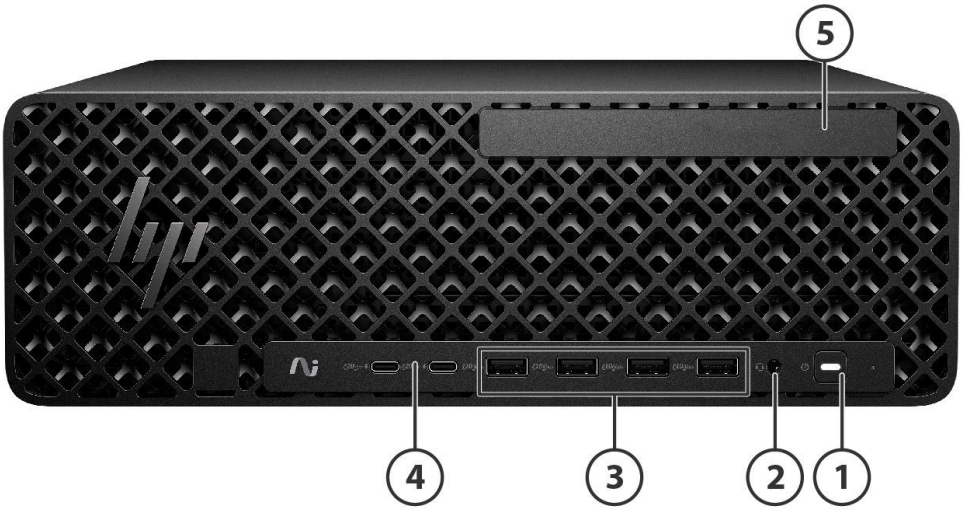
Overview

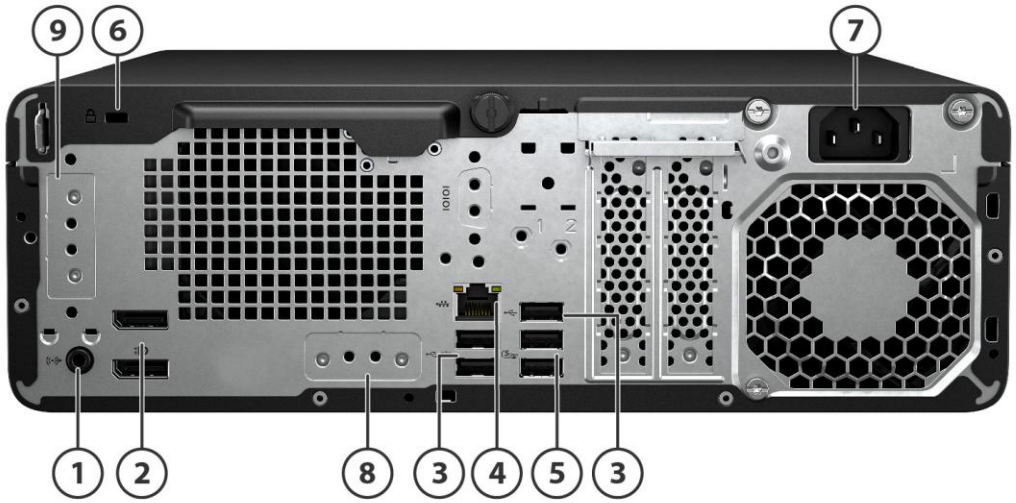
## HP Z2 SFF G1i Workstation




**Front View**

1. Power button
2. headphone/microphone combo
3. 4 SuperSpeed USB Std-A 10Gbps port
4. 2 SuperSpeed USB-C® 20Gbps port (charge supports up to 5V/3A)
5. Slim ODD bay

## Overview




**Rear View**

1. Audio line in/ line out
2. 2 DisplayPort 1.4 ports
3. 3 SuperSpeed USB Std-A 480Mbps ports
4. 1 RJ-45 Integrated LAN Port (1GbE)
5. 2 SuperSpeed USB Std-A 5Gbps ports
6. Nano Security Lock Slot
7. Power connector
8. Flex I/O module: choose one from the following:
   1 Dual SuperSpeed USB Std-A 5Gbps port, 1 SuperSpeed USB Type-C® 10Gbps port (Alt Mode DisplayPort™1.4 with 15W Output) , 1 Dual SuperSpeed USB Type-C® 10Gbps port, 1 Thunderbolt™ 4 port (40Gbps), 1 USB-based Serial port, 1 Displayport 2.1 port, 1 HDMI 2.1 port, 1 VGA port, (1) 1GbE NIC, (1) 1Gbps Fiber LC NIC*, (1) 2.5GbE NIC, (1) 10GbE NIC*
9. Flex IO 2

## Overview

**Operating Systems**

Preinstalled:

- Windows 11 Pro 64[1]
- Windows 11 Home 64[1]
- Linux®-ready[4]
- Ubuntu® 24.04 LTS[2,3]

Supported:

- Windows 10
- Red Hat® Enterprise Linux® Workstation 9[4]
- SUSE Linux® Enterprise Desktop 15[4]
- Ubuntu® 24.04 LTS[2,3]

[1] 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 11 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.

[2] 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 requires may apply over time for updates.

[3] A certified preloaded version of Ubuntu® 24.04 LTS is available from HP for this platform. 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 upgrades.

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

**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.

**Processors Overview[1,2,3,4,5,6]**

Intel® Core™ Ultra 9 Processor 285K with Intel® Graphics (3.2 GHz E-core base frequency, 3.7 GHz P-core base frequency, up to 4.6 GHz E-core Max Turbo frequency, up to 5.5 GHz P-core Max Turbo frequency, 36 MB L3 cache, 8 P-cores and 16 E-cores, 24 threads)

Intel® Core™ Ultra 9 Processor 285 with Intel® Graphics (1.9 GHz E-core base frequency, 2.5 GHz P-core base frequency, up to 4.6 GHz E-core Max Turbo frequency, up to 5.4 GHz P-core Max Turbo frequency, 36 MB L3 cache, 8 P-cores and 16 E-cores, 24 threads)

Intel® Core™ Ultra 7 Processor 265K with Intel® Graphics (3.3 GHz E-core base frequency, 3.9 GHz P-core base frequency, up to 4.6 GHz E-core Max Turbo frequency, up to 5.4 GHz P-core Max Turbo frequency, 30 MB L3 cache, 8 P-cores and 12 E-cores, 20 threads)

Intel® Core™ Ultra 7 Processor 265 with Intel® Graphics (1.8 GHz E-core base frequency, 2.4 GHz P-core base frequency, up to 4.6 GHz E-core Max Turbo frequency, up to 5.2 GHz P-core Max Turbo frequency, 30 MB L3 cache, 8 P-cores and 12 E-cores, 20 threads)

Intel® Core™ Ultra 5 Processor 245K with Intel® Graphics (3.6 GHz E-core base frequency, 4.2 GHz P-core base frequency, up to 4.6 GHz E-core Max Turbo frequency, up to 5.2 GHz P-core Max Turbo frequency, 24 MB L3 cache, 6 P-cores and 8 E-cores, 14 threads)

Intel® Core™ Ultra 5 Processor 245 with Intel® Graphics (3.0 GHz E-core base frequency, 3.5 GHz P-core base frequency, up to 4.5 GHz E-core Max Turbo frequency, up to 5.1 GHz P-core Max Turbo frequency, 24 MB L3 cache, 6 P-cores and 8 E-cores, 14 threads)

Intel® Core™ Ultra 5 Processor 235 with Intel® Graphics (2.9 GHz E-core base frequency, 3.4 GHz P-core base frequency, up to 4.4 GHz E-core Max Turbo frequency, up to 5.0 GHz P-core Max Turbo frequency, 24 MB L3 cache, 6 P-cores and 8 E-cores, 14 threads)

Intel® Core™ Ultra 5 Processor 225 with Intel® Graphics (2.7 GHz E-core base frequency, 3.3 GHz P-core base frequency, up to 4.4

## Overview

GHz E-core Max Turbo frequency, up to 4.9 GHz P-core Max Turbo frequency, 20 MB L3 cache, 6 P-cores and 4 E-cores, 10 threads)

[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 Turbo Boost performance varies depending on hardware, software and overall system configuration. See http://www.intel.com/technology/turboboost for more information.
[3] Intel vPro® requires Windows 10 Pro 64 bit or higher, a vPro supported processor, vPro enabled chipset, vPro enabled wired LAN and/or Wi-Fi 6E WLAN and TPM 2.0. Some functionality requires additional 3rd party software in order to run. Features of vPro® Essentials and Enterprise vary. See http://intel.com/vpro.
[4] 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.
[5] Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.
[6]Features and software that require a NPU may require software purchase, subscription or enablement by a software or platform provider, and third party software may have specific configuration or compatibility requirements. Performance varies by use, configuration, and other factors.

| | |
|---|---|
| **Expansion Slots (see system board section for more details)** | Slot 1:<br>PCIe Gen5 x16<br>Slot 2:<br>PCIe Gen4 x4 |
| **Expansion Bays (see storage section for more details)** | 1 dedicated 9.5mm slim optical disk drive bay |
| **Front I/O** | 4 SuperSpeed USB Std-A 10Gbps port;<br>2 SuperSpeed USB Type-C® 20Gbps port (charge supports up to 5V/3A) |
| **Internal I/O [5]** | Serial port |
| **Rear I/O** | 2 SuperSpeed USB Std-A 5Gbps port; 3 High-speed USB Std-A 480Mbps port |
| **Optional I/O** | 1 Dual SuperSpeed USB Std-A 5Gbps port, 1 SuperSpeed USB Type-C® 10Gbps port (Alt Mode DisplayPort™1.4 with 15W Output) [1], 1 Dual SuperSpeed USB Type-C® 10Gbps port [1], 1 Thunderbolt™ 4 port (40Gbps) [1], 1 USB-based Serial port, 1 Displayport 2.1 port, 1 HDMI 2.1 port, 1 VGA port, (1) 1GbE NIC, (1) 1Gbps Fiber LC NIC*, (1) 2.5GbE NIC, (1) 10GbE NIC*<br><br>Flex IO2, choice of:<br>1 Dual SuperSpeed USB Std-A 5Gbps ports, 1 USB-based Serial port, (1) 1Gbps Fiber LC NIC (FLY USB Type)<br><br>* Modern standby feature was not compatible risk (detail see NETWORKING / COMMUNICATION).<br>[1]Component will be ready in 2025Q3 |
| **On-board RAID Support** | Factory integrated RAID 0, 1 for NVME drives (RAID 5, 10 Intel support) |
| **Chassis Dimensions (H x W x D)** | H: 3.9" [100mm]<br>W: 11.9" [303.5 mm]<br>D: 12.1" [308 mm] (Standard desktop orientation) |
| **Packaged Dimensions** | H: 15.5" [394 mm]<br>W: 19.6" [499 mm] |

## Overview

| | |
|---|---|
| | D: 7.9" [200mm] (Standard desktop orientation) |
| **Rack Dimensions** | 7U, 4 units per shelf (Standard EIA-310-D 19" Rack) |
| **Weight** | Exact weights depend upon configuration (System weight only).<br>Starting at 4.0kg (8.82lbs.) |
| **Temperature** | 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 |
| **Humidity** | Operating: 8% to 85% RH, non-condensing, 35° C maximum wet bulb<br>Non-operating: 8% to 90% RH, non-condensing, 35° C maximum wet bulb |
| **Maximum Altitude (non-pressurized)[6]** | 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. |
| **Power Supply** | 500W wide-ranging, active Power Factor Correction, 92% Efficiency and 400W wide-ranging, active Power Factor Correction, 92% Efficiency.<br><br>NOTE: The Power Supply Efficiency Report for the 500W 92% Efficiency and 400W 92% Efficiency power supply may be found at the following links:<br><br>https://www.plugloadsolutions.com/80PlusPowerSuppliesDetail.aspx?id=0&type=2 |
| **Backup Devices** | |
| **Chipset** | Intel® W880 Chipset |
| **Memory** | 4 DIMM slots supporting up to 192GB nECC at launch ( 256 GB later) or up to 128 GB ECC, DDR5 unbuffered DIMM memory.<br>Max memory speed will run at 5600 MT/s based on system configuration. See Supported Components / Memory Section for details. |

**Processors**

| | Factory Configured | Option Kit | Option Kit Part Number | Support Notes |
|---|---|---|---|---|
| **Intel® Core™ Ultra Desktop Processors (series 2)** | | | | |
| Intel® Core™ Ultra 9 285K Processor | Y | N | | |
| Intel® Core™ Ultra 9 285 Processor | Y | N | | |
| Intel® Core™ Ultra 7 265K Processor | Y | N | | |
| Intel® Core™ Ultra 7 265 Processor | Y | N | | |
| Intel® Core™ Ultra 5 245K Processor | Y | N | | |
| Intel® Core™ Ultra 5 245 Processor | Y | N | | |

| | | | |
|---|---|---|---|
| Intel® Core™ Ultra 5 235 Processor | Y | N | |
| Intel® Core™ Ultra 5 225 Processor | Y | N | 1 |

**NOTE 1:** Support only non-ECC memory

| PCIe Solid State Drives | Factory Configured | Option Kit | Option Kit Part Number |
|---|---|---|---|
| HP Z Turbo Drive 1TB 2280 PCIe-4x4 SED OPAL2 TLC Z2 Kit SSD | N | Y | 223A3AA |
| HP Z Turbo Drive 2TB 2280 PCIe-4x4 SED OPAL2 TLC Z2 Kit SSD | N | Y | 223A4AA |
| HP ZTurbo 1TB PCIe-Gen 4x4 TLC Z2 SSDKit | N | Y | 201F5AA |
| HP ZTurbo 2TB PCIe-Gen 4x4 TLC Z2 SSDKit | N | Y | 201F8AA |
| HP ZTurbo 512GB PCIe-Gen 4x4 SED Z2 SSDKit | N | Y | 201F9AA |
| HP ZTurbo 512GB PCIe-Gen 4x4 TLC Z2 SSDKit | N | Y | 201G0AA |
| Z Turbo 2TB PCIe-4x4 TLC SSD Module | Y | Y | 38T75AA |
| Z Turbo 1TB 2280 PCIe-4x4 SED OPAL2 TLC M.2 SSD Module | Y | Y | 38T76AA |
| Z Turbo 1TB PCIe-4x4 TLC SSD Module | Y | Y | 38T77AA |
| Z Turbo 2TB 2280 PCIe-4x4 SED OPAL2 TLC M.2 SSD Module | Y | Y | 38T79AA |
| Z Turbo 512GB PCIe-4x4 TLC SSD Module | Y | Y | 38T80AA |
| Z Turbo 512GB 2280 PCIe-4x4 SED OPAL2 TLC M.2 SSD Module | Y | Y | 38T81AA |
| 256GB 2280 PCIe-4x4 NVMe Value M.2 Z2 SSD Module | Y | Y | 4M9Z1AA |
| 512GB 2280 PCIe-4x4 NVMe Value M.2 Z2 SSD Module | Y | Y | 4M9Z2AA |
| 1TB 2280 PCIe-4x4 NVMe Value M.2 Z2 SSD Module | Y | Y | 4M9Z3AA |
| Z Turbo 4TB 2280 PCIe-4x4 TLC M.2 Z2 Kit SSD | Y | Y | 5S492AA |
| Z Turbo 4TB 2280 PCIe-4x4 TLC M.2 SSD Module | Y | Y | 5S496AA |
| Z Turbo 4TB 2280 PCIe-4x4 SED OPAL2 TLC M.2 SSD Module | Y | Y | 5S497AA |
| Z Turbo 4TB 2280 PCIe-4x4 SED OPAL2 TLC M.2 Z2 Kit SSD | Y | Y | 5S498AA |
| Z Turbo 512GB 2280 PCIe-4x4 TLC China SSD Module | Y | Y | 906H1AA |
| Z Turbo 1TB PCIe-4x4 TLC China SSD Module | Y | Y | 906H6AA |
| Z Turbo 2TB PCIe-4x4 TLC China SSD Module | Y | Y | 906J0AA |
| HP Z Turbo 2TB PCIe-4x4 TLC China Z2 Kit SSD | Y | Y | 906J1AA |
| 256GB 2280 PCIe-4x4 NVMe Value M.2 China Z2 SSD Module | Y | Y | 906J7AA |
| 512GB 2280 PCIe-4x4 NVMe Value M.2 China Z2 SSD Module | Y | Y | 906K1AA |

