Watts<br>Cooling Solution: Active Fan Heatsink                  |
|                                                                                                                                                                                                              | <b>Memory</b>                     | 24GB GDDR6                                                                                             |
|                                                                                                                                                                                                              | <b>Maximum Resolution</b>         | DisplayPort™ 1.4:<br>- up to 4x 5120 x 2880 x 24 bpp @ 60Hz<br>- supports Multi-Stream Transport (MST) |
|                                                                                                                                                                                                              | <b>Display Outputs</b>            | 4x DisplayPort™ 1.4 and VirtualLink <sup>2</sup>                                                       |
|                                                                                                                                                                                                              | <b>Supported Graphics APIs</b>    | DirectX®12, OpenGL® 4.5, Vulkan 1.0<br>Additional API support includes: CUDA, OpenCL™ 1.x              |
|                                                                                                                                                                                                              | <b>Available Graphics Drivers</b> | Windows® 10 64-bit<br>Linux® 64-bit (selected Enterprise distributions)                                |
| <p>HP qualified drivers may be preloaded or available from the HP support Web site:<br/> <a href="http://welcome.hp.com/country/us/en/support.html">http://welcome.hp.com/country/us/en/support.html</a></p> |                                   |                                                                                                        |

### Technical Specifications - Graphics

Factory Configured: No adapters included  
After market option kit: No adapters included

\*VirtualLink's USB-C™ (data) cannot be disabled at a hardware level

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### Technical Specifications - Optical and Removable Storage

|                                 |                                                                   |                                                                                                                                                                                                                                                     |
|---------------------------------|-------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>HP 9.5mm Slim DVD Writer</b> | <b>Description</b>                                                | 9.5mm height, tray-load                                                                                                                                                                                                                             |
|                                 | <b>Mounting Orientation</b>                                       | Either horizontal or vertical                                                                                                                                                                                                                       |
|                                 | <b>Interface Type</b>                                             | SATA/ATAPI                                                                                                                                                                                                                                          |
|                                 | <b>Dimensions (WxHxD)</b>                                         | 128 x 9.5 x 127mm                                                                                                                                                                                                                                   |
|                                 | <b>Supported Media Types</b>                                      | DVD+R<br>DVD+RW<br>DVD+R DL<br>DVD-R DL<br>DVD-R<br>DVD-RW<br>CD-R<br>CD-RW                                                                                                                                                                         |
|                                 | <b>Disc Capacity</b>                                              | <b>DVD-ROM</b> 8.5 GB DL or 4.7 GB standard                                                                                                                                                                                                         |
|                                 | <b>Access Times</b>                                               | <b>Full Stroke DVD</b> < 200 ms (seek)<br><b>Full Stroke CD</b> < 200 ms (seek)                                                                                                                                                                     |
|                                 | <b>Maximum Data Transfer Rates</b>                                | <b>CD ROM Read</b> CD-ROM, CD-R Up to 24X<br>CD-RW Up to 24X<br><br><b>DVD ROM Read</b> DVD+RW Up to 8X<br>DVD-RW Up to 8X<br>DVD+R DL Up to 8X<br>DVD-R DL Up to 8X<br>DVD-ROM Up to 8X<br>DVD-ROM DL Up to 8X<br>DVD+R Up to 8X<br>DVD-R Up to 8X |
|                                 | <b>Power</b>                                                      | <b>Source</b> SATA DC power receptacle<br><b>DC Power Requirements</b> 5 VDC ± 5%-100 mV ripple p-p<br><b>DC Current</b> 5 VDC -< 800 mA typical, <1600 mA maximum                                                                                  |
|                                 | <b>Operating Environmental</b><br>(all conditions non-condensing) | <b>Temperature</b> 41° to 122° F (5° to 50° C)<br><b>Relative Humidity</b> 10% to 80%<br><b>Maximum Wet Bulb Temperature</b> 84° F (29° C)                                                                                                          |
|                                 | <b>Operating Systems Supported</b>                                | Windows 10, Windows 7 Professional 64-bit, Windows Vista Business 64*, Windows 2000. Red Hat® Enterprise Linux® (RHEL) 6, 7 Desktop/Workstation SUSE Linux® Enterprise Desktop 12                                                                   |
|                                 | <b>Kit Contents</b>                                               | HP SATA DVD Writer drive, installation guide.                                                                                                                                                                                                       |
|                                 | <b>Approvals</b>                                                  | 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                                       |

