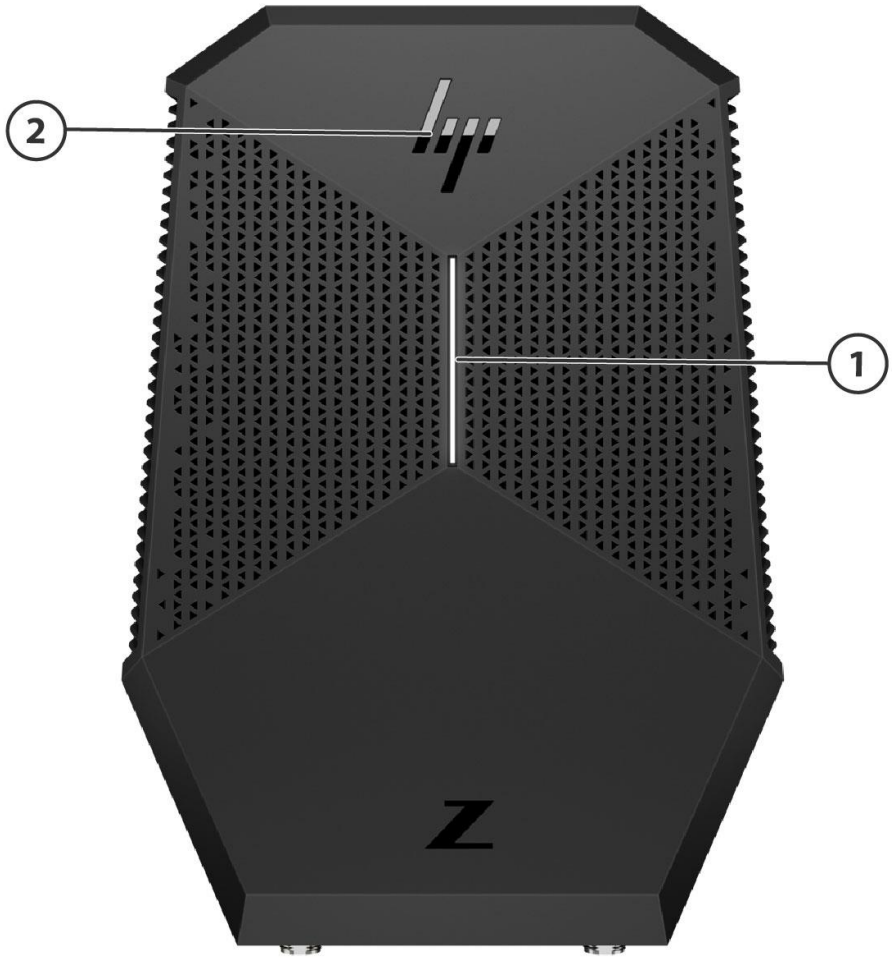
Overview

HP Z VR Backpack G1 Workstation

Overview



Front View

1. Programmable RGB LED Bar
2. RGB LED HP logo

Overview

Top View

1. HTC Vive™ HMD power port
2. (2) USB 3.0 Type A
3. (1) HDMI 2.0
4. (1) Mini DisplayPort™ 1.3
5. (1) USB Type-C™, Thunderbolt™