## Overview

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|---|---|---|---|
| 1TB 2280 PCIe-4x4 NVMe Value M.2 China Z2 SSD Module | Y | Y | 906K2AA |
| HP Z Turbo 1TB 2280 PCIe-5x4 TLC M.2 Z2 G12 SFF Kit SSD | Y | Y | A9TN3AA |
| HP Z Turbo 1TB 2280 PCIe-5x4 SED OPAL2 TLC M.2 Z2 G12 SFF Kit SSD | Y | Y | A9TN2AA |
| HP Z Turbo 2TB 2280 PCIe-5x4 TLC M.2 Z2 G12 SFF Kit SSD | Y | Y | A9TN5AA |
| HP Z Turbo 2TB 2280 PCIe-5x4 SED OPAL2 TLC M.2 Z2 G12 SFF Kit SSD | Y | Y | A9TN4AA |
| HP Z Turbo 8TB PCIe-4x4 2280 NVMe M.2 SSD | Y | | |

**NOTE:** For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36GB of system disk (for Windows) is reserved for system recovery software.
**NOTE:** PCIe M.2 SSD Kit SKUs include a heatsink. PCIe M.2 SSD Module SKUs do not include a heatsink

## Overview

| Graphics | | Factory Configured | Option Kit | Option Kit Part Number | Supported # of cards | Support Notes |
|---|---|---|---|---|---|---|
| **Graphics Cable Adapters** | HP DisplayPort To VGA Adapter | N | Y | F7W97AA | | |
| | HP USB-C to HDMI Adapter | N | Y | 4SH07AA | | |
| | HP USB-C to VGA Adapter | N | Y | 4SH06AA | | |
| | HP Single miniDP-to-DP Adapter Cable | Y | Y | 2MY05AA | | |
| | HP DisplayPort to DVI-D Adapter | Y | N | | | |
| | HP DP to HDMI 2.0 | Y | N | | | |
| **Entry 3D** | NVIDIA RTX A400 4 GB with Mini Bracket 4mDP Graphics | Y | Y | AV8J3AA | 2 | |
| | NVIDIA RTX A1000 8 GB with Mini Bracket 4mDP Graphics | Y | Y | AV8J4AA | 2 | 2 |
| **Mid-range 3D** | NVIDIA RTX 2000 Ada 16 GB 4mDP Graphics | Y | Y | 8D6B8AA | 1 | 1 |
| | NVIDIA® RTX 2000E Ada 16 GB | Y | Y | C81TMAA | 2 | 2 |
| | NVIDIA RTX PRO 2000 Blackwell 16 GB 4mDP Graphics | Y | Y | B5CH7AA | 1 | 2 |
| **High-End 3D** | NVIDIA RTX 4000 SFF Ada 20 GB 4mDP Graphics | Y | Y | 8C1W1AA | 1 | 2 |
| | NVIDIA RTX PRO 4000 Blackwell SFF 24 GB 4mDP Graphics | Y | Y | BX6A5AA | 1 | 2 |

**Note:** Additional third-party graphics cards may be available. Please contact your sales representative or channel partner for more information.
**Note 1:** Double width card consumes 2 PCIe slots
**Note 2:** Not available with 400W power supply

| Memory | Factory Configured | Option Kit | Option Kit Part Number | Support Notes |
|---|---|---|---|---|
| 8GB DDR5 (1x8GB) 5600 UDIMM NECC Memory | Y | Y | A9TF0AA | |
| 16GB DDR5 (1x16GB) 5600 UDIMM NECC Memory | Y | Y | A9TF1AA | |
| 16GB DDR5 (1x16GB) 5600 UDIMM ECC Memory | Y | Y | A9TF2AA | 1 |
| 32GB DDR5 (1x32GB) 5600 UDIMM NECC Memory | Y | Y | A9TF3AA | |
| 32GB DDR5 (1x32GB) 5600 UDIMM ECC Memory | Y | Y | A9TF4AA | 1 |
| HP 48GB DDR5 (1x48GB) 5600 UDIMM NECC Memory | Y | Y | 8F070AA | |
| 64GB DDR5 (1x64GB) 6400 CUDIMM NECC Memory | Y | | | |

**NOTE 1:** ECC memory is supported

## Overview

| Optical and Removable Storage | Factory Configured | Option Kit | Option Kit Part Number |
|---|---|---|---|
| HP USB External DVDRW Drive | N | Y | F2B56AA |
| HP USB External DVDRW Drive | N | Y | Y3T76AA |
| HP Z2 G1i SFF DVD-ROM 9.5mm Slim ODD | Y | Y | A9TN0AA |
| HP Z2 G1i SFF SuperMulti DVD-Writer 9.5mm Slim ODD | Y | Y | A9TN1AA |
| HP CRU Secure High Performance Storage M.2 2TB Storage Module | Y | Y | 56Q87AA |
| HP CRU Secure High Performance Storage M.2 1TB Storage Module | Y | Y | 56Q88AA |
| HP CRU Secure High Performance Storage M.2 512GB Storage Module | Y | Y | 56Q89AA |

| Networking and Communications | Factory Configured | Option Kit | Option Kit Part Number |
|---|---|---|---|
| Intel Ethernet I350-T4 4-Port 1Gb NIC | N | Y | W8X25AA |
| Allied Telesis AT-2911T/2-901 Dual Port 1GbE NIC[1] | Y | Y | 6E3Y9AA |
| Intel I226-T1 2.5GbE Ethernet Network Adapter | Y | Y | 9P1U8AA |
| Intel X550 10GBASE-T Dual Port NIC | Y | Y | 1QL46AA |
| NVIDIA Mellanox ConnectX-6 DX Dual Port 10/25GbE SFP28 NIC | Y | Y | 436M8AA |
| Intel E810-XXVDA2 10/25GbE SFP28 PCIe Network Adapter | Y | Y | C20MMAA |
| HP 10GbE SFP+ SR/SW LC Fiber Optic Transceiver | Y | Y | 860T8AA |
| HP 25GbE SFP28 LC Fiber Optic Transceiver | Y | Y | 860T9AA |
| Intel® Wi-Fi 6E AX211 BT 5.3 wireless card M.2 non-vPro | Y | N | |
| Intel® Wi-Fi 7 BE200 BT 5.4 wireless card M.2 non-vPro | Y | N | |

**Note:** Specific Network on Modern standby feature Support limitation
Legacy Card AT-2911T2/901 and INTEL I350-T4 and INTEL X550-T2 and 10GBase-T FLEX IO and NVDIA CX-6 DX Dual 25GbE NIC do not support modern standby. And system equipped with those non modern standby network card, when monitor off and it is not really entered Modern standby state for wake-up function support, another path suggestion is Customer can use Onboard Lan for Wake event instead of legacy function WOL limitation because those commodities might not meet the required compliance standards in system modern standby configuration.
**Note 1:** Cannot be configured concurrently in Slot 2 or Slot 4 (connectors J31 and J32)
**Note 2:** Not available for Taiwan, China and Morrocco

| Input Devices | Factory | Option Kit | Option Kit Part Number |
|---|---|---|---|

## Overview

| | Configured | | |
|---|---|---|---|
| HP 685 Comfort Dual-Mode Keyboard | N | Y | 8T6L9UT |
| HP 725 Multi-Device Rechargeable Wireless Keyboard | N | Y | 9T5B2AA |
| HP Bus Slim v2 Smart Card USB Keyboard | Y | Y | A71J9AA |
| HP 125 G2 USB Wired Keyboard | Y | Y | AY2Y7AA |
| HP 320K G2 USB Wired Keyboard | Y | Y | 9SR37UT |
| HP 685 Comfort Dual-Mode Keyboard and Mouse Combo | N | Y | 8T6L7UT |
| HP 725 Multi-Device Rechargeable Wireless Keyboard and Mouse Combo | Y | Y | 9T5B0UT |
| HP 655 Wireless Keyboard and Mouse Combo G2 | N | Y | 4R009UT |
| HP Wired Desktop 320MK Mouse and Keyboard G2 | N | Y | 9SR36UT |
| HP Wired 320M Mouse | Y | Y | 9VA80AA |
| HP Creator 935 Black Wireless Mouse | N | Y | 1D0K8AA |
| HP 128 LSR Wired Mouse | Y | Y | 265D9AA |
| HP 125 Wired Mouse | Y | Y | 265A9AA/AT/UT |

| **Flex Module (Rear IO)** | **Factory Configured** | **Option Kit** | **Option Kit Part Number** |
|---|---|---|---|
| HP 1GbE LAN Flex Port 2020 | Y | Y | 141J6AA |
| HP Flex 1GbE Fiber LC Single Port[1] | Y | Y | 20J15AA |
| HP Z2 2.5GbE LAN Flex Port | Y | Y | B96W7AA |
| HP 10GBase-T Flex IO | Y | Y | 56Q71AA |
| HP Serial Port v3 Flex IO | Y | Y | 5B895AA |
| DisplayPort 2.1 BTB Flex IO | Y | N | |
| HP HDMI 2.1 Flex IO v3 | Y | Y | B6BS9AA |
| VGA BTB Flex IO | Y | N | |
| HP Dual USB-A 3.2 Gen1 Flex 2020 | Y | Y | 141J8AA |
| HP Dual Type-C 3.2 Gen2 15W Out Flex IO v3 | Y | Y | B6BT5AA |
| TBT4 BTB 15W Out Flex IO | Y | Y | B6BT1AA |
| USB-C G2 ALT BTB 15W Out Flex IO | Y | Y | B6BT3AA |

**Note 1:** Not allowed to be configured in the same system with Single 1Gbps Fiber NIC (B4UD5AA)

## Overview

| Flex Module (FLY) | Factory Configured | Option Kit | Option Kit Part Number |
|---|---|---|---|
| Z2 G1i Single 1Gbps Fiber NIC USB FLY Adapter[1] | Y | Y | B4UD5AA |
| Serial Port FLY Flex IO | Y | N | |
| Dual Type-A 3.2 Gen 1 FLY Flex IO | Y | N | |

**Note 1:** Not allowed to be configured in the same system with HP Flex 1GbE Fiber LC Single Port (20J15AA)

| Other Hardware | Factory Configured | Option Kit | Option Kit Part Number |
|---|---|---|---|
| HP Z2 2nd serial port adapter | Y | Y | 141K8AA |
| HP Parallel PCIe x1 Card | Y | Y | N1M40AA |
| HP Remote System Controller | Y | Y | 7K6D7AA |
| HP Remote System Controller Main Board Adapter | Y | Y | 7K6D8AA |
| HP Integrated Remote System Controller | Y | Y | 7K6D9AA |
| HP Rack Cable Management Arm | N | Y | 35Z34AA |

| Racking and Physical Security | Factory Configured | Option Kit | Option Kit Part Number |
|---|---|---|---|
| HP Z2 SFF Rail Rack Kit | N | Y | A9TM3AA |
| HP Business PC Security Lock V3 Kit | N | Y | 3XJ17AA |

| Software | Factory Configured | Option Kit | Support Notes |
|---|---|---|---|
| HP PC Hardware Diagnostics UEFI (Windows OS only) | Y | N | 2 |
| HP PC Hardware Diagnostics Windows | Y | N | |
| HP Wolf Security | Y | N | 3 |
| HP Notifications | Y | N | |
| HP Desktop Support Utility | Y | N | |
| HP Documentation | Y | N | |
| myHP | Y | N | |
| Kingsoft WPS Office | Y | N | 4 |
| Z by HP Data Science Stack Manager | Y | N | 5 |
| HP Image Assistant | N | N | |
| HP Support Assistant | N | N | 1 |

1. Supported with Windows only. Also available as a free download from https://www.hp.com/us-en/workstations/performance-advisor.html

## Overview

2. Windows OS only
3. Not available in Russia
4. Only available in China
5. Optional software

**Operating Systems**

Windows 11 Pro 64[1]

Windows 11 Home 64 - HP recommends Windows 11 Pro[1]

Linux®-ready[4]

Ubuntu® 24.04 LTS[2,3]

[1] 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 11 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.
[2] 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 requires may apply over time for updates.
[3] A certified preloaded version of Ubuntu® 24.04 LTS is available from HP for this platform. 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 upgrades.
[4]For detailed OS/hardware support information for Linux, see:
http://www.hp.com/support/linux_hardware_matrix

**HP BIOS**

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
-Most Wake events other than power buttons and WOL(Wake on LAN supported by embedded Lan controller under S4/S5 Maximum Power Saving Enabled )
-USB charging ports

**HP Performance Control Modes**

HP Z Desktop Workstations offers Performance Control Modes in the F10 BIOS menu. Z2 G1i offers Quiet Mode, Performance Mode, Rack Mode, and High-Performance Mode. HP recommends using High Performance Mode unless

you have concerns about acoustics in an open office environment. Customers can achieve CPU performance gains in multithreaded workloads using High Performance Mode over Performance Mode*. High Performance Mode is configured as default from the factory."

**How to Set HP Performance Control Modes in HP F10 BIOS Menu**
In the F10 BIOS Menu, the setting titled “Performance Control” is adjustable to High Performance Mode, Performance Mode or Quiet Mode. These modes are choice points for performance and acoustic tradeoffs based on user needs or recommended balanced conditions in performance and noise optimization.