|                                    |                             |                               |
|------------------------------------|-----------------------------|-------------------------------|
| <b>HP 9.5mm Slim DVD-ROM Drive</b> | <b>Description</b>          | 9.5mm height, tray-load       |
|                                    | <b>Mounting Orientation</b> | Either horizontal or vertical |
|                                    | <b>Interface Type</b>       | SATA / ATAPI                  |
|                                    | <b>Dimensions (WxHxD)</b>   | 128 x 9.5 x 127mm             |

### Technical Specifications - Optical and Removable Storage

|                                                                   |                                                                                                                                                                                                                  |                                                          |
|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------|
| <b>Disc Capacity</b>                                              | <b>DVD-ROM</b>                                                                                                                                                                                                   | Single layer: Up to 4.7 GB<br>Double layer: Up to 8.5 GB |
| <b>Access Times</b>                                               | <b>DVD-ROM Single Layer</b>                                                                                                                                                                                      | < 110 ms (typical)                                       |
|                                                                   | <b>CD-ROM Mode 1</b>                                                                                                                                                                                             | < 110 ms (typical)                                       |
|                                                                   | <b>Full Stroke DVD</b>                                                                                                                                                                                           | < 230 ms (typical)                                       |
|                                                                   | <b>Full Stroke CD</b>                                                                                                                                                                                            | < 220 ms (typical)                                       |
| <b>Power</b>                                                      | <b>Source</b>                                                                                                                                                                                                    | SATA DC power receptacle                                 |
|                                                                   | <b>DC Power Requirements</b>                                                                                                                                                                                     | 5 VDC ± 5%-100 mV ripple p-p                             |
|                                                                   | <b>DC Current</b>                                                                                                                                                                                                | 5 VDC – <800mA typical, < 1600 mA maximum                |
| <b>Operating Environmental</b><br>(all conditions non-condensing) | <b>Temperature</b>                                                                                                                                                                                               | 41° to 122° F (5° to 50° C)                              |
|                                                                   | <b>Relative Humidity</b>                                                                                                                                                                                         | 10% to 80%                                               |
|                                                                   | <b>Maximum Wet Bulb Temperature</b>                                                                                                                                                                              | 84° F (29° C)                                            |
| <b>Operating Systems Supported</b>                                | Windows 10, Windows 7 Professional 64-bit,<br><br>Windows Vista Business 64*, Windows 2000.<br>Red Hat® Enterprise Linux® (RHEL) 6, 7 Desktop/Workstation<br>SUSE Linux® Enterprise Desktop 12                   |                                                          |
| <b>Kit Contents</b>                                               | 9.5mm Slim DVD-ROM Drive, slim SATA data/power cable, installation guide                                                                                                                                         |                                                          |
| <b>Approvals</b>                                                  | USB-IF, WHQL, Compliant with USB Mass Storage Class Bulk only Transport Specification Rev. 1.0,<br>Compliant Intel Front Panel I/O Connectivity Design Guide V. 1.3, FCC, CE, BSMI, C-Tick, VCCI, MIC, cUL, TUVT |                                                          |

#### HP 9.5mm Slim BDXL Blu-Ray Writer

|                              |                                                                                                                   |                                                                 |
|------------------------------|-------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------|
| <b>Description</b>           | 9.5mm height, tray-load                                                                                           |                                                                 |
| <b>Mounting Orientation</b>  | Either horizontal or vertical                                                                                     |                                                                 |
| <b>Interface Type</b>        | SATA/ATAPI                                                                                                        |                                                                 |
| <b>Dimensions (WxHxD)</b>    | 128 x 9.5 x 127mm                                                                                                 |                                                                 |
| <b>Supported Media Types</b> | BD-ROM<br>BD-R<br>BD-RE<br>DVD-RAM<br>DVD+R<br>DVD+RW<br>DVD+R DL<br>DVD-R DL<br>DVD-R<br>DVD-RW<br>CD-R<br>CD-RW |                                                                 |
| <b>Disc Capacity</b>         | <b>DVD-ROM</b>                                                                                                    | 8.5 GB DL or 4.7 GB standard                                    |
|                              | <b>Blu-ray</b>                                                                                                    | 25 GB (single-layer)<br>50 GB (dual-layer)<br>100/128 GB (BDXL) |
| <b>Access Times</b>          | <b>Full Stroke DVD</b>                                                                                            | < 230 ms (seek)                                                 |
|                              | <b>Full Stroke CD</b>                                                                                             | < 220 ms (seek)                                                 |