Bottom View

6. Audio jack
7. Power Button
8. Dock Connector
9. Dock Guide Posts
10. External Battery power ports

Overview

HP Z VR Backpack G1, left side and right side view

1. Power Button
2. (2) USB 3.0 Type A
3. DC in port

Overview

At A Glance

- Windows 10 Pro edition
- Full performance industrial design, in a wearable form factor using a backpack harness solution. Reinforced chassis, top cover frame features customizable system health RGB LED indicator.
- Docking station solution to convert the HP Z VR Compact Workstation from backpack to desktop use modes.
- Workstation-caliber NVIDIA ® Quadro® discrete graphics: NVIDIA® Quadro® P5200 with 16GB GDDR5 memory.
- ISV certified to provide fast and reliable performance with workstation applications, including manipulation of 3D textures.
- 7th generation Intel® Core™ i7 with vPro™ technology (vPro™optional).
- HP Performance Advisor for optimal configuration, compatibility and performance
- Two SODIMMs, for system memory up to 32 GB.
- Supports multi-display, including up to four (4) displays, 2 direct from the HP Z VR Compact Workstation and additional 2 via docking solution.
- One (1) Thunderbolt™ 3 port (supporting DisplayPort™ 1.2, USB 3.1, PCIe Gen 3 devices) on the new USB-C™ connector, for high speed data/video/audio transfer support.
- DTS Headphone:X® and DTS Studio Sound™ audio optimized for high fidelity audio with immersive surround sound with deep, rich bass and crystal clear dialog without distortion at high volume
- Internal battery to support wearable harness use mode with hot swap external batteries: 6-cell (55 WHr)
- Wireless connectivity included:
    - Intel® Dual Band Wireless-M.2/PCIe AC 8265 802.11 AC/a/b/g/n (2x2) WiFi and Bluetooth® 4.2 combo adaptor (vPro)
- Dedicated storage slot: (1) M.2
- Security features including HP Client Security Manager, managed via single console.
- Designed to pass military standard Mil-Std-810G testing. MIL STD 810G testing is pending and is not intended to demonstrate fitness for U.S. Department of Defense contract requirements or for military use. Test results are not a guarantee of future performance under these test conditions. Damage under the MIL STD test conditions or any accidental damage requires an optional HP Accidental Damage Protection Care Pack.
- Low halogen
- The base factory ordered HP Z VR Backpack G1 Workstation includes the following items:
    - HP Z VR Compact Workstation
    - HP Z VR Backpack Dock
    - HP 330W Smart AC Adapter
    - HP Z VR Backpack Harness
    - 2x HP Z VR Backpack External Battery
    - HP Z VR Backpack External Battery Charger
    - HP 180W Smart AC Adapter
    - HTC Vive Combo Cable

NOTE: HTC VIVE Business Edition VR System headset sold separately.

NOTE: See important legal disclosures for all listed specs in their respective features sections.

Overview

Form Factor	Small Form Factor, wearable PC
Operating Systems	Preinstalled: • Windows 10 Pro 64[1]

Notes:

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 10 is automatically updated, which is always enabled. ISP fees may apply and additional requirements may apply over time for updates. See http://www.windows.com
2. 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.

Overview

Processors*

Name	Cores	Clock Speed (GHz)	Intel® Turbo Boost Technology[1]	Cache (MB)	Memory Speed (MT/s)	Hyper-Threading	Integrated Graphics	Featuring Intel® vPro™ Technology	TDP (W)
Z2 Mini G3 Performance base unit									
Intel® Core i7® processor 7820HQ	4	2.9	3.9	8	2400	Y	Intel® HD Graphics 630[2]	Y	45W

[1]The specifications shown in this column represent the maximum turbo frequency with one core active. Turbo boost stepping occurs in 100MHz increments. Processors that do not have turbo functionality are denoted as N/A.
[2]Intel HD Graphics 630 is not enabled in the HP Z VR Backpack G1. All graphics for the platform is provided by the NVIDIA® Quadro® P5200 GPU.

NOTES:
* 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 is not a measurement of higher performance.

INTEL® Core™ i7 with vPro™

Intel® Core™ i7 with vPro™ technology is a selectable feature that is available on units configured with select processors, a qualified Intel® Centrino® WLAN module and a preinstalled Windows® operating system. It provides advances in remote manageability, security, energy efficient performance, and wireless connectivity. Intel® Active Management Technology (iAMT) offers built-in manageability and proactive security for networked mobile workstations, even when they are powered off* or when the operating system is inoperable. It can help identify threats before they reach the network, isolate infected systems, and update regardless of their power state.

*Requires a Windows operating system, network hardware and software, connection with a power source, and a direct (non-VPN) corporate network connection which is either cable or wireless LAN.

NOTE: Some functionality of Intel® Core™ i7 with vPro™ such as Intel® Active Management technology and Intel® Virtualization technology, requires additional third- party software in order to run. Availability of future "virtual appliances" applications for Intel® Core™ i7 with vPro™ technology is dependent on third- party software providers. Compatibility with future "virtual appliances" is yet to be determined.

Graphics

Video Outputs: HDMI 2.0
Mini DisplayPort™ 1.3
USB-C Thunderbolt™ 3 enabled with DisplayPort™ 1.2

Intel Integrated: Intel® HD graphics 630 is NOT enabled in the HP Z VR Backpack. Discrete graphics is the only available graphics.