At startup, push the F10 key while system is booting to get to the BIOS Menu.
Go to → Advanced -> System Options ->scroll down and choose “Performance Control”

Set the Performance Mode you desire and then go back to Main->Save Changes and Exit -> Yes
The machine will restart in the mode you’ve chosen.

**How to change Performance Modes in HP Performance Advisor software?**
Select BIOS Settings -> Advanced -> System Options -> Performance Controls

The machine will restart in the mode you’ve chosen.

For more information on performance control modes, please see the white paper called, HP Performance Control Modes for Z Desktop Workstations.

## SOFTWARE COMPONENTS AND APPLICATIONS WITH WINDOWS

**Software**
HP Support Assistant [1]
HP Image Assistant
HP Desktop Support Utility
HP Documentation
HP Notifications
HP PC Hardware Diagnostics UEFI
HP PC Hardware Diagnostics Windows
myHP
WSL/Ubuntu Data Science Stack
HP Privacy Settings

**Manageability Features**
HP Driver Packs[2]
HP UWP Pack
HP System Software Manager (SSM)
HP Manageability Integration Kit [3]
HP Client Catalog (download)
HP Image Assistant (download)

## Overview

HP Cloud Recovery
HP Client Management Script Library (download)
HP BIOSphere[4]
HP BIOS Configuration Utility (download)

**Client Security Software**
HP Client Security Suite[5] including: (including Credential Manager, HP Password Manager[6], HP Spare Key)
HP Power On Authentication
Microsoft Defender[7]

**Security Management**
HP Secure Erase[8]
HP Wolf Pro Security Edition (optional) [9]
HP Wolf Security for Business[10] Includes:
HP Sure Click[11]
HP Sure Sense[12]
HP Sure Run[13]
HP Sure Recover[14]
HP Sure Start[15]
HP Tamper Lock
HP Sure Admin [16]
HP Client Security Manager[17]
Hood Sensor Optional Kit

[1] HP Support Assistant requires Windows and Internet access.

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

[3]HP Manageability Integration Kit can be downloaded from http://www8.hp.com/us/en/ads/clientmanagement/overview.html
[4] HP BIOSphere features may vary depending on the platform and configurations.

[5] HP Client Security Manager requires Windows and is available on the select HP PCs.

[6] 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.

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

[8] HP Secure Erase - –or the methods outlined in the National Institute of Standards and Technology Special Publication 800-88 “C“ear” ”anitation method. HP Secure Erase does not support platforms with Intel® Optane.

[9] HP Wolf Pro Security Edition is available preloaded on select SKUs, and, depending on the HP product purchased, includes a license with a term length communicated to you at purchase and in your order confirmation email. The HP Wolf Pro Security Edition software is licensed under the license terms of the HP Wolf Security Software - End-User license Agreement (EULA) that can be found at: https://support.hp.com/us-en/document/ish_3875769-3873014-16 as that EULA is modified by the following: 7. Term. Unless otherwise terminated earlier pursuant to the terms contained in this EULA, the license for the HP Wolf Pro Security Edition is effective upon 4 months after the date the HP Product was shipped by HP and will continue for the term communicated to you at purchase and in

your order confirmation email (“Initial Term”). At the end of the Initial Term you may either (a) purchase a renewal license for the HP Wolf Pro Security Edition from HP.com, HP Sales or an HP Channel Partner, or (b) continue using the standard versions of HP Sure Click and HP Sure Sense at no additional cost with no future software updates or HP Support. Notwithstanding the foregoing, the license shall expire no later than one year after the fixed term of the subject license ends.

[10] HP Wolf Security for Business requires Windows 10 or higher, includes various HP security features and is available on HP Pro, Elite, RPOS and Workstation products. See product details for included security features

[11] HP Sure Click requires Windows 10 Pro or higher or Enterprise. See https://bit.ly/2PrLT6A_SureClick for complete details.

[12] HP Sure Sense requires Windows 11 Pro or Enterprise and supports Microsoft Internet Explorer, Google Chrome™, and Chromium™. Supported attachments include Microsoft Office (Word, Excel, PowerPoint) and PDF files in read only mode, when Microsoft Office or Adobe Acrobat are installed.

[13] HP Sure Run is available on select Windows 11 based HP Pro, Elite and Workstation PCs with select Intel® or AMD processors

[14] HP Sure Recover is available on select HP PCs and requires Windows 10 and an open network connection. You must back up important files, data, photos, videos, etc. before using HP Sure Recover to avoid loss of data. Network based recovery using Wi-Fi is only available on PCs with Intel Wi-Fi Module

[15] HP Sure Start is available on select HP PCs and workstations. See product specifications for availability.

[16] HP Sure Admin requires Windows 11, HP BIOS, HP Manageability Integration Kit from http://www.hp.com/go/clientmanagement and HP Sure Admin Local Access Authenticator smartphone app from the Android or Apple store.

[17] HP Client Security Manager requires Windows and is available on the select HP PCs.

System Technical Specifications

## System Board

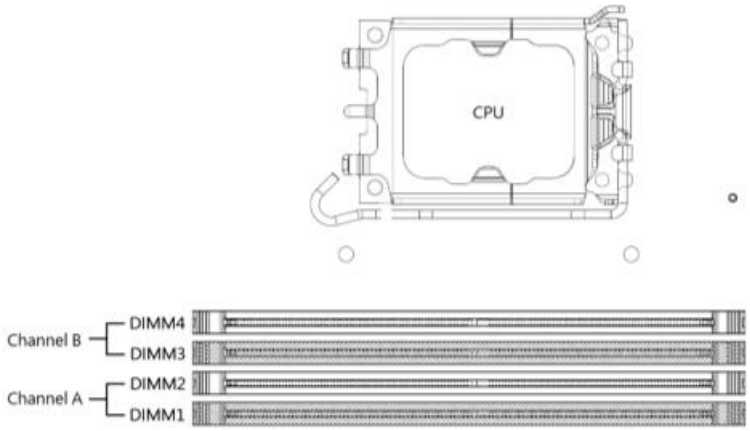
| | |
|---|---|
| **System Board Form Factor** | 206x302x1.55 mm |
| **Processor Socket** | Single LGA-1851 |
| **CPU Bus Speed** | DMI GEN4 |
| **Chipset** | Intel® W880 Chipset |
| **Super I/O Controller** | Nuvoton SIO24 |
| **Memory Expansion Slots** | 4 DDR5 memory slots |
| **Memory Type Supported** | DDR5, UDIMM (Unbuffered), ECC& non-ECC |
| **Memory Modes** | Non-Interleaved for single channel. Interleaved when both channels are populated. |
| **Memory Speed Supported** | 5600MT/s DDR5 |
| **Memory Protection** | ECC available on data |
| **Maximum Memory** | 256GB |
| **Memory Configuration** (Supported) | 8GB, 16GB, 32GB, 48G and 64GB non-ECC/16GB, 32GB ECC unbuffered DIMMs are supported.<br>ECC and non-ECC memory DIMMs cannot be mixed on the same system.<br>Two channels of DDR5 memory are supported. To realize full performance at least one DIMM must be inserted into each channel. Single DIMM per channel must be installed into furthest slot from CPU( DIMM 1 or 3). |

The system speed will be determined by a number of key factors:

| Module Configuration | Description of configuration | Max Memory Speed (Actual Memory speed is dependent on CPU) |
|---|---|---|
| Single DIMM per channel | Configurations that contain only one or two DIMM modules with DIMMs only in the black slots | 5600MHz |
| Two single ranked DIMMs in a channel | Configurations with 3 or 4 single ranked DIMMs (8GB and 16GB) installed in a system. Memory speed may also vary depending on vendor module mix. | 4800MHz |
| Two dual ranked DIMMs in a channel | Configurations with 3 or 4 dual ranked DIMMs (32GB, 48GB and 64GB) installed in a system | 4400MHz |

When more than one memory slot is populated, symmetric configurations are required for 2 DIMMs per channel. Mix of different part numbers or mix of single and dual ranks within a channel is not allowed.

## System Technical Specifications




**PCI Express Connectors**

(1) PCI Express Gen5 slot x16 mechanical/ x16 electrical (half height, half length)
(1) PCI Express Gen4 slot x4 mechanical/ x4 electrical (half height, half length, open-ended)
(1) M.2 2280 Storage (PCIe Gen5 x4)
(1) M.2 2280 Storage (PCIe Gen4 x4)
(1) M.2 2280 Storage (PCIe Gen4 x4)
(1) M.2 2230 WLAN (PCIe Gen4 x1+ Intel CNVi)

**Supported Interfaces**

| | |
|---|---|
| **Integrated RAID** | RAID 0, 1 (RAID 5, 10 Intel support) |
| **Integrated Graphics** | Intel® Graphics (on Core™ Ultra 9 /Core™ Ultra 7/Core™ Ultra 5 processors)<br>Based on Unified Memory Architecture (UMA) - a region of system memory is reserved and dedicated to the graphics display.<br>Support for Microsoft DirectX 12, OpenGL 4.6, OpenCL 3.0 and Vulkan on Intel® Graphics;<br>2x DP 1.4 graphics ports integrated in motherboard;<br>Supports up to four simultaneous displays with Multiple Stream Transport (MST) across VGA*/DVI*/HDMI* outputs.<br>Max resolution supported on onboard DP 1.4/HBR3 ports: 3840 x2160 (4K) @ 60Hz.<br>Max resolution supported on flexIO DP 2.1/UHBR20 ports: 7680*4320 (8K) @60Hz compressed, 5K 120Hz compressed. |
| **Network Controller** | Integrated Ethernet PHY Connection I219LM. Management capabilities: WOL, PXE 2.1 and AMT 19 |
| **Serial** | 1 internal header (requires optional Serial Port Adapter Kit) |
| **2nd Serial** | USB-based Serial port option through Flex IO<br>USB-based Serial port option through Flex IO2 |
| **HD Integrated Audio** | |

## System Technical Specifications

| | | |
|---|---|---|
| **USB Connector(s)** | **Front** | 4 SuperSpeed USB Std-A 10Gbps port;<br>2 SuperSpeed USB Type-C® 20Gbps port (charge supports up to 5V/3A) |
| | **Rear** | 2 SuperSpeed USB Std-A 5Gbps port;<br>3 High-speed USB Std-A 480Mbpsport<br><br>Flex IO, choice of:<br>1 Dual SuperSpeed USB Std-A 5Gbps port, 1 SuperSpeed USB Type-C® 10Gbps port (Alt Mode DisplayPort™1.4 with 15W output) [1], 1 Dual SuperSpeed USB Type-C® 10Gbps port [1], 1 Thunderbolt™ 4 port (40Gbps) [1]<br><br>Flex IO2, choice of:<br>1 Dual SuperSpeed USB Std-A 5Gbps ports<br><br>[1]Component will be ready in 2025Q3 |
| **HD Integrated Audio** | Realtek ALC3252, 2.0W internal mono speaker | |
| **Flash ROM** | Yes | |
| **CPU Fan Header** | Yes | |
| **Memory Fan Header** | None | |
| **Chassis Fan Header** | 1 Rear System Chassis Fan Header, 1 Graphic chassis Fan Header. | |
| **Front PCI Fan Header** | None | |
| **Front Control Panel/Speaker Header** | Yes | |
| **CMOS Battery Holder - – ithium** | Yes | |
| **Integrated Trusted Platform Module** | Integrated TPM 2.0 Convertible to FIPS 140-2 Certified mode<br>The TPM module disabled where restricted by law | |
| **Power Supply Headers** | Yes | |
| **Power Switch, Power LED & Hard Drive LED Header** | Yes | |
| **Clear Password Jumper** | None | |
| **Keyboard/Mouse** | USB or PS/2 Mouse (option) | |
| **Power Supply** | 500W wide-ranging, active Power Factor Correction, 92% Efficiency and 400W wide-ranging, active Power Factor Correction, 92% Efficiency.<br><br>NOTE: The Power Supply Efficiency Report for the 500W 92% Efficiency and 400W 92% Efficiency power supply may be found at the following links:<br><br>https://www.plugloadsolutions.com/80PlusPowerSuppliesDetail.aspx?id=0&type=2 | |

| System Configurations | | |
|---|---|---|
| **HP Z2 SFF G1i Configuration #1** | **Processor Info** | Intel Core Ultra 5 10C 3.3GHz LGA 65 W |
| | **Memory Info** | 1x 16GB DDR5 ECC |
| | **Graphics Info** | 1x NVIDIA RTX A400 |
| | **Disks/Optical/Floppy** | 1x 256GB PCIe-4x4 2280 Value M.2 SSD |
| | **PSU** | 500W |
| | **Other** | NA |

| **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) | 2.312 | | 2.311 | | 2.314 | |
| | Windows short Idle (S0) | 13.78 | | 13.76 | | 13.75 | |
| | Windows Busy Typ (S0) | 139.56 | | 138.54 | | 139.12 | |
| | Windows Busy Max (S0) | 148.62 | | 149.76 | | 148.92 | |
| | Sleep (S3) | 2.312 | 2.312 | 2.311 | 2.311 | 2.314 | 2.314 |
| | Off (S5) | 0.567 | 0.558 | 0.561 | 0.558 | 0.564 | 0.556 |
| | Zero Power Mode (EuP) | 0.258 | | 0.26 | | 0.261 | |

| **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) | 7.89 | | 7.89 | | 7.90 | |
| | Windows short Idle (S0) | 47.02 | | 46.95 | | 46.92 | |
| | Windows Busy Typ (S0) | 476.18 | | 472.70 | | 474.68 | |
| | Windows Busy Max (S0) | 507.10 | | 510.99 | | 508.12 | |
| | Sleep (S3) | 7.89 | 7.87 | 7.89 | 7.89 | 7.90 | 7.90 |
| | Off (S5) | 1.93 | 1.90 | 1.91 | 1.90 | 1.92 | 1.90 |
| | Zero Power Mode (EuP) | 0.88 | | 0.89 | | 0.89 | |

| | | |
|---|---|---|
| **HP Z2 SFF G1i Configuration #2** | **Processor Info** | Intel Core Ultra 7 20C 2.4GHz LGA 65W |
| | **Memory Info** | 1x 32GB DDR5 ECC |
| | **Graphics Info** | 1x NVIDIA RTX A1000 |