### Technical Specifications - Optical and Removable Storage

|                                                                   |                                                                                                                                                                                                |                                                                                                                                                                                 |
|-------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                   | <b>Blu-ray</b>                                                                                                                                                                                 | < 230 ms (seek) (Full Stroke Blu-ray)                                                                                                                                           |
|                                                                   | <b>Startup Time</b>                                                                                                                                                                            | (Time to drive ready from tray loading)                                                                                                                                         |
|                                                                   |                                                                                                                                                                                                | BD-ROM (SL/DL) 25S / 28S                                                                                                                                                        |
|                                                                   |                                                                                                                                                                                                | BD-R (SL/DL) 25S / 28S                                                                                                                                                          |
|                                                                   |                                                                                                                                                                                                | BD-RE (SL/DL) 25S / 28S                                                                                                                                                         |
|                                                                   |                                                                                                                                                                                                | DVD-ROM (SL/DL) 18S / 18S                                                                                                                                                       |
|                                                                   |                                                                                                                                                                                                | DVD-R (SL/DL) 25S / 25S                                                                                                                                                         |
|                                                                   |                                                                                                                                                                                                | DVD-RW 25S                                                                                                                                                                      |
|                                                                   |                                                                                                                                                                                                | DVD+R (SL/DL) 25S / 25S                                                                                                                                                         |
|                                                                   |                                                                                                                                                                                                | DVD+RW 25S                                                                                                                                                                      |
|                                                                   |                                                                                                                                                                                                | DVD-RAM 45S                                                                                                                                                                     |
|                                                                   |                                                                                                                                                                                                | CD-ROM 15S                                                                                                                                                                      |
| <b>Maximum Data Transfer Rates</b>                                | <b>CD ROM Read</b>                                                                                                                                                                             | CD-ROM, CD-R Up to 24X<br>CD-RW Up to 24X                                                                                                                                       |
|                                                                   | <b>DVD ROM Read</b>                                                                                                                                                                            | DVD-RAM Up to 8X<br>DVD+RW Up to 8X<br>DVD-RW Up to 8X<br>DVD+R DL Up to 8X<br>DVD-R DL Up to 8X<br>DVD-ROM Up to 8X<br>DVD-ROM DL Up to 8X<br>DVD+R Up to 8X<br>DVD-R Up to 8X |
|                                                                   | <b>Blu-ray</b>                                                                                                                                                                                 | BD-ROM Up to 6X<br>BD-ROM DL Up to 6X<br>BD-R Up to 6X<br>BD-R DL Up to 6X<br>BD-R Up to 6X<br>BD-RE SL/DL Up to 6X                                                             |
| <b>Power</b>                                                      | <b>Source</b>                                                                                                                                                                                  | SATA DC power receptacle                                                                                                                                                        |
|                                                                   | <b>DC Power Requirements</b>                                                                                                                                                                   | 5 VDC $\pm$ 5%-100 mV ripple p-p                                                                                                                                                |
|                                                                   | <b>DC Current</b>                                                                                                                                                                              | 5 VDC -900 mA typical, 2000mA maximum                                                                                                                                           |
| <b>Operating Environmental</b><br>(all conditions non-condensing) | <b>Temperature</b>                                                                                                                                                                             | 41° to 122° F (5° to 50° C)                                                                                                                                                     |
|                                                                   | <b>Relative Humidity</b>                                                                                                                                                                       | 10% to 80%                                                                                                                                                                      |
|                                                                   | <b>Maximum Wet Bulb Temperature</b>                                                                                                                                                            | 84° F (29° C)                                                                                                                                                                   |
| <b>Operating Systems Supported</b>                                | Windows 10, Windows 7 Professional 64-bit,<br><br>Windows Vista Business 64*, Windows 2000.<br>Red Hat® Enterprise Linux® (RHEL) 6, 7 Desktop/Workstation<br>SUSE Linux® Enterprise Desktop 12 |                                                                                                                                                                                 |
| <b>Kit Contents</b>                                               | 9.5mm Slim BDXL Blu-Ray Writer, 5.25" ODD Bay adapter/carrier, slim SATA data/power cable, installation guide                                                                                  |                                                                                                                                                                                 |