## System Technical Specifications

| | | |
|---|---|---|
| | **Disks/Optical/Floppy** | 1x 1TB 2280 PCIe-4x4 Val M.2 SSD |
| | **PSU** | 500W |
| | **Other** | NA |

| **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) | 2.365 | | 2.374 | | 2.363 | |
| | Windows short Idle (S0) | 13.91 | | 13.88 | | 13.87 | |
| | Windows Busy Typ (S0) | 241.25 | | 243.14 | | 243.52 | |
| | Windows Busy Max (S0) | 257.46 | | 261.76 | | 258.65 | |
| | Sleep (S3) | 2.366 | 2.366 | 2.374 | 2.374 | 2.363 | 2.363 |
| | Off (S5) | 0.594 | 0.587 | 0.586 | 0.571 | 0.588 | 0.576 |
| | Zero Power Mode (EuP) | 0.261 | | 0.26 | | 0.262 | |

| **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) | 8.07 | | 8.10 | | 8.06 | |
| | Windows short Idle (S0) | 47.47 | | 47.36 | | 47.32 | |
| | Windows Busy Typ (S0) | 823.15 | | 829.59 | | 830.89 | |
| | Windows Busy Max (S0) | 878.45 | | 893.12 | | 882.51 | |
| | Sleep (S3) | 8.07 | 8.07 | 8.10 | 8.10 | 8.06 | 8.06 |
| | Off (S5) | 2.03 | 2.00 | 2.00 | 1.95 | 2.00 | 1.96 |
| | Zero Power Mode (EuP) | 0.89 | | 0.88 | | 0.89 | |

| **HP Z2 SFF G1i Configuration #3** | | |
|---|---|---|
| | **Processor Info** | Intel Core Ultra 9K 24C 3.7GHz LGA 125W |
| | **Memory Info** | 4x 48GB DDR5 NECC |
| | **Graphics Info** | 1x NVIDIA RTX 4000 SFF Ada |
| | **Disks/Optical/Floppy** | 3x 4TB 2280 PCIe-4x4 OPAL2 M.2 SSD |
| | **PSU** | 500W |
| | **Other** | NA |

| **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) | 5.824 | | 5.762 | | 5.735 | |
| | Windows short Idle (S0) | 15.72 | | 15.69 | | 15.72 | |

## System Technical Specifications

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| | Windows Busy Typ (S0) | 339.26 | | 340.15 | | 339.50 | |
| | Windows Busy Max (S0) | 358.42 | | 360.22 | | 359.61 | |
| | Sleep (S3) | 5.824 | 5.824 | 5.762 | 5.762 | 5.735 | 5.735 |
| | Off (S5) | 0.646 | 0.638 | 0.649 | 0.633 | 0.646 | 0.627 |
| | Zero Power Mode (EuP) | 0.262 | | 0.261 | | 0.26 | |

| **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) | 19.87 | | 19.66 | | 19.57 | |
| | Windows short Idle (S0) | 53.64 | | 53.53 | | 53.64 | |
| | Windows Busy Typ (S0) | 1157.56 | | 1160.60 | | 1158.37 | |
| | Windows Busy Max (S0) | 1222.93 | | 1229.07 | | 1226.99 | |
| | Sleep (S3) | 19.87 | 19.87 | 19.66 | 19.66 | 19.57 | 19.57 |
| | Off (S5) | 2.21 | 2.18 | 2.21 | 2.16 | 2.20 | 2.14 |
| | Zero Power Mode (EuP) | 0.89 | | 0.89 | | 0.89 | |

| | |
|---|---|
| **Operating Voltage Range** | 90-269VAC |
| **Rated Voltage Range** | 100-240VC |
| **Rated Line Frequency** | 50-60Hz |
| **Frequency Range** | 47-63Hz |
| **Rated Input Current** | 6A @100-240V |
| **Heat Dissipation** | Typical: 1160.60 btu/hr (292.703 kcal/hr)<br>Maximum: 1229.07 btu/hr (309.981 kcal/hr) |
| **ENERGY STAR® certified** (Config Dependent) | Yes |
| **CECP Compliant @ 220V** | Yes |
| **FEMP Standby Power Compliant** | Yes, with Wake-on-LAN disabled: <1W in S4/S5 - Power Off. |
| **Built-in Self Test** (BIST) **LED** | Yes |
| **Surge Tolerant Full Ranging Power Supply** (withstands power surges up to 2000V) | Yes |
| **Hood Lock Header** | Yes |

## System Technical Specifications

| | |
|---|---|
| **ErP Lot 6- Tier 1 Compliance @ 230V** (<1W in S5 - –Power Off) | Yes |
| **ErP Lot 6- Tier 2 Compliance @ 230V** (<0.5W in S5 - –Power Off) | Yes |

**Declared Noise Emissions** (Entry-level, Mid-level, and High-end configurations; tested on floor)

| | | |
|---|---|---|
| **System Configuration (Entry-level)** | **Processor Info** | Intel CPU Core U5-225 /65W |
| | **Memory Info** | Micron 5600M 32GB x4 |
| | **Graphics Info** | Nvidia RTX A1000 |
| | **Disks/Optical** | PHISON GEN4 M.2 SSD 4TB x2<br>PHISON GEN5 M.2 SSD 4TB x1 |
| | **Power Supply** | 500W |

| | | | |
|---|---|---|---|
| **Declared Noise Emissions** | | **Sound Power** (LWAd, bels) | **Deskside Sound Pressure** (LpAm, decibels) |
| | **Idle** | 3.13 | 18.5 |
| | **Hard drive Operating (Drive Random Seek)** | NA | NA |
| | **Hard drive Operating (Active mode)** | 3.24 | 21.5 |

| | | |
|---|---|---|
| **System Configuration (Mid-end)** | **Processor Info** | Intel Core Ultra 9 285/65W |
| | **Memory Info** | Micron 5600M 32GB x4 |
| | **Graphics Info** | Nvidia RTX A1000 |
| | **Disks/Optical** | PHISON GEN4 M.2 SSD 4TB x2<br>PHISON GEN5 M.2 SSD 4TB x1 |
| | **Power Supply** | 500W |

| | | | |
|---|---|---|---|
| **Declared Noise Emissions** | | **Sound Power** (LWAd, bels) | **Deskside Sound Pressure** (LpAm, decibels) |
| | **Idle** | 3.25 | 21.3 |
| | **Hard drive Operating (Drive Random Seek)** | NA | NA |
| | **Hard drive Operating (Active mode)** | 3.74 | 27.4 |

## System Technical Specifications

| | | |
|---|---|---|
| **System Configuration (High-end)** | **Processor Info** | Intel Core Ultra 9 285K/125W |
| | **Memory Info** | Micron 5600M 32GB x4 |
| | **Graphics Info** | Nvidia RTX A1000 |
| | **Disks/Optical** | PHISON GEN4 M.2 SSD 4TB x2<br>PHISON GEN5 M.2 SSD 4TB x1 |
| | **Power Supply** | 500W |

| **Declared Noise Emissions** | **Sound Power** (LWAd, bels) | **Deskside Sound Pressure** (LpAm, decibels) |
|---|---|---|
| **Idle** | 3.13 | 19.4 |
| **Hard drive Operating (Drive Random Seek)** | NA | NA |
| **Hard drive Operating (Active mode)** | 4.0 | 32.0 |

| | | |
|---|---|---|
| **Environmental Requirements** | **Temperature** | Operating: 5° to 35° C (40° to 95° F)<br>Non-operating: -40° to 60° C (-40° to 140° F)<br>Maximum rate of change: 10°C/hr |
| | **Humidity** | Operating: 8% to 85% RH, non-condensing, 35° C maximum wet bulb<br>Non-operating: 8% to 90% RH, non-condensing, 35° C maximum wet bulb |
| | **Maximum Altitude** | 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 Cooling for details. |
| | **Dynamic** | Shock<br>Operating: ½-sine: 40g, 2ms<br>Non-operating: ½-sine: 165 cm/s, 2-3ms*<br>square: 422 cm/s, 30g<br><br>Vibration<br>Operating random: 0.5g (rms), 5-300 Hz, up to 0.00025g²/Hz<br>Non-operating random: 2.0g (rms), 5-500 Hz, up to 0.0150 g²/Hz |
| | **Cooling** | 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>up to 3048 m (10,000 feet) |

## Physical Security and Serviceability

| | |
|---|---|
| **Access Panel** | One thumb screw |
| **Expansion Cards** | Tool-less |
| **Processor Socket** | Tool-less, except for the processor heatsink |
| **Blue User Touch Points** | Yes, on tool-less internal chassis mechanisms |
| **Color-coordinated Cables nd Connectors** | Yes |
| **Memory** | Tool-less |
| **System Board** | Screw-In |
| **Padlock Support** | Yes (optional): Locks side cover and secures chassis from theft<br>0.22-in diameter padlock loop at rear of system |
| **Cable Lock Support** | Yes, Kensington Cable Lock (optional): Locks side cover and secures chassis from theft<br>3 mm x 7 mm slot at rear of system |
| **Universal Chassis Clamp Lock Support** | No |
| **Solenoid Lock and Hood Sensor** | 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. |
| **Keyboard/Mouse/Video Cable Lock** | Yes, cable hook integrated with the access cover at rear. |
| **CPUs and Heatsinks** | A T-15 Torx or flat blade screwdriver is needed to remove the CPU heatsink before the CPU can be removed. CPU removal is tool-less |
| **Internal Speaker** | Yes |
| **Power Supply Fans** | 70mm x 70mm x 25mm 4-wire PWM (non-serviceable) |
| **Access Panel Key Lock** | No |
| **Integrated Chassis Handles** | No |
| **Power Supply** | Requires T15 Torx or flat blade screwdriver |
| **PCI Card Retention** | Yes, rear(all) |
| **Power-On Password** | Yes, prevents an unauthorized person from booting up the workstation |
| **Setup Password** | Yes, prevents an unauthorized person from changing the workstation configuration |

## Service, Support, and Warranty

On-site Warranty and Service[1]: One-year (1-1-1), limited warranty and service offering delivers on-site, next business-day[2] service for parts and labor and includes free telephone support[3] 8am - –5pm. Global coverage[2] 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. Storage devices are not covered under warranty for 24/7 operation except for Enterprise class HDDs.

**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.

**Certification and Compliance**

Environmental Sustainability questions concerning:

- Ecolabels (EPEAT, TCO, etc.)
- ENERGY STAR, California Energy Commission (CEC)
- Compliance with Environmental legislation (EU ErP, China CECP, EU RoHS and other countries)
- Supply Chain Social Environmental Responsibility (SER) (conflict minerals; human rights, etc.)
- Product specific environmental features (material content, packaging content, recycled content, etc.)
- China Energy Label (CEL)
-

Please contact sustainability@hp.com

For country specific Regulatory Compliance approval documents or Regulatory and Safety questions concerning:

- Declarations of Conformity (for self-service, go to https://www.hp.com/uk-en/certifications/technical/regulations-certificates.html?jumpid=ex_r135_uk/en/any/corp/hpuk-mu_chev/certificates)
- GS Certificates
- Product Safety Certificates (UL, CB, BIS, etc.)
- EMC Certificates, Declarations of Conformity, or Certificates of Conformity (CE, FCC, ICES, etc.)
- CCC Certificates
- Ergonomics
-

Please contact techregshelp@hp.com

## BIOS

**BIOS 64-bit Services** BIOS supports 64-bit Operating systems.

## System Technical Specifications

| | |
|---|---|
| **PCI 3.0 Support** | Full BIOS support for PCI Express through industry standard interfaces |
| **ATAPI** | ATAPI Removable Media Device BIOS Specification Version 1.0. |
| **WMI Support** | WMI is Microsoft's implementation of Web-Based Enterprise Management (WBEM) for Windows. WMI is fully compliant with the Distributed Management Task Force (DMTF) Common Information Model (CIM) and WBEM specifications. |
| **BIOS Power On** | Users can define a specific date and time for the system to power on. |
| **ROM Based Computer Setup Utility (F10)** | Review and customize system configuration settings controlled by the BIOS. |
| **System/Emergency ROM Flash Recovery with Video** | Recovers system BIOS in corrupted Flash ROM. |
| **Replicated Setup** | Saves BIOS settings to USB flash device in human readable file (HpSetup.txt). BiosConfigurationUtility.exe utility can then replicate these settings on machines being deployed without entering Computer Configuration Utility (F10 Setup). |
| **Boot Control** | Disables the ability to boot from removable media on supported devices. |
| **Memory Change Alert** | Alerts management console if memory is removed or changed. |
| **Thermal Alert** | Monitors the temperature state within the chassis. Three modes:<br>• NORMAL – normal temperature ranges.<br>• ALERTED – excessive temperatures are detected. Raises a flag so action can be taken to avoid shutdown or provide for a smoother system shutdown.<br>• SHUTDOWN – excessive temperatures are encountered. Automatically shuts down the computer without warning before hardware component damage occurs |
| **Remote ROM Flash** | Provides secure, fail-safe ROM image management from a central network console. |
| **ACPI (Advanced Configuration and Power Management Interface)** | Allows the system to enter and resume from low power modes (sleep states). Enables an operating system to control system power consumption based on the dynamic workload. Makes it possible to place individual cards and peripherals in a low-power or powered-off state without affecting other elements of the system. Supports ACPI 6.0 for full compatibility with 64-bit operating systems. |
| **Ownership Tag** | A user-defined string stored in non-volatile memory that is displayed in the BIOS splash screen. |
| **Remote Wakeup/Remote Shutdown** | System administrators can power on, restart, and power off a client computer from a remote location. |
| **Instantly Available PC (Suspend to RAM - –CPI sleep state Modern Standby)** | Allows for very low power consumption with quick resume time. |
| **Remote System Installation via F12 (PXE 2.1) (Remote Boot from Server)** | Allows a new or existing system to boot over the network and download software, including the operating system. |
| **ROM revision levels** | Reports the system BIOS revision level in Computer Configuration Utility (F10 Setup). Version is available through an industry standard interface (SMBIOS and WMI) so that management SW applications can use and report this information. |
| **System board revision** | Allows management SW to read revision level of the system board. Revision level is digitally encoded |

## System Technical Specifications

| | |
|---|---|
| **level** | into the HW and cannot be modified. |
| **Start-up Diagnostics (Power-on Self-Test)** | Assesses system health at boot time with selectable levels of testing. |
| **Auto Setup when new hardware installed** | System automatically detects addition of new hardware. |
| **Keyboard-less Operation** | The system can be booted without a keyboard. |
| **Localized ROM Setup** | Common BIOS image supports System Configuration Utility (F10 Setup) menus in 15 languages with local keyboard mappings. |
| **Asset Tag** | The user or MIS to set a unique tag string in non-volatile memory. |
| **Per-slot Control** | Allows I/O slot parameters (option ROM enable/disable, bus latency) to be configured individually |
| **Adaptive Cooling** | Control parameters are set according to detected hardware configuration for optimal acoustics. |
| **Pre-boot Diagnostics** | (Pre-video) critical errors are reported via beeps and blinks on the power LED. |
| **UEFI Specification Revision** | 2.9 |
| **ACPI** | Advanced Configuration and Power Management Interface, Version 6.0 |
| **ATA (IDE)** | AT Attachment 6 with Packet Interface (ATA/ATAPI-6), Revision 3b |
| **CD Boot** | “El Torito” Bootable CD-ROM Format Specification Version 1.0 |
| **EHCI** | Enhanced Host Controller Interface for Universal Serial Bus, Revision 1.0 |
| **PCI** | PCI Local Bus Specification, Revision 2.3<br>PCI Power Management Specification, Revision 1.1<br>PCI Firmware Specification, Revision 3.0. |
| **PCI Express** | PCI Express Base Specification, Revision 2.0<br>PCI Express Base Specification, Revision 3.0<br>PCI Express Base Specification, Revision 4.0 |
| **SATA** | Serial ATA Specification, Revision 1.0a Serial ATA 3 Gb/s:<br>Serial ATA Specification, Revision 2.5 Serial ATA 6 Gb/s:<br>Serial ATA Specification, Revision 3.0 |
| **SPD** | JEDEC JESD300-5 |
| **TPM** | Trusted Computing Group TPM Specification Version 2.0 (Nuvoton NPCT760HACYX or Infineon SLB9672).<br>Common Criteria EAL4+ certified.<br>FIPS 140-2 Certification<br>TCG TPM Certified products list:<br>http://www.trustedcomputinggroup.org/certification/tpm-certified-products/ |
| **UHCI** | Universal Host Controller Interface Design Guide, Revision 1.1 |
| **USB** | Universal Serial Bus Revision 1.1 Specification<br>Universal Serial Bus Revision 2.0 Specification<br>Universal Serial Bus Revision 3.1 Specification<br>Universal Serial Bus Revision 3.2 Specification |
| **SMBIOS** | System Management BIOS Reference Specification, Version 3.8 |

External BIOS simulator found at: http://csrsml.itcs.hp.com/

## 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:

- IT ECO declaration
- US ENERGY STAR®
- US Federal Energy Management Program (FEMP)
- EPEAT® Gold registered in the United States. See http://www.epeat.net for registration status in your country.
- TCO Certified
- China Energy Conservation Program (CECP)
- China State Environmental Protection Administration (SEPA)
- Taiwan Green Mark
- Korea Eco-label
- Japan PC Green label*

**Sustainable Impact Specifications**

- Product Carbon Footprint
- At least 25% ocean bound plastic in the System Fan , CPU Fan and 5% ocean bound plastic in the speaker[1]
- At least 85% ITE-Derived closed loop plastic[2]
- At least 65% post-consumer recycled plastic[2]
- At least 20% recycled metal[3]
- Low Halogen[4]
- 100% of HP paper-based packaging is from recycled or certified sustainable sources[5]
- Bulk packaging available

**System Configuration**

The configuration used for the Energy Consumption and Declared Noise Emissions data for the Notebook model is based on a “Typically Configured Notebook”.

| **Energy Consumption (in accordance with US ENERGY STAR® test method)** | **115VAC, 60Hz** | **230VAC, 50Hz** | **100VAC, 50Hz** |
|---|---|---|---|
| Normal Operation (Sort idle) | 15.7 W | 15.7 W | 15.7 W |
| Normal Operation (Long idle) | 5.7 W | 5.8 W | 5.8 W |
| Sleep | 5.7 W | 5.8 W | 5.8 W |

## System Technical Specifications

| | | | |
|---|---|---|---|
| Off | 0.6 W | 0.6 W | 0.6 W |

Note:
Energy efficiency data listed is for an ENERGY STAR® compliant product if offered within the model family . HP computers marked with the ENERGY STAR® Logo are compliant with the applicable U.S. Environmental Protection Agency (EPA) ENERGY STAR® specifications for computers. If a model family does not offer ENERGY STAR® compliant configurations, then energy efficiency data listed is for a typically configured PC featuring a hard disk drive, a high efficiency power supply, and a Microsoft Windows® operating system.

| **Heat Dissipation*** | **115VAC, 60Hz** | **230VAC, 50Hz** | **100VAC, 50Hz** |
|---|---|---|---|
| Normal Operation (Short idle) | 54 BTU/hr | 54 BTU/hr | 54 BTU/hr |
| Normal Operation (Long idle) | 19 BTU/hr | 20 BTU/hr | 20 BTU/hr |
| Sleep | 19.5 BTU/hr | 20 BTU/hr | 19.8 BTU/hr |
| Off | 2.1 BTU/hr | 2 BTU/hr | 2.1 BTU/hr |

*NOTE: Heat dissipation is calculated based on the measured watts, assuming the service level is attained for one hour.

| **Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)** | **Sound Power ($L_{WAd}$, bels)** | **Sound Pressure ($L_{pAm}$, decibels)** |
|---|---|---|
| Typically Configured – Idle | 3.1 | 19.4 |
| Fixed Disk – Random writes | 4.3 | 35.2 |
| Optical Drive – Sequential reads | 4.0 | 32.0 |

| | |
|---|---|
| **Longevity and Upgrading** | This product can be upgraded, possibly extending its useful life by several years. Upgradeable features and/or components contained in the<br><br>Spare parts are available throughout the warranty period and or for up to “5” years after the end of production. |

## System Technical Specifications

**Additional Information**

- This product is in compliance with the Restrictions of Hazardous Substances (RoHS) directive - 2011/65/EC.
- This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive – 2002/96/EC.
- This product is in compliance with California Proposition 65 (State of California; Safe Drinking Water and Toxic Enforcement Act of 1986).
- This product is in compliance with the IEEE 1680 (EPEAT) standard at the Gold level, see www.epeat.net
- Plastics parts weighing over 25 grams used in the product are marked per ISO11469 and ISO1043.
- This product is 92.6% recycle-able when properly disposed of at end of life.

**Packaging Materials**

| | | |
|---|---|---|
| **External:** | PAPER/Corrugated | 464 gram |
| **Internal:** | PAPER/Molded Pulp | 468gram |
| | PAPER/paper | 160 g |
| | PLASTIC/Polyethylene low density - LDPE | 28 g |

The plastic packaging material contains at least 7.5% recycled content.

The corrugated paper packaging materials contains at least 53.6% recycled content.

**RoHS Compliance**

HP Inc. complies fully with materials regulations. We were among the first companies to extend the restrictions in the European Union (EU) Restriction of Hazardous Substances (RoHS) Directive to our products worldwide through the HP GSE. HP has contributed to the development of related legislation in Europe, as well as China, India, and Vietnam.

We believe the RoHS directive and similar laws play an important role in promoting industry-wide elimination of substances of concern. We have supported the inclusion of additional substances—including PVC, BFRs, and certain phthalates—in future RoHS legislation that pertains to electrical and electronics products.

We met our voluntary objective to achieve worldwide compliance with the new EU RoHS requirements for virtually all relevant products by July 2013, and we will continue to extend the scope of the commitment to include further restricted substances as regulations continue to evolve.

To obtain a copy of the HP RoHS Compliance Statement, see HP RoHS position statement.

**Material Usage**

This product does not contain any of the following substances in excess of regulatory limits (refer to the HP General Specification for the Environment at https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c05998906):

- Asbestos
- Certain Azo Colorants
- Certain Brominated Flame Retardants – may not be used as flame retardants in plastics
- Cadmium
- Chlorinated Hydrocarbons

- Chlorinated Paraffins
- Bis(2-Ethylhexyl) phthalate (DEHP)
- Benzyl butyl phthalate (BBP)
- Dibutyl phthalate (DBP)
- Diisobutyl phthalate (DIBP)
- Formaldehyde
- Halogenated Diphenyl Methanes
- Lead carbonates and sulfates
- Lead and Lead compounds
- Mercuric Oxide Batteries
- Nickel – finishes must not be used on the external surface designed to be frequently handled or carried by the user.
- Ozone Depleting Substances
- Polybrominated Biphenyls (PBBs)
- Polybrominated Biphenyl Ethers (PBBEs)
- Polybrominated Biphenyl Oxides (PBBOs)
- Polychlorinated Biphenyl (PCB)
- Polychlorinated Terphenyls (PCT)
- Polyvinyl Chloride (PVC) – except for wires and cables, and certain retail packaging has been voluntarily removed from most applications.
- Radioactive Substances
- Tributyl Tin (TBT), Triphenyl Tin (TPT), Tributyl Tin Oxide (TBTO)

**Packaging Usage**

HP follows these guidelines to decrease the environmental impact of product packaging:

- Eliminate the use of heavy metals such as lead, chromium, mercury and cadmium in packaging materials.
- Eliminate the use of ozone-depleting substances (ODS) in packaging materials.
- Design packaging materials for ease of disassembly.
- Maximize the use of post-consumer recycled content materials in packaging materials.
- Use readily recyclable packaging materials such as paper and corrugated materials.
- Reduce size and weight of packages to improve transportation fuel efficiency.
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards.

**End-of-life Management and Recycling**

HP offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: https://h20195.www2.hp.com/V2/GetDocument.aspx?docname=c05403198 or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner.

The EU WEEE directive (2002/95/EC) requires manufacturers to provide treatment information for each product type for use by treatment facilities. This information (product disassembly instructions) is posted on the Hewlett Packard web site at: HP Product Disassembly Instruction Website. These instructions may be used by recyclers and other WEEE treatment facilities as well as HP OEM customers who integrate and re-sell HP equipment.

## System Technical Specifications

**HP, Inc. Corporate Environmental Information**

For more information about HP's commitment to the environment:

- Sustainable Impact Report
  - https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c06040843
- Eco-label certifications
  - https://www.hp.com/us-en/sustainable-impact/document-reports.html#filters_documents_reports-=document_type-type_energy_star,type_epeat,type_tcoISO
- ISO 14001 certificates
  - https://h20195.www2.hp.com/v2/GetDocument.aspx?docname=c04777932

**footnotes**

1. Percentage of ocean-bound plastic contained in each component varies by product. Ocean Bound plastic is expressed as a percentage of the total weight plastic. Ocean Bound plastic is based on the definition set by the UL2809 standard.
2. Recycled plastic is expressed as a percentage of the total weight plastic. Post-consumer recycled is based on the definition set in the EPEAT standard for computers, IEEE 1680.1-2018 standard.
3. Recycled metal is expressed as a percentage of the total weight of the metal according to ISO 14021 definitions for metal parts over 25 grams.
4. External power supplies, WWAN modules, power cords, cables and peripherals excluded. Service parts obtained after purchase may not be Low Halogen.
5. HP paper and fiber-based packaging for PCs, displays, home and office print, and supplies is reported by suppliers as recycled or certified, with a minimum of 97% by volume verified by HP. Packaging is the box that comes with the product and all paper-based materials inside the box. Packaging for personal systems accessories and spare parts is not included. Plastic cushions are made from >90% recycled plastic.

## Manageability

**Intel® Active Management Technology (AMT)**

Intel® Active Management Technology (AMT) [1]
An advanced set of remote management features and functionality providing IT administrators the latest and most effective tools to remotely discover, heal, and protect networked client systems regardless of the system's health or power state. Intel® AMT includes the following advanced management functions:
• Power Management (on, off, reset, graceful shutdown, sleep and hibernate)
• Hardware Inventory (includes BIOS and firmware revisions)
• Serial Over LAN (SOL)
• USB Redirect (Media Redirection)
• ME Wake-on-LAN (WOL)
• Ipv6 Support
• Host Base set-up and configuration
• Management Engine (ME) firmware roll back

**Intel® vPro® Technology**

The HP Z2 G1i SFF Workstation supports Intel® vPro® technology when configured as outlined below:
• Intel® Core™ Ultra 200S Series Processors product family featuring Intel® vPro® Technology

## System Technical Specifications

| | |
|---|---|
| | • Intel® W880 chipset<br>• Intel® I219LM GbE LAN |
| **HP Image Assistant** | Visit: http://ftp.hp.com/pub/caps-softpaq/cmit/HPIA.html |
| **System Software Manager** | For questions or support for SSM, please visit: http://www.hp.com/go/ssm |

[1]Requires activation and a system with a corporate network connection, an Intel® AMT enabled chipset, and network hardware and software. For notebooks, Intel AMT may be unavailable or limited over a host OS-based VPN, when connecting wirelessly, on battery power, sleeping, hibernating, or powered off. Results dependent upon hardware, setup, and configuration. For more information, visit: https://www.intel.com/content/www/us/en/architecture-and-technology/intel-active-managementtechnology.html

Technical Specifications - Storage Drives

## STORAGE

| | | |
|---|---|---|
| **HP Z Turbo 8TB PCIe-4x4 2280 NVMe M.2 SSD** | **Capacity** | 8TB |
| | **Protocol** | PCIe |
| | **Form Factor** | M.2 |
| | **Controller** | NVMe |
| | **NAND Type** | 3D TLC |
| | **Endurance** | 2400TBW (TB Written) |
| | **Reliability** | 1.5M Hours |
| | **Interface** | PCI Express 4.0 x4 electrical |
| | **Operating Temperature** | 32° to 158° F (0° to 70° C) |
| | **Performance** | |
| | **Sequential Read** | up to 6500MB/s [1] |
| | **Sequential Write** | up to 5000MB/s [1] |
| | **Random Read** | up to 800K IOPS [1] |
| | **Random Write** | up to 800K IOPS [1] |

*Actual performance may vary.

| | | |
|---|---|---|
| **HP Z Turbo Drv PCIE-4X4 512GB TLC PCIe SSD (Z2G1i)** | **Capacity** | 512GB |
| | **Protocol** | PCIe |
| | **Form Factor** | M.2 in native Slot on motherboard |
| | **Controller** | NVMe |
| | **NAND Type** | 3D TLC |
| | **Endurance** | 150 TBW |
| | **Reliability** | 1.5M Hours |
| | **Interface** | PCI Express 4.0 x4 electrica |
| | **Operating Temperature** | 32° to 158° F (0° to 70° C) |
| | **Performance** | |
| | **Sequential Read** | 6400MB/s [1] |
| | **Sequential Write** | 3400MB/s [1] |
| | **Random Read** | 600K IOPS [1] |
| | **Random Write** | 600K IOPS [1] |
| | **End Subtitle** | |

*Actual performance may vary.

| | | |
|---|---|---|
| **HP Z Turbo Drv PCIE-4X4 1TB TLC PCIe SSD (Z2G1i)** | **Capacity** | 1TB |
| | **Protocol** | PCIe |
| | **Form Factor** | M.2 in native Slot on motherboard |
| | **Controller** | NVMe |
| | **NAND Type** | 3D TLC |
| | **Endurance** | 300 TBW |
| | **Reliability** | 1.5M hours |
| | **Interface** | PCI Express 4.0 x4 electrica |
| | **Operating Temperature** | 32° to 158° F (0° to 70° C) |
| | **Performance** | |

## Technical Specifications - Storage Drives

| | | |
|---|---|---|
| | **Sequential Read** | 6500MB/s [1] |
| | **Sequential Write** | 5000MB/s [1] |
| | **Random Read** | 800K IOPS [1] |
| | **Random Write** | 800K IOPS [1] |
| | **End Subtitle** | |

*Actual performance may vary.