### Technical Specifications - Controller Cards

|                                                                           |                                      |                                                                                                                                                                                 |
|---------------------------------------------------------------------------|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>HP Thunderbolt™ 3 PCIe 3 Data Transfer Rate<br/>Dual-port I/O Card</b> | <b>Devices Supported</b>             | Supports up to 40 Gb/s 40,000 Mb/s                                                                                                                                              |
|                                                                           | <b>Bus Type</b>                      | Thunderbolt™ certified devices                                                                                                                                                  |
|                                                                           | <b>Ports</b>                         | PCIe card, full height PCIe slots                                                                                                                                               |
|                                                                           |                                      | One USB 3.1 Type-C® connector (Rear)                                                                                                                                            |
|                                                                           | <b>Internal Connectors</b>           | One wire-to-board-connector                                                                                                                                                     |
|                                                                           | <b>System Requirements</b>           | Windows 10 RS3 64-bit, Intel® i5 series or higher processor, 4-GB RAM, 20-GB Hard Drive, available PCIe slot.                                                                   |
|                                                                           | <b>Temperature - Operating</b>       | 50° to 131° F (10° to 55° C)                                                                                                                                                    |
|                                                                           | <b>Temperature - Storage</b>         | -22° to 140° F (-30° to 60° C)                                                                                                                                                  |
|                                                                           | <b>Relative Humidity - Operating</b> | 20% to 80%                                                                                                                                                                      |
|                                                                           | <b>Compliances</b>                   | FCC Part 15B, cULus 60950, CE Mark EN55022B(1995)/EN55024-1998 STD, Taiwan BSMI CNS13438, Korea MIC                                                                             |
|                                                                           | <b>Operating Systems Supported</b>   | -Windows 10 RS3 64-bit.                                                                                                                                                         |
|                                                                           | <b>Kit Contents</b>                  | HP Thunderbolt™ 3 PCIe 3-port I/O Card, full height bulkhead bracket, DisplayPort™ and GPIO (General-Purpose Input/Output) cable, Installation documentation and warranty card. |

### Technical Specifications - Networking and Communications

|                                                                                         |                                |                                                                                                                                                                                            |
|-----------------------------------------------------------------------------------------|--------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Integrated Intel® I219LM PCIe GbE Controller (Intel® vPro® with Intel® AMT 12.0)</b> | <b>Connector</b>               | RJ-45                                                                                                                                                                                      |
|                                                                                         | <b>Controller</b>              | Intel® I219LM GbE platform LAN connect networking controller                                                                                                                               |
|                                                                                         | <b>Memory</b>                  | 3 KB Tx and 3KB Rx FIFO packet buffer memory                                                                                                                                               |
|                                                                                         | <b>Data Rates Supported</b>    | 10/100/1000 Mbps                                                                                                                                                                           |
|                                                                                         | <b>Compliance</b>              | 802.1as/1588, 802.1p, 802.1Q, 802.3, 802.3ab, 802.3az, 802.3i, 802.3u, 802.3z                                                                                                              |
|                                                                                         | <b>Bus Architecture</b>        | PCI Express and SMBus                                                                                                                                                                      |
|                                                                                         | <b>Data Transfer Mode</b>      | PCIe-based interface for active state operation (S0 state) and SMBus for host and management traffic (Sx low power state)                                                                  |
|                                                                                         | <b>Power Requirement</b>       | Requires 3.3V (integrated regulators for core Vdc)                                                                                                                                         |
|                                                                                         | <b>Boot ROM Support</b>        | Yes                                                                                                                                                                                        |
|                                                                                         | <b>Network Transfer Mode</b>   | Full-duplex; Half-duplex (not supported for the 1000BASE-T transceiver)                                                                                                                    |
|                                                                                         | <b>Network Transfer Rate</b>   | 10BASE-T (half-duplex) 10 Mbps<br>10BASE-T (full-duplex) 20 Mbps<br>100BASE-TX (half-duplex) 100 Mbps<br>100BASE-TX (full-duplex) 200 Mbps<br>1000BASE-T (full-duplex) 2000 Mbps           |
|                                                                                         | <b>Management Capabilities</b> | vPro®, WOL, auto MDI crossover, PXE, Multi-port teaming, RSS, ACPI, Advanced cable diagnostic, loopback modes, AMT 12.0 support, Circuit Breaker, VLAN, Multicast Listener Discovery (MLD) |