| | | |
|---|---|---|
| **HP Z Turbo Drv PCIE-4X4 2TB TLC PCIe SSD (Z2G1i)** | **Capacity** | 2TB |
| | **Protocol** | PCIe |
| | **Form Factor** | M.2 in native Slot on motherboard |
| | **Controller** | NVMe |
| | **NAND Type** | 3D TLC |
| | **Endurance** | 500 TBW |
| | **Reliability** | 1.5M hours |
| | **Interface** | PCI Express 4.0 x4 electrica |
| | **Operating Temperature** | 32° to 158° F (0° to 70° C) |
| | **Performance** | |
| | **Sequential Read** | 6500MB/s [1] |
| | **Sequential Write** | 5000MB/s [1] |
| | **Random Read** | 800K IOPS [1] |
| | **Random Write** | 800K IOPS [1] |
| | **End Subtitle** | |

*Actual performance may vary.

| | | |
|---|---|---|
| **HP Z Turbo Drv PCIE-4X4 4TB TLC PCIe SSD (Z2G1i)** | **Capacity** | 4TB |
| | **Protocol** | PCIe |
| | **Form Factor** | M.2 in native Slot on motherboard |
| | **Controller** | NVMe |
| | **NAND Type** | 3D TLC |
| | **Endurance** | 600 TBW |
| | **Reliability** | 1.5M hours |
| | **Interface** | PCI Express 4.0 x4 electrica |
| | **Operating Temperature** | 32° to 158° F (0° to 70° C) |
| | **Performance** | |
| | **Sequential Read** | 6500MB/s [1] |
| | **Sequential Write** | 5000MB/s [1] |
| | **Random Read** | 800K IOPS [1] |
| | **Random Write** | 800K IOPS [1] |
| | **End Subtitle** | |

| | | |
|---|---|---|
| **HP Z Turbo Drv PCIE-4X4 512GB TLC PCIe SED OPAL2 (Z2G1i)** | **Capacity** | 512GB |
| | **Protocol** | PCIe |
| | **Form Factor** | M.2 in native Slot on motherboard |
| | **Controller** | NVMe |

## Technical Specifications - Storage Drives

| | | |
|---|---|---|
| | **NAND Type** | 3D TLC |
| | **Endurance** | 150 TBW |
| | **Reliability** | 1.5M hours |
| | **Interface** | PCI Express 4.0 x4 electrical |
| | **Operating Temperature** | 32° to 158° F (0° to 70° C) |
| | **Performance** | |
| | **Sequential Read** | 6400MB/s [1] |
| | **Sequential Write** | 3400MB/s [1] |
| | **Random Read** | 600K IOPS [1] |
| | **Random Write** | 600K IOPS [1] |
| | **Self-Encrypting Drive Support** | OPAL2 |
| **HP Z Turbo Drv PCIE-4X4 1TB TLC PCIe SED OPAL2 (Z2G1i)** | **Capacity** | 1TB |
| | **Protocol** | PCIe |
| | **Form Factor** | M.2 in native Slot on motherboard |
| | **Controller** | NVMe |
| | **NAND Type** | 3D TLC |
| | **Endurance** | 300 TBW |
| | **Reliability** | 1.5M hours |
| | **Interface** | PCI Express 4.0 x4 electrica |
| | **Operating Temperature** | 32° to 158° F (0° to 70° C) |
| | **Performance** | |
| | **Sequential Read** | 6500MB/s [1] |
| | **Sequential Write** | 5000MB/s [1] |
| | **Random Read** | 800K IOPS [1] |
| | **Random Write** | 800K IOPS [1] |
| | **Self-Encrypting Drive Support** | OPAL2 |
| **HP Z Turbo Drv PCIE-4X4 2TB TLC PCIe SED OPAL2 (Z2G1i)** | **Capacity** | 2TB |
| | **Protocol** | PCIe |
| | **Form Factor** | M.2 in native Slot on motherboard |
| | **Controller** | NVMe |
| | **NAND Type** | 3D TLC |
| | **Endurance** | 500 TBW |
| | **Reliability** | 1.5M hours |
| | **Interface** | PCI Express 4.0 x4 electrica |
| | **Operating Temperature** | 32° to 158° F (0° to 70° C) |
| | **Performance** | |
| | **Sequential Read** | 6500MB/s [1] |
| | **Sequential Write** | 5000MB/s [1] |
| | **Random Read** | 800K IOPS [1] |
| | **Random Write** | 800K IOPS [1] |

Technical Specifications - Storage Drives

| | | |
|---|---|---|
| | **Self-Encrypting Drive Support** | OPAL2 |
| **HP Z Turbo Drv PCIE-4X4 4TB TLC PCIe SED OPAL2 (Z2G1i)** | **Capacity** | 4TB |
| | **Protocol** | PCIe |
| | **Form Factor** | M.2 in native Slot on motherboard |
| | **Controller** | NVMe |
| | **NAND Type** | 3D TLC |
| | **Endurance** | 600 TBW |
| | **Reliability** | 1.5M hours |
| | **Interface** | PCI Express 4.0 x4 electrica |
| | **Operating Temperature** | 32° to 158° F (0° to 70° C) |
| | **Performance** | |
| | **Sequential Read** | 6500MB/s [1] |
| | **Sequential Write** | 5000MB/s [1] |
| | **Random Read** | 800K IOPS [1] |
| | **Random Write** | 800K IOPS [1] |
| | **Self-Encrypting Drive Support** | OPAL2 |
| **256GB 2280 PCIe-4x4 Value M.2 SSD (Z2G1i)** | **Capacity** | 256GB |
| | **Protocol** | PCIe |
| | **Form Factor** | M.2 in native Slot on motherboard |
| | **Controller** | NVMe |
| | **NAND Type** | 3D TLC |
| | **Endurance** | 200TBW (TB Written) |
| | **Reliability** | 1.5M Hours |
| | **Interface** | PCI Express 4.0 x4 electrica |
| | **Operating Temperature** | 32° to 158° F (0° to 70° C) |
| | **Performance** | |
| | **Sequential Read** | 3100MB/s [1] |
| | **Sequential Write** | 1400MB/s [1] |
| | **Random Read** | 200K IOPS [1] |
| | **Random Write** | 400K IOPS [1] |
| | **End Subtitle** | |
| **512GB 2280 PCIe-4x4 Value M.2 SSD (Z2G1i)** | **Capacity** | 512GB |
| | **Protocol** | PCIe |
| | **Form Factor** | M.2 in native Slot on motherboard |
| | **Controller** | NVMe |
| | **NAND Type** | 3D TLC |
| | **Endurance** | 300TBW (TB Written) |
| | **Reliability** | 1.5M Hours |

## Technical Specifications - Storage Drives

| | | |
|---|---|---|
| | **Interface** | PCI Express 4.0 x4 electrica |
| | **Operating Temperature** | 32° to 158° F (0° to 70° C) |
| | **Performance** | |
| | **Sequential Read** | 3400MB/s [1] |
| | **Sequential Write** | 2500MB/s [1] |
| | **Random Read** | 380K IOPS [1] |
| | **Random Write** | 430K IOPS [1] |
| | **End Subtitle** | |
| **1TB 2280 PCIe-4x4 Value M.2 SSD (Z2G1i)** | **Capacity** | 1TB |
| | **Protocol** | PCIe |
| | **Form Factor** | M.2 in native Slot on motherboard |
| | **Controller** | NVMe |
| | **NAND Type** | 3D TLC |
| | **Endurance** | 400TBW (TB Written) |
| | **Reliability** | 1.5M Hours |
| | **Interface** | PCI Express 4.0 x4 electrical |
| | **Operating Temperature** | 32° to 158° F (0° to 70° C) |
| | **Performance** | |
| | **Sequential Read** | 3400MB/s [1] |
| | **Sequential Write** | 2500MB/s [1] |
| | **Random Read** | 500K IOPS [1] |
| | **Random Write** | 440K IOPS [1] |
| | **End Subtitle** | |
| **HP Z Turbo Drv PCIE-5X4 1TB TLC PCIe SSD** | **Capacity** | 1TB |
| | **Protocol** | PCIe |
| | **Form Factor** | M.2 in native Slot on motherboard |
| | **Controller** | NVMe |
| | **NAND Type** | 3D TLC |
| | **Endurance** | 300TBW (TB Written) |
| | **Reliability** | 1.5M Hours |
| | **Interface** | PCI Express 5.0 x4 electrical |
| | **Operating Temperature** | 32° to 158° F (0° to 70° C) |
| | **Performance** | |
| | **Sequential Read** | 12000 MB/s* |
| | **Sequential Write** | 10000 MB/s* |
| | **Random Read** | 1500K IOPS* |
| | **Random Write** | 1300K IOPS* |
| | **End Subtitle** | |

## Technical Specifications - Storage Drives

| | | |
|---|---|---|
| **HP Z Turbo Drv PCIE-5X4 2TB TLC PCIe SSD** | **Capacity** | 2TB |
| | **Protocol** | PCIe |
| | **Form Factor** | M.2 in native Slot on motherboard |
| | **Controller** | NVMe |
| | **NAND Type** | 3D TLC |
| | **Endurance** | 500TBW (TB Written) |
| | **Reliability** | 1.5M Hours |
| | **Interface** | PCI Express 5.0 x4 electrical |
| | **Operating Temperature** | 32° to 158° F (0° to 70° C) |
| | **Performance** | |
| | **Sequential Read** | 12000 MB/s [1] |
| | **Sequential Write** | 11000 MB/s [1] |
| | **Random Read** | 1500K IOPS [1] |
| | **Random Write** | 1300K IOPS [1] |
| | **End Subtitle** | |
| **HP Z Turbo Drv PCIE-5X4 1TB TLC PCIe SED OPAL2** | **Capacity** | 1TB |
| | **Protocol** | PCIe |
| | **Form Factor** | M.2 in native Slot on motherboard |
| | **Controller** | NVMe |
| | **NAND Type** | 3D TLC |
| | **Endurance** | 300TBW (TB Written) |
| | **Reliability** | 1.5M Hours |
| | **Interface** | PCI Express 5.0 x4 electrical |
| | **Operating Temperature** | 32° to 158° F (0° to 70° C) |
| | **Performance** | |
| | **Sequential Read** | 12000 MB/s [1] |
| | **Sequential Write** | 10000 MB/s [1] |
| | **Random Read** | 1500K IOPS [1] |
| | **Random Write** | 1300K IOPS [1] |
| | **Self-Encrypting Drive Support** | OPAL2 |
| **HP Z Turbo Drv PCIE-5X4 2TB TLC PCIe SED OPAL2** | **Capacity** | 2TB |
| | **Protocol** | PCIe |
| | **Form Factor** | M.2 in native Slot on motherboard |
| | **Controller** | NVMe |
| | **NAND Type** | 3D TLC |
| | **Endurance** | 500TBW (TB Written) |
| | **Reliability** | 1.5M Hours |
| | **Interface** | PCI Express 5.0 x4 electrical |
| | **Operating Temperature** | 32° to 158° F (0° to 70° C) |
| | **Performance** | |

## Technical Specifications - Storage Drives

| | | |
|---|---|---|
| | **Sequential Read** | 12000 MB/s [1] |
| | **Sequential Write** | 11000 MB/s [1] |
| | **Random Read** | 1500K IOPS [1] |
| | **Random Write** | 1300K IOPS [1] |
| **512GB TLC PCIE Gen3x4 SED FIPS 140-2** | **Capacity** | 512GB |
| | **Protocol** | PCIe |
| | **Form Factor** | M.2 in native Slot on motherboard |
| | **Controller** | NVMe |
| | **NAND Type** | 3D TLC |
| | **Endurance** | 320 TBW (TB Written) |
| | **Reliability** | 1.5M Hours |
| | **Interface** | PCI Express 3.0 x4 electrical |
| | **Operating Temperature** | 32° to 158° F (0° to 70° C) |
| | **Performance** | |
| | **Sequential Read** | up to 3400MB/s [1] |
| | **Sequential Write** | up to 2500MB/s [1] |
| | **Random Read** | 420K IOPS [1] |
| | **Random Write** | 635K IOPS[1] |
| | **Self-Encrypting Drive Support** | OPAL2/FIPS 140-2 |
| **1TB TLC PCIE Gen3x4 SED FIPS 140-2** | **Capacity** | 1TB |
| | **Protocol** | PCIe |
| | **Form Factor** | M.2 in native Slot on motherboard |
| | **Controller** | NVMe |
| | **NAND Type** | 3D TLC |
| | **Endurance** | 1620 TBW (TB Written) |
| | **Reliability** | 1.5M Hours |
| | **Interface** | PCI Express 3.0 x4 electrical |
| | **Operating Temperature** | 32° to 158° F (0° to 70° C) |
| | **Performance** | |
| | **Sequential Read** | 3400MB/s* [1] |
| | **Sequential Write** | 3000MB/s* [1] |
| | **Random Read** | 720K IOPS* [1] |
| | **Random Write** | 690K IOPS* [1] |
| | **Self-Encrypting Drive Support** | OPAL2/FIPS 140-2 |
| **2TB TLC PCIE Gen3x4 SED FIPS 140-2** | **Capacity** | 2TB |
| | **Protocol** | PCIe |
| | **Form Factor** | M.2 in native Slot on motherboard |
| | **Controller** | NVMe |

## Technical Specifications - Storage Drives

| | | |
|---|---|---|
| | **NAND Type** | 3D TLC |
| | **Endurance** | 3140 TBW (TB Written) |
| | **Reliability** | 1.5M Hours |
| | **Interface** | PCI Express 3.0 x4 electrical |
| | **Operating Temperature** | 32° to 158° F (0° to 70° C) |
| | **Performance** | |
| | **Sequential Read** | 3400MB/s [1] |
| | **Sequential Write** | 3000MB/s [1] |
| | **Random Read** | 720K IOPS [1] |
| | **Random Write** | 690K IOPS [1] |
| | **Self-Encrypting Drive Support** | OPAL2/FIPS 140-2 |
| **Citadel 512GB TLC PCIE Gen3x4 SED FIPS 140-2** | **Capacity** | 512GB |
| | **Protocol** | PCIe |
| | **Form Factor** | M.2 in native Slot on motherboard |
| | **Controller** | NVMe |
| | **NAND Type** | 3D TLC |
| | **Endurance** | 320 TBW (TB Written) |
| | **Reliability** | 1.5M Hours |
| | **Interface** | PCI Express 3.0 x4 electrical |
| | **Operating Temperature** | 32° to 158° F (0° to 70° C) |
| | **Performance** | |
| | **Sequential Read** | up to 3400MB/s [1] |
| | **Sequential Write** | up to 2500MB/s [1] |
| | **Random Read** | 420K IOPS [1] |
| | **Random Write** | 635K IOPS[1] |
| | **Self-Encrypting Drive Support** | OPAL2/FIPS 140-2 |
| **Citadel 1TB TLC PCIE Gen3x4 SED FIPS 140-2** | **Capacity** | 1TB |
| | **Protocol** | PCIe |
| | **Form Factor** | M.2 in native Slot on motherboard |
| | **Controller** | NVMe |
| | **NAND Type** | 3D TLC |
| | **Endurance** | 1620 TBW (TB Written) |
| | **Reliability** | 1.5M Hours |
| | **Interface** | PCI Express 3.0 x4 electrical |
| | **Operating Temperature** | 32° to 158° F (0° to 70° C) |
| | **Performance** | |
| | **Sequential Read** | 3400MB/s* [1] |
| | **Sequential Write** | 3000MB/s* [1] |
| | **Random Read** | 720K IOPS* [1] |
| | **Random Write** | 690K IOPS* [1] |

## Technical Specifications - Storage Drives

| | | |
|---|---|---|
| | **Self-Encrypting Drive Support** | OPAL2/FIPS 140-2 |
| **Citadel 2TB TLC PCIE Gen3x4 SED FIPS 140-2** | **Capacity** | 2TB |
| | **Protocol** | PCIe |
| | **Form Factor** | M.2 in native Slot on motherboard |
| | **Controller** | NVMe |
| | **NAND Type** | 3D TLC |
| | **Endurance** | 3140 TBW (TB Written) |
| | **Reliability** | 1.5M Hours |
| | **Interface** | PCI Express 3.0 x4 electrical |
| | **Operating Temperature** | 32° to 158° F (0° to 70° C) |
| | **Performance** | |
| | **Sequential Read** | 3400MB/s [1] |
| | **Sequential Write** | 3000MB/s [1] |
| | **Random Read** | 720K IOPS [1] |
| | **Random Write** | 690K IOPS [1] |
| | **Self-Encrypting Drive Support** | OPAL2/FIPS 140-2 |

## Technical Specifications - Graphics

| | | |
|---|---|---|
| **NVIDIA® RTX™ A400 4GB** | **Form Factor** | Half Height Single Slot (2.7" Height x 6.4" Length) |
| | **Graphics Controller** | Max Power: 50 Watts<br>Cooling Solution: Active fan heatsink |
| | **Bus Type** | PCI Express 4.0 x 8 |
| | **Memory** | 4GB GDDR6<br>Memory Bandwidth: 96 GB/s<br>Memory Width: 64-bit |
| | **Connectors** | 4x Mini DisplayPort 1.4a |
| | **Max simultaneous displays** | 4x 4096 x 2160 @ 120 Hz<br>4x 5120 x 2880 @ 60 Hz<br>2x 7680 x 4320 @ 60 Hz |
| | **Available Graphics Drivers** | Windows 10 64-bit<br>Windows 11 64-bit<br>Linux® 64-bit (selected Enterprise distributions)<br><br>HP qualified drivers may be preloaded or available from the HP support Web site:<br>http://welcome.hp.com/country/us/en/support.html |
| **NVIDIA® RTX™ A1000 8GB** | **Form Factor** | Half Height Single Slot (2.7" Height x 6.4" Length) |
| | **Graphics Controller** | Max Power: 50 Watts<br>Cooling Solution: Active fan heatsink |
| | **Bus Type** | PCI Express 4.0 x 8 |
| | **Memory** | 8GB GDDR6<br>Memory Bandwidth: 96 GB/s<br>Memory Width: 128-bit |
| | **Connectors** | 4x Mini DisplayPort 1.4a |
| | **Max simultaneous displays** | 4x 4096 x 2160 @ 120 Hz<br>4x 5120 x 2880 @ 60 Hz<br>2x 7680 x 4320 @ 60 Hz |
| | **Available Graphics Drivers** | Windows 10 64-bit<br>Windows 11 64-bit<br>Linux® 64-bit (selected Enterprise distributions)<br><br>HP qualified drivers may be preloaded or available from the HP support Web site:<br>http://welcome.hp.com/country/us/en/support.html |

## Technical Specifications - Graphics

| | | |
|---|---|---|
| **NVIDIA® RTX™ 2000 Ada 16GB** | **Form Factor** | Half Height Dual Slot (2.7" Height x 6.7" Length) |
| | **Graphics Controller** | Max Power: 70 Watts<br>Cooling Solution: Active fan heatsink |
| | **Bus Type** | PCI Express 4.0 x 8 |
| | **Memory** | 16GB GDDR6<br>Memory Bandwidth: 224 GB/s<br>Memory Width: 128-bit |
| | **Connectors** | 4x Mini DisplayPort 1.4a |
| | **Max simultaneous displays** | 4x 4096 x 2160 @ 120 Hz<br>4x 5120 x 2880 @ 60 Hz<br>2x 7680 x 4320 @ 60 Hz |
| | **Available Graphics Drivers** | Windows 10 64-bit<br>Windows 11 64-bit<br>Linux® 64-bit (selected Enterprise distributions)<br><br>HP qualified drivers may be preloaded or available from the HP support Web site:<br>http://welcome.hp.com/country/us/en/support.html |
| **NVIDIA® RTX™ 4000 SFF Ada 20GB** | **Form Factor** | Half Height Dual Slot (2.7" Height x 6.7" Length)" |
| | **Graphics Controller** | Max Power: 70 Watts<br>Cooling Solution: Active fan heatsink |
| | **Bus Type** | PCI Express 4.0 x 16 |
| | **Memory** | 20GB GDDR6<br>Memory Bandwidth: 280 GB/s<br>Memory Width: 160-bit |
| | **Connectors** | 4x DisplayPort 1.4a |
| | **Max simultaneous displays** | 4x 4096 x 2160 @ 120 Hz<br>4x 5120 x 2880 @ 60 Hz<br>2x 7680 x 4320 @ 60 Hz |
| | **Available Graphics Drivers** | Windows 10 64-bit<br>Windows 11 64-bit<br>Linux® 64-bit (selected Enterprise distributions)<br><br>HP qualified drivers may be preloaded or available from the HP support |

Web site:
http://welcome.hp.com/country/us/en/support.html

## Technical Specifications - Optical and Removable Storage

| | | | |
|---|---|---|---|
| **HP 9.5mm Slim DVD Writer** | **Description** | 9.5mm height, tray-load | |
| | **Mounting Orientation** | Either horizontal or vertical | |
| | **Interface Type** | SATA/ATAPI | |
| | **Dimensions** (WxHxD) | 128 x 9.5 x 127mm | |
| | **Supported Media Types** | 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 | |
| | **Disc Capacity** | **DVD-ROM** | 8.5 GB DL or 4.7 GB standard |
| | **Access Times** | **Full Stroke DVD** | < 200 ms (seek) |
| | | **Full Stroke CD** | < 200 ms (seek) |
| | **Maximum Data Transfer Rates** | **CD ROM Read** | CD-ROM, CD-R Up to 24X<br>CD-RW Up to 24X |
| | | **DVD ROM Read** | 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 |
| | **Power** | **Source** | SATA DC power receptacle |
| | | **DC Power Requirements** | 5 VDC ± 5%-100 mV ripple p-p |
| | | **DC Current** | 5 VDC -< 800 mA typical, <1600 mA maximum |
| | **Operating Environmental** (all conditions non-condensing) | **Temperature** | 41° to 122° F (5° to 50° C) |
| | | **Relative Humidity** | 10% to 80% |
| | | **Maximum Wet Bulb Temperature** | 84° F (29° C) |
| | **Operating Systems Supported** | Windows 10, Windows 11<br>Linux® | |
| | **Kit Contents** | HP SATA DVD Writer drive, installation guide. | |
| | **Weight** | 0.35 lbs. (0.16 kg) | |

## Technical Specifications - Optical and Removable Storage

| | | | |
|---|---|---|---|
| **HP 9.5mm Slim DVD-ROM Drive** | **Description** | 9.5mm height, tray-load | |
| | **Mounting Orientation** | Either horizontal or vertical | |
| | **Interface Type** | SATA / ATAPI | |
| | **Dimensions** (WxHxD) | 128 x 9.5 x 127mm | |
| | **Supported Media Types** | 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 | |
| | **Disc Capacity** | **DVD-ROM** | 8.5 GB DL or 4.7 GB standard |
| | **Access Times** | **DVD-ROM Single Layer** | < 110 ms (typical) |
| | | **CD-ROM Mode 1** | < 110 ms (typical) |
| | | **Full Stroke DVD** | < 230 ms (typical) |
| | | **Full Stroke CD** | < 220 ms (typical) |
| | **Power** | **Source** | SATA DC power receptacle |
| | | **DC Power Requirements** | 5 VDC ± 5%-100 mV ripple p-p |
| | | **DC Current** | 5 VDC – <800mA typical, < 1600 mA maximum |
| | **Operating Environmental** (all conditions non-condensing) | **Temperature** | 41° to 122° F (5° to 50° C) |
| | | **Relative Humidity** | 10% to 80% |
| | | **Maximum Wet Bulb Temperature** | 84° F (29° C) |
| | **Operating Systems Supported** | Windows 10, Windows 11<br>Linux® | |
| | **Kit Contents** | HP SATA DVD Writer drive, installation guide. | |

Technical Specifications - Networking and Communications

## NETWORKING / COMMUNICATION

| | | |
|---|---|---|
| **Integrated Intel® I219LM PCIe GbE Controller (Intel® vPro™ with Intel® AMT 19.0)** | **Connector** | RJ-45 |
| | **Cabling** | Twisted pair up to 100m |
| | **Controller** | Intel® I219LM GbE platform LAN connect networking controller |
| | **Memory** | 3 KB Tx and 3KB Rx FIFO packet buffer memory |
| | **Data Rates Supported** | 10/100/1000 Mbps |
| | **Compliance** | 802.1as/1588, 802.1p, 802.1Q, 802.3, 802.3ab, 802.3az, 802.3i, 802.3u, 802.3z |
| | **Bus Architecture** | PCI Express and SMBus |
| | **Data Transfer Mode** | PCIe-based interface for active state operation (S0 state) and SMBus for host and management traffic (Sx low power state) |
| | **Power Requirement** | Requires 3.3V (integrated regulators for core Vdc) |
| | **Boot ROM Support** | Yes |
| | **Network Transfer Mode** | Full-duplex; Half-duplex (not supported for the 1000BASE-T transceiver) |
| | **Network Transfer Rate** | 10BASE-T (half-duplex) 10 Mbps<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 |
| | **Management Capabilities** | vPro, WOL, auto MDI crossover, PXE, Muti-port teaming, RSS, ACPI, Advanced cable diagnostic, loopback modes,<br>AMT 19 support, Circuit Breaker, VLAN, Multicast Listener Discovery (MLD) |
| | **Notes** | onboard LAN support RDP Wake on LAN function, if some networking device does not support Modern standby feature for WOL limitation, suggest using this Function for alternate solution for WOL G3-S5/ S5/S4/MSC wake.<br><br>**NOTE1:** NDIS driver limitation and Wind11 OS, I219 switch to NDIS Driver and it only support IPV4 wake from MSC, if using IPV6 can't wake up from MSC.<br>**NOTE2:** S4 can't wake up limitation on the NDIS Driver known issue. |
| **HP 1-Port 1GbE Flex IO NIC** | **Connector** | RJ-45 (Single Port) |
| | **Cabling** | 1GbE over Category 5e (or better) up to 100m |
| | **Controller** | Realtek 8153 Ethernet Controller |
| | **Data Rates Supported** | 10/100/1000 Mbps |
| | **Compliance** | 802.3 (LAN) 802.3u (100BASE-TX) 802.3ab (1000BASE-T) 802.3x (Ethernet Flow Control) 802.1Q (Virtual LAN) 802.1P Layer 2 Priority Encoding 802.3az (Energy Efficient Ethernet) |
| | **Bus Architecture** | USB |
| | **Power Requirement** | Requires 3.3V (integrated regulators for core Vdc) |
| | **Boot ROM Support** | Yes |

## Technical Specifications - Networking and Communications

| | | |
|---|---|---|
| | **Network Transfer Mode** | Full-duplex; Half-duplex |
| | **Network Transfer Rate** | 1000BASE-T Full-Duplex<br>100BASE-TX Full-Duplex<br>100BASE-TX Half-Duplex<br>10BASE-T Full-Duplex<br>10BASE-T Half-Duplex |
| | **Operating Temperature** | 32° to 131° F (0° to 55° C) |
| | **Dimensions (HxW)** | 1.5 in x 1.5 in. x 0.75 in (3.81 cm x 3.81 cm x 1.9 cm) |
| | **Operating System Driver Support** | Windows 11 Windows 10 Linux® |
| **HP 2.5GbE LAN Flex Port** | **Connector** | RJ-45 (Single Port) |
| | **Cabling** | Twisted Pair Cabling, up to 100 meters, 2.5GbE on CAT 5e UTP and up, 2.5Gbe/1GbE/10Mbps on CAT 5 UTP and up |
| | **Controller** | I226 |
| | **Data Rates Supported** | 10/100/1000Mbps and 2.5Gbps BASE-T |
| | **Compliance** | IEEE: 802.3 (Ethernet Interface for 2500BASE-T, 1000BASE-T, 100BASE-TX, and 10BASE-TE) 802.1AS-Rev 802.1Q (Virtual LAN) 802.1Qav 802.1Qbu 802.1Qbv 1588 802.1AS-REV 802.1p/Q 802.3br 802.3az (Energy Efficient Ethernet) 802.3x (Ethernet Flow Control) 802.3z CB Certification (International Safety) NRTL UL Certification (North America Safety) FCC Class B (USA) CE (European Union) ICES-003 Class B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UKCA (UK) UL (Safety) RoHS (Restricted or Hazardous Substances) |
| | **Bus Architecture** | PCIe-based interface for active state operation (S0 state) and SMBus for host and management traffic (Sx and low power states) |
| | **Power Requirement** | 2.5W |
| | **Network Transfer Mode** | Full-duplex; Half-duplex |
| | **Network Transfer Rate** | 2500BASE-T Full-Duplex<br>1000BASE-T Full-Duplex<br>100BASE-TX Full-Duplex<br>100BASE-TX Half-Duplex<br>10BASE-T Full-Duplex<br>10BASE-T Half-Duplex |
| | **Operating System Driver Support** | Windows 11 Windows 10 Linux® |
| **HP 10GBase-T Flex IO** | **Connector** | RJ-45 (Single Port) |