|                                              |                                         |                                                                                                                                                                                        |
|----------------------------------------------|-----------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Intel® X710-DA2 2-Port SFP+ 10GbE NIC</b> | <b>Connector</b>                        | 2 SFP+ Ports                                                                                                                                                                           |
|                                              | <b>Cabling</b>                          | Twin Axial Cabling up to 10m                                                                                                                                                           |
|                                              | <b>Controller</b>                       | Intel® Ethernet Controller X710-AM2                                                                                                                                                    |
|                                              | <b>Network Transfer Rates Supported</b> | 10GbE (with supported 10GBASE-SR transceivers)                                                                                                                                         |
|                                              | <b>Data Path Width</b>                  | PCIe Gen3x8 (compatible with x4)                                                                                                                                                       |
|                                              | <b>Power Requirement</b>                | 4.3W (typical) (with supported 10GBASE-SR transceivers)                                                                                                                                |
|                                              | <b>Operating Temperature</b>            | 32° to 131° F (0° to 55° C)                                                                                                                                                            |
|                                              | <b>Dimensions (HxW)</b>                 | 2.703 x 6.578 inches                                                                                                                                                                   |
|                                              | <b>Operating System Driver Support</b>  | Windows 10 64-bit<br>Linux®                                                                                                                                                            |
|                                              | <b>Kit Contents</b>                     | <ul style="list-style-type: none"> <li>Intel® X710-DA2 2-Port SFP+ 10GbE NIC with standard height bracket attached</li> <li>Low-profile bracket</li> <li>Product Literature</li> </ul> |

|                                     |                              |                              |
|-------------------------------------|------------------------------|------------------------------|
| <b>HP 10GbE SFP+ SR Transceiver</b> | <b>Operating Temperature</b> | 32°F to 113°F (0°C to 45°C)  |
|                                     | <b>Operating Humidity</b>    | 0% to 85%, noncondensing     |
|                                     | <b>Dimensions (HxWxD)</b>    | 0.47 x 0.54 x 2.19 inches    |
|                                     | <b>Kit Contents</b>          | HP 10GbE SFP+ SR Transceiver |

### Technical Specifications - Networking and Communications

|                                          |                                         |                                                                                                                                                                                   |
|------------------------------------------|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Intel® X550-T2 2-Port 10GbE NIC</b>   | <b>Connector</b>                        | 2 RJ-45                                                                                                                                                                           |
|                                          | <b>Cabling</b>                          | 10GbE: Cat6a (or better) up to 100m<br>5GbE and below: Cat5e (or better) up to 100m                                                                                               |
|                                          | <b>Controller</b>                       | Intel® Ethernet Controller X550                                                                                                                                                   |
|                                          | <b>Network Transfer Rates Supported</b> | 10GbE, 5GbE, 2.5GbE, 1GbE, 100MbE                                                                                                                                                 |
|                                          | <b>Data Path Width</b>                  | PCIe Gen3x4                                                                                                                                                                       |
|                                          | <b>Power Requirement</b>                | 11.2W (typical)                                                                                                                                                                   |
|                                          | <b>Operating Temperature</b>            | 32° to 131° F (0° to 55° C)                                                                                                                                                       |
|                                          | <b>Dimensions (HxW)</b>                 | 5.1 x 2.7 in (without brackets)                                                                                                                                                   |
|                                          | <b>Operating System Driver Support</b>  | Windows 10 64-bit<br>Linux®                                                                                                                                                       |
|                                          | <b>Kit Contents</b>                     | <ul style="list-style-type: none"> <li>Intel® X550-T2 2-Port 10GbE NIC with standard height bracket attached</li> <li>Low-profile bracket</li> <li>Product Literature</li> </ul>  |
| <b>Aquantia® AQN-108 1-Port 5GbE NIC</b> | <b>Connector</b>                        | 1 RJ-45                                                                                                                                                                           |
|                                          | <b>Cabling</b>                          | Cat5e (or better) up to 100m                                                                                                                                                      |
|                                          | <b>Controller</b>                       | Aquantia® AQC108                                                                                                                                                                  |
|                                          | <b>Network Transfer Rates Supported</b> | 5GbE, 2.5GbE, 1GbE, 100MbE                                                                                                                                                        |
|                                          | <b>Data Path Width</b>                  | PCIe Gen3x1                                                                                                                                                                       |
|                                          | <b>Power Requirement</b>                | 3.5W (typical)                                                                                                                                                                    |
|                                          | <b>Operating Temperature</b>            | 32° to 131° F (0° to 55° C)                                                                                                                                                       |
|                                          | <b>Dimensions (HxW)</b>                 | 3.72 x 3.18 inches (without brackets)                                                                                                                                             |
|                                          | <b>Operating System Driver Support</b>  | Windows 7 64-bit; Windows 10 64-bit;<br>Linux®                                                                                                                                    |
|                                          | <b>Kit Contents</b>                     | <ul style="list-style-type: none"> <li>Aquantia AQN-108 1-Port 5GbE NIC with standard height bracket attached</li> <li>Low-profile bracket</li> <li>Product Literature</li> </ul> |
| <b>Intel® I350-T2 2-Port 1GbE NIC</b>    | <b>Connector</b>                        | 2 RJ-45                                                                                                                                                                           |
|                                          | <b>Cabling</b>                          | Cat5e (or better) up to 100m                                                                                                                                                      |
|                                          | <b>Controller</b>                       | Intel® Ethernet I350 Controller                                                                                                                                                   |
|                                          | <b>Network Transfer Rates Supported</b> | 1GbE, 100MbE, 10MbE                                                                                                                                                               |
|                                          | <b>Data Path Width</b>                  | PCIe Gen2.1x4                                                                                                                                                                     |
|                                          | <b>Power Requirement</b>                | 4.4W (typical)                                                                                                                                                                    |
|                                          | <b>Operating Temperature</b>            | 32° to 131° F (0° to 55° C)                                                                                                                                                       |
|                                          | <b>Dimensions (HxW)</b>                 | 2.75 x 5.5 inches (without brackets)                                                                                                                                              |
|                                          | <b>Operating System Driver Support</b>  | Windows 7 64-bit; Windows 10 64-bit;<br>Linux®                                                                                                                                    |
|                                          |                                         |                                                                                                                                                                                   |



### Technical Specifications - Networking and Communications

#### Kit Contents

- Intel® I350-T2 2-Port 1GbE NIC with standard height bracket attached
- Low-profile bracket
- Product Literature

#### Intel® I350-T4 4-Port 1GbE NIC

##### Connector

4 RJ-45

##### Cabling

Cat5e (or better) up to 100m

##### Controller

Intel® Ethernet I350 Controller

##### Network Transfer Rates Supported

1GbE, 100MbE, 10MbE

##### Data Path Width

PCIe Gen2.1x4

##### Power Requirement

5W (typical)

##### Operating Temperature

32° to 131° F (0° to 55° C)

##### Dimensions (HxW)

2.75 x 5.5 inches (without brackets)

##### Operating System Driver Support

Windows 7 64-bit; Windows 10 64-bit; Linux®

#### Kit Contents

- Intel® I350-T4 4-Port 1GbE NIC with standard height bracket attached
- Low-profile bracket
- Product Literature