## Technical Specifications - Networking and Communications

| | | |
|---|---|---|
| | **Cabling** | 10GbE over Category 6a (or better) up to 100m 5GbE over Category 5e (or better) up to 100m |
| | **Controller** | Marvell AQC113C |
| | **Data Rates Supported** | 10/100/1000 Mbps and 2.5/5/10 Gbps |
| | **Compliance** | 802.3-2018 Clauses 55 and 126 802.3az (Energy Efficient Ethernet) 1588 v2 (Precision Clock Synchronization) NBASE-T™ Alliance PHY Specification CB Certification (International Safety) NRTL UL Certification (North America Safety) FCC Class B (USA) CE (European Union) ICES-003 Class B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UKCA (UK) UL (Safety) RoHS (Restricted or Hazardous Substances) |
| | **Bus Architecture** | PCIe-based interface for active state operation (S0 state) and SMBus for host and management traffic (Sx and low power states) |
| | **Power Requirement** | 6.5W |
| | **Network Transfer Mode** | Full-duplex; Half-duplex |
| | **Network Transfer Rate** | 10G BASE-T<br>5G BASE-T<br>2.5G BASE-T<br>2.5GBASE-T<br>1000BASE-T<br>100BASE-TX<br>10BASE-T Te |
| | **Operating System Driver Support** | Windows 11 Windows 10 Linux® |
| | **Notes** | **NOTE:1** Modern standby feature was not support & Suggest Customer use Onboard Lan for Wake event instead of FLEX IO MSC Wake<br>The HP 10GBase-T Flex IO NIC can't support MSC (modern standby)/ S4/S5 wake, suggestion customer can use Onboard Lan RDP wake to replace the MSC Wake instead of FLEX IO MSC Wake & Not support.<br><br>**NOTE:2** Known issue with connection by FLEX IO module of LAN Cable, sometimes will auto resume in S4/S5 risk or User can manually disabled 10GBase-T FLOEX Wake function by changing the driver (Device Manager) this setting for “Wake from power off state” in Advanced. |
| **HP Flex 1GbE Fiber LC Single Port** | **Connector** | 1 LC Optical Fiber Port (Little Connector) |
| | **Cabling** | Optical Multi Mode Fiber OM2 or better |
| | **Controller** | AT-29M2/LC-AF-901 |
| | **Data Rates Supported** | 1GbE |
| | **Compliance** | IEEE 802.3 IEEE 802.3u IEEE 802.3ab IEEE 802.1q VLAN Tagging IEEE 802.1AS |

## Technical Specifications - Networking and Communications

| | | |
|---|---|---|
| | | IEEE 1588<br>CB Certification (International Safety) NRTL UL Certification (North America Safety) FCC Class B (USA) CE (European Union) ICES-003 Class B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UKCA (UK) UL (Safety) RoHS (Restricted or Hazardous Substances) |
| | **Bus Architecture** | USB 3.1 interface, USB 2.0 interface, |
| | **Power Requirement** | Requires 3.3V (integrated regulators for core Vdc) |
| | **Power Requirement** | Up to 3W |
| | **Notes** | It's same locate at FLEX IO location and same as HP 2.5GbE LAN Flex Port and HP 10GBase-T Flex IO and HP 1-Port 1GbE Flex IO NIC |
| **Z2 G1i Single 1Gbps Fiber NIC USB FLY YgritteF Adapter** | **Connector** | 1 LC Optical Fiber Port (Little Connector) |
| | **Cabling** | Optical Multi Mode Fiber OM2 or better |
| | **Controller** | AT-29M2/LC-AG-901 |
| | **Data Rates Supported** | 1GbE |
| | **Compliance** | IEEE 802.3 IEEE 802.3u IEEE 802.3ab IEEE 802.1q VLAN Tagging IEEE 802.1AS IEEE 1588 IEEE 802.3az Energy Efficient Ethernet<br>CB Certification (International Safety) NRTL UL Certification (North America Safety) FCC Class B (USA) CE (European Union) ICES-003 Class B (Canada) BSMI (Taiwan) VCCI (Japan) KCC (Korea) CTICK (Australia/New Zealand) UKCA (UK) UL (Safety) RoHS (Restricted or Hazardous Substances) |
| | **Bus Architecture** | USB 3.1 interface, USB 2.0 interface, |
| | **Power Requirement** | Requires 3.3V (integrated regulators for core Vdc) |
| | **Power Requirement** | Up to 3W |
| | **Footnotes** | Rear IO of Single FLY USB Fiber Adapter, it's not located at FLEX IO location |
| **NVIDIA® Mellanox® ConnectX-6 DX Dual Port 10/25GbE SFP28 NIC** | **Connector** | Dual-port SFP28 |
| | **Cabling** | Transceiver with Multi-Mode Fiber OM3 or OM4) |
| | **Controller** | ConnectX-6 Dx |
| | **Network Transfer Rates Supported** | 1/10/25 GbE |
| | **Data Path Width** | PCIe Gen4x8 |
| | **Power Requirement** | 19.74W Maximum power available through SFP28 port: 2.5W (each port) |
| | **Operating Temperature** | 32° to 131° F (0° to 55° C) |
| | **Dimensions (HxW)** | 6.22in. x 2.67in (158mm x 68mm) |
| | **Operating System** | Windows 11 64-Bit |

## Technical Specifications - Networking and Communications

| | | |
|---|---|---|
| | **Driver** | Linux® |
| | **Kit Contents** | •NVIDIA Mellanox ConnectX-6 SFP28 25GbE NIC with standard height bracket attached<br>• Low-profile bracket<br>• Product Literature |
| | **Notes** | The NVIDIA® Mellanox® ConnectX-6 NIC can't support MSC (modern standby) / S4 / S5 wake, suggestion customer can use Onboard Lan RDP wake to replace the MSC Wake |
| **HP 25GbE SFP28 LC Fiber Optic Transceiver** | **Connector** | LC Fiber Optic Connector |
| | **Cabling** | Typically OM4 or higher MMF LC fiber optic cabling, up to 100m on OM4, up to 70m on OM3 |
| | **Data Rates Supported** | 25Gbps |
| | **Compliance** | SFF-8472 and 8431, Hot pluggable SFP+ footprint |
| | **Compatibility** | Intended for use with NVIDIA Mellanox ConnectX-6 DX Dual Port 10/25GbE NIC |
| | **Wavelength** | 850nm |
| | **Kit Contents** | 25GbE SFP28 Transceiver |
| **HP 10GbE SFP+ SR/SW LC Fiber Optic Transceiver** | **Connector** | LC Fiber Optic Connector |
| | **Cabling** | Typically OM4 or higher MMF LC fiber optic cabling, up to 300m on MMF |
| | **Data Rates Supported** | 10Gbps |
| | **Compliance** | SFF-8472 and 8431, Hot pluggable SFP+ footprint |
| | **Compatibility** | Intended for use with NVIDIA Mellanox ConnectX-6 DX Dual Port 10/25GbE NIC |
| | **Wavelength** | 850nm |
| | **Kit Contents** | 10GbE SFP+ Transceiver |
| **Intel® X550-T2 2-Port 10GbE NIC** | **Connector** | Dual-port RJ-45 |
| | **Cabling** | Cat5 (or higher) for 100Mbps<br>Cat5e (or higher) for 1Gbps, 2.5Gbps, or 5Gbps<br>Cat6 (or higher) for 10Gbps up to 55m<br>Cat6a (or higher) for 10Gbps up to 100m |
| | **Controller** | Intel® Ethernet Controller X550-AT2 |
| | **Network Transfer Rates Supported** | 10GbE, 5GbE, 2.5GbE, 1GbE, 100MbE |
| | **Data Path Width** | PCIe Gen3x4 |
| | **Power Requirement** | 3.9W at 100Mbps<br>5.5W at 1Gbps<br>11.2W at 10Gbps |
| | **Operating Temperature** | 32° to 131° F (0° to 55° C) |

## Technical Specifications - Networking and Communications

| | | |
|---|---|---|
| | **Dimensions (HxW)** | 167 mm x 69 mm |
| | **Operating System** | Windows 11 64-Bit |
| | **Driver** | Windows 10 64-bit<br>Linux® |
| | **Management Capabilities** | DMI 2.0 Support, Windows Management Instrumentation (WMI) and SNMP, PXE 2.0 through boot ROM, Multi-mode I/O Virtualization, VxLAN, VMDq, VLAN support with VLAN tag insertion |
| | **Kit Contents** | • Intel® X550-T2 2-Port 10GbE NIC with standard height bracket attached<br>• Low-profile bracket<br>• Product Literature |
| | **Notes** | The Intel® X550-T2 NIC can't support MSC (modern standby) / S4 / S5 wake, suggestion customer can use Onboard Lan RDP wake to replace the MSC Wake |
| **Allied Telesis AT2911T/2-901 Dual Port 1GbE NIC** | **Connector** | 2 x RJ-45 (Dual Port) |
| | **Cabling** | Cat3 (or higher) for 10Mbps<br>Cat5 (or higher) for 100Mbps<br>Cat5e (or higher) for 1Gbps up to 100m |
| | **Memory** | 17 Rx and 16 Tx queues |
| | **Network Transfer Rates Supported** | 10/100/1000 Mbps |
| | **Compliance** | IEEE 802.1p (Quality of Service), IEEE 802.1Q (VLANs), IEEE 802.2 (LLC), IEEE 802.3ac (MAC), IEEE 802.3x (Flow control auto-negotiation), IEEE 802.3z (1000 Base-X), IEEE 802.3ad (Link aggregation), IEEE 802.3ab (10/100/1000T)<br>RoHS, UL, FCC/EN55022 Class A, TUV, EN55024, CE, C-TICK, VCCI |
| | **Bus Architecture** | PCIe 2x1 |
| | **Data Transfer Mode** | PCIe-based interface |
| | **Power Requirement** | 2.4 Watts (typical) |
| | **Management Capabilities** | VLAN support, Link aggregation LACP, Link aggregation smart switch, Failover, Smart Load Balancing (SLB), iSCSI boot support, Windows Management Instrumentation (WMI), PXE 2.1, SNMP |
| | **Kit Contents** | Allied Telesis AT-2911T/2-901 Dual Port 1GbE NIC with low-profile bracket attached and standard bracket included |
| | **Notes** | The AT2911T/2-9 NIC can't support MSC (modern standby) wake, suggestion customer can use Onboard Lan RDP wake to replace the MSC Wake |
| **Intel® I350-T4 4-Port 1GbE NIC** | **Connector** | 4x RJ-45 (Quad Port) |
| | **Cabling** | Cat3 (or higher) for 10Mbps<br>Cat5 (or higher) for 100Mbps<br>Cat5e (or higher) for 1Gbps up to 100m |

## Technical Specifications - Networking and Communications

| | | |
|---|---|---|
| | **Controller** | Intel® I350 |
| | **Memory** | Jumbo Frames up to 9.5KB, 8 Tx/Rx Queue pairs per port, Main Internal memory is Error Code Correcting |
| | **Network Transfer Rates Supported** | 10Mbps, 100Mbps, 1Gbps |
| | **Compliance** | IEEE 802.3 auto negotiation, 802.3, 802.3u, 802.3ab, 802.3x, 802.3z, IEEE1588 protocol and 802.1AS implementation, 802.3az EEE |
| | **Power Requirement** | 5W |
| | **Bus Architecture** | PCI Express 2.1 x4 |
| | **Data Transfer Mode** | PCIe-based interface for active state operation |
| | **Network Transfer Mode** | multi-speed, full, and half-duplex |
| | **Network Transfer Rate** | 10BASE-T<br>100BASE-Tx<br>1000BASE-T |
| | **Management Capabilities** | WOL, PXE 2.1, UEFI, Power Management Protocol Offload (proxying), MAC Power Management, Active State Power Management, VLAN, ACPI |
| | **Kit Contents** | Intel® Ethernet I350-T4V2 4-Port 1Gb NIC with full-height bracket installed<br>Low-profile bracket included |
| | **Notes** | The I350-T4 NIC can't support MSC (modern standby) /S4 wake, suggestion customer can use Onboard Lan RDP wake to replace the MSC Wake |

| | | |
|---|---|---|
| **Intel® Wi-Fi 6E* AX211 802.11ax, BT 5.3, M.2** | **WLAN Standards** | IEEE 802.11a, b, d, e, g, h, i, k, n, r, u, v, w, ac, ax; Fine Timing Measurement based on 802.11-2016, 802.11az HW readiness |
| | **Antenna** | 2x2 Dual-Band |
| | **Bluetooth Standards** | 5.3 |
| | **Operating Temperature** | 32° to 122° F (0° to 50° C) |
| | **Interface** | M.2 CNVio2 |
| | **Dimensions** | M.2 2230 |
| | **Kit Contents** | Not Available |

Wi-Fi 6E requires a Wi-Fi 6E router, sold separately, to function in the 6GHz band. Availability of public wireless access points is limited. Wi-Fi 6E is backward compatible with prior 802.11 specs. And available in countries where Wi-Fi 6E is supported.

| | | |
|---|---|---|
| **Intel® Wi-Fi 7 BE200 802.11be, BT 5.4, M.2** | **WLAN Standards** | IEEE 802.11a, b, d, e, g, h, i, k, n, r, u, v, w, ac, ax, be; Fine Timing Measurement based on 802.11-2016, 802.11az HW readiness |
| | **Antenna** | 2x2 Dual-Band |
| | **Bluetooth Standards** | 5.4 |

## Technical Specifications - Networking and Communications

| | |
|---|---|
| **Operating Temperature** | 32° to 122° F (0° to 50° C) |
| **Interface** | M.2: PCIe, USB |
| **Dimensions** | M.2 2230 |
| **Kit Contents** | Not Available |

Wireless access point and Internet service required and sold separately. Availability of public wireless access points limited. Wi-Fi 7 (802.11BE)
functionality requires Windows 11 24H2, select Intel® processor, and a Wi-Fi 7 router, sold separately.
Wi-Fi 7 is backward compatible with prior 802.11 specs. Available in countries where Wi-Fi 7 is supported.

| Date of change | Version History | | Description of change |
|---|---|---|---|
| April 8, 2025 | From v1 to v2 | Change | Social and Environmental Responsibility, Graphics sections |
| April 14, 2025 | From v2 to v3 | Change | Graphics section |
| May 9, 2025 | From v3 to v4 | Change | Graphics section |
| May 27, 2025 | From v4 to v5 | Change | NETWORKING / COMMUNICATION section |
| June 1, 2025 | From v5 to v6 | Change | Graphics section |
| June 5, 2025 | From v6 to v7 | Change | Overview section |
| June 9, 2025 | From v7 to v8 | Change | Rear View section |
| June 24, 2025 | From v8 to v9 | Change | Graphics section |
| July 21, 2025 | From v9 to v10 | Change | Flex IO section |
| July 23, 2025 | From v10 to v11 | Change | Image page 2, Overview section |
| August 1, 2025 | From v11 to v12 | Change | Graphics section |
| September 1, 2025 | From v12 to v13 | Change | PCIe Solid State Drives section |
| September 24, 2025 | From v13 to v14 | Change | System Board section |
| September 30, 2025 | From v14 to v15 | Change | Memory section |
| November 17, 2025 | From v15 to v16 | Change | Flex Module (Rear IO), Environmental Requirements, STORAGE sections, Changed format page 2 |
| November 20, 2025 | From v16 to v17 | Change | STORAGE, Networking and Communications sections |
| January 15, 2025 | From v17 to v18 | Update | Graphics section Updated |
| Ferbuary 18, 2026 | From v18 to v19 | Update | N&C and Flex Module (rear IO) updated and Flex Module (FLY) added. |