#### Intel® AX201 802.11 a/b/g/n/ac/ax WLAN + Bluetooth 5.0 M.2

##### WLAN Standards

802.11a/b/g/n/ac/ax Wave 6, Dual band 2x2 with up to 2.4Gbps speed (theoretical maximum); Up to 3x faster than 802.11 ac and up to 4x capacity in congested environments than 802.11 ac

##### Antenna

2x2 Dual-Band

##### Bluetooth Standards

5

##### Operating Temperature

32° to 131° F (0° to 55° C)

##### Interface

M.2 CNVio

##### Dimensions

M.2 2230

##### Kit Contents

Not Available

**NOTE:** Wireless access point and internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 5 (802.11 ax) is backwards compatible with prior 802.11 specs.

#### HP eSATA PCI Cable Kit

##### Part Number

FH966AA

##### Features

- 1x eSATA ports
- Bring the same ultra-fast SATA performance that you demand from your internal SATA hard drives to an external eSATA hard drive.
- Faster transfer rates than existing external storage solutions: USB 2.0 & 1394.
- Complete motherboard to eSATA PCI bracket solution.
- Robust and user friendly external eSATA connector.

#### Z2 G5 TWR Bezel w/ Dust Filter option

##### Part Number

4KY89AA

##### Overview

Workstations are deployed in a variety of different ways and in different environments, from under a desk to manufacturing floors. HP Workstations designed a dust filter option to further protect the system

### Technical Specifications - Networking and Communications

against the ingress of dust and other particles over the life of the system. Test have shown a reduction of dust ingress of up to 32% for the HP Z2 Tower G5 Workstation platform and is cleanable and serviceable by customers. There is also a BIOS setting that will warn customer when it is time to check and clean their filters.

#### Cleaning and servicing the dust filter

1. After removing the filter from the system bezel (dust filter can be removed without the use of tools from the front bezel), either blow it with and wash with water or use a delicate duster (feather duster) to brush off the filter then rinse it with water.
2. Allow the filter half a day to dry at room temperature (25C at 30%-50% humidity)
3. Temperature of water can be 0-70C, due to the dust filter meeting the SQTM 70C humidity test. Suggested water temperature for best user experience is 0-50C.
4. Normal tap water (and most other types of water) can be used to rinse the filter. Any type of corrosive liquid is restricted.

#### Enabling the Check Filter warning in the BIOS:

1. Customers must enable the BIOS setting once they receive their filter.
2. To enable, do the following once you see the boot screen for your system: F10 > Advanced > Built-In Device Options > Dust Filter
3. Select to enable the Dust Filter replacement reminder, which can be set for 15, 30, 60, 90, 120, or 180 days. The Reminder will show during POST after the reminder timer has expired.
- 4.

**NOTE:** customers who anticipate more dust ingress in their environments should set the reminder for a shorter window. Customers anticipating longer ingress can set the reminder for a longer window.

#### BIOS Warnings

Large enterprise customers deploying multiple systems can centrally enable/control the BIOS warning using the WMI/BCU tool remotely to set the options below:

##### Dust Filter

- Disable\*
- Enable

##### Dust Filter Reminder (Days)

15, 30, 60\*, 90, 120, and 180

#### Z2 G5 Dust Filter (Filter Only)

##### Part Number

3TQ24AA

This is intended to be a replacement filter for the HP Z2 Tower G5 Workstation in the event that the original filter would need to be replaced.

#### HP Z2 Tower PCIe Card Holder/Blower Kit

##### Part Number

2B1D4AA

##### Features

This card holder/blower kit is required to enable added mechanical stability when configuring select graphics cards on the HP Z2 Tower G5 Workstation.

The kit enables added mechanical stability when configuring:

- 2x AMD Radeon™ Pro WX 3200 4GB Graphics
- 1x AMD Radeon™ Pro W5500

### Technical Specifications - Networking and Communications

- 1x AMD Radeon™ Pro W5700
- 2x NVIDIA Quadro P400
- 2x NVIDIA Quadro P620
- 2x NVIDIA® Quadro® P1000 4GB Graphics
- 1x NVIDIA® Quadro® P2200 5GB Graphics
- 1x NVIDIA® Quadro® RTX 4000 8GB Graphics
- 1x NVIDIA® Quadro® RTX 5000 16GB Graphics
- 1x NVIDIA® Quadro® RTX6000 24GB Graphics

**NOTE:** If one of the above graphics cards is configured with the Z2 G5 TWR at time of purchase or the 700W chassis is configured, the Card Holder/Blower is automatically included.

- If one of the above graphics cards is added as an aftermarket option, the Card holder/Blower Kit (2B1D4AA) is required, as a separate purchase, for installation of the graphics card.

### Technical Specifications – Miscellaneous Features

#### MISCELLANEOUS FEATURES

##### Management Features

- 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.
- Intel® Wired for Management support; industry wide initiative to make Intel® architecture based PCs, servers and mobile computers more inherently manageable out-of-the-box and over the network
- Dual State Power Button; acts as both an on/off button and a suspend-to-sleep button

##### Serviceability Features

- Dual colored power LED on front of computer to indicate either normal or fault condition
- Diagnostic LED Explanation Table:
  - Power LED will blink red 2 to 5 times, then blink white 2 or more times, then repeat (with beep tones for each blink initially):
    - 2 red + 2 white User must provide file for BIOS recovery (USB storage typically)
    - 2 red + 3 white User must enter a key sequence to proceed with recovery by policy
    - 2 red + 4 white BIOS recovery is in progress
    - 3 red + 2 white Memory could not be initialized
    - 3 red + 3 white Graphics adaptor could not be found
    - 3 red + 4 white Power supply failure / not connected
    - 3 red + 5 white Processor not installed
    - 3 red + 6 white Current processor does not support an enabled feature
    - 4 red + 2 white Processor has exceeded its temperature threshold / system thermal shutdown
    - 4 red + 3 white System internal temperature has exceeded its threshold
    - 5 red + 2 white System controller firmware is not valid
    - 5 red + 3 white System controller detected BIOS is not executing
    - 5 red + 4 white BIOS could not complete initialization / PCA failure
    - 5 red + 5 white System controller rebooted the system after a health or recovery timer triggered
- HP PC Hardware Diagnostics UEFI:
  - This utility 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
- System/Emergency ROM
- Flash ROM
- CMOS Battery Holder for easy replacement
- Flash Recovery with Video Configuration Record Software
- 5 Aux Power LED on System PCA
- Processor ZIF Socket for easy Upgrade
- Over-Temp Warning on Screen (Requires IM Agents)
- Clear Password Jumper
- DIMM Connectors for easy Upgrade
- Clear CMOS Button
- NIC LEDs (integrated) (Green & Amber)
- Color coordinated cables and connectors
- Tool-less Hood Removal
- Front power switch
- System memory can be upgraded without removing the system board or any internal components
- Tool-less Hard Drive, CD & Diskette Removal
- Blue Pull Tabs, and Quick Release Latches for easy Identification

### Summary of Changes

| Date of change:   | Version History: |         | Description of change:                                                                                                              |
|-------------------|------------------|---------|-------------------------------------------------------------------------------------------------------------------------------------|
| December 18, 2020 | From v1 to v2    | Changed | Processors, Other Hardware, HP Bios, PCIe Solid State Drives, Input Devices, Other Hardware, Networking and Communications sections |
| January 26, 2021  | From v2 to v3    | Changed | PCIe Hold-down / Blower Kit Specification section                                                                                   |
| February 1, 2021  | From v3 to v4    | Changed | Operating Systems and NETWORKING AND COMMUNICATIONS sections                                                                        |
| March 1, 2021     | From v4 to v5    | Changed | Overview, Social and Environmental Responsibility sections                                                                          |
| April 13, 2021    | From v5 to v6    | Changed | Format page 2 and changed Optical and Removable Storage section                                                                     |
| May 1, 2021       | From v6 to v7    | Added   | Service, Support, and Warranty section                                                                                              |
|                   |                  | Changed | Graphics and System Configurations sections                                                                                         |
| May 31, 2021      | From v7 to v8    | Added   | HP Smart Support and footnote                                                                                                       |
| July 1, 2021      | From v8 to v9    | Changed | Graphics and Power Supply sections                                                                                                  |

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