Discrete: NVIDIA® Quadro® P5200 with 16GB dedicated GDDR5

NOTE: NVIDIA® Quadro® mobile professional graphics support up to four independent displays when used with an HP Z VR Backpack Dock (included with the HP Z VR Compact Workstation). Connecting a

Overview

Virtual Reality HMD will take one or more of the display connections depending on the HMD requirements, thus reducing the number of simultaneous external displays connected accordingly.

NVIDIA® GC6 Technology is supported allowing S0 state power usage optimization.

DisplayPort™ 1.2 protocol features supported on Thunderbolt™ 3 ports:

- Legacy displays (HDMI, DVI, VGA) may be attached to Thunderbolt™ port with the use of a certified dongle.
- DisplayPort™ monitors capable of supporting DisplayPort™ 1.2 may be directly attached to the Thunderbolt™ port to achieve HBR2 with the use a dongle.
- Thunderbolt™ 3 enabled monitors may be directly attached to the Thunderbolt port to achieve HBR2 and MST.
- DisplayPort™1.2 MST feature ("daisy-chain" feature) is supported through Thunderbolt™ 3 port on Thunderbolt™ 3 enabled devices or DisplayPort™1.2 monitors (requires monitor with DisplayPort™ 1.2 MST capability) with the use of a dongle.
- Up to 2 streams (eight lanes) of DisplayPort™ 1.2 are supported over a single Thunderbolt™ 3 port. Up to (2) 4K displays 24/30-bit color depth at 60 Hz or (1) 5K display supported over a single Thunderbolt™ 3 port. (Requires Intel® certified Thunderbolt™ cable).
- DisplayPort™ 1.2 w/MST (Multi-stream Transport): Supports resolutions up to Full 4K, 24/30-bit color depth at 60 Hz, and WUXGA (1920 x1200) monitors, 24/30-bit color depth at 120 Hz.

Thunderbolt™ 3 is superset port supporting DisplayPort™ 1.2, USB 3.1 Gen 2, and PCIe Gen 3 devices over the new USB-C™ connector. Install all the latest drivers for your Thunderbolt™ device before connecting the device to the Thunderbolt™ port. Thunderbolt™ cable and Thunderbolt™ device (sold separately) must be compatible with Windows. To determine whether your device is Thunderbolt™ Certified for Windows, see https://Thunderbolttechnology.net/products

Other System Specs

Color
Black

Convertibility
The HP Z VR Compact Workstation can either be placed in its docking station on the desktop or mounted on the backpack harness as a wearable PC for VR or AR usage.

Expansion Slots
1 80mm M.2 slot (PCIe Gen3 x4)
1 30mm M.2 slot (PCIe Gen3 x1)*

* For WLAN/BT M.2 module only

Expansion Bays
None

Top I/O
Power button, 2 USB 3.0 ports, 1 HDMI 2.0 output, 1 Mini Display Port™ 1.3, 1 USB Type C™ (Thunderbolt™), 1 audio combo jack, 1 DC power output (for HTC Vive™ HMD, the HP HMD Combo cable provided must be used)

Overview

Side I/O	2 USB 3.0 ports, 330W AC Adapter DC In port
Bottom I/O	Docking connector, 2 Battery DC In ports
Chassis Dimensions (H x W x D)	Standard desktop orientation: 333.5 x 236.4 x 60.9 mm
Weight	Exact weights depend upon configuration; Minimum Weight: 2.588 kg Typical Weight: 2.588 kg Maximum Weight: 4.658 kg* (when used as a wearable PC backpack with the Z VR Backpack harness and external batteries) Max Supported Weight (as used in backpack mode): 4.658 kg* (2588 g (PC) + 920 g (battery x2) + 368 g (housing x2) + 782 g (Backpack)= 4658 g) * When used as a wearable PC backpack with the Z VR Backpack harness and external batteries. Excludes any VR or AR head mounted display used with the HP Z VR Compact Workstation.
Temperature	Operating: 40° to 95°F (5° to 35°C) Non-operating: -4° to 140°F (-20° to 60°C) **Notes:** De-rate the maximum operating temperature by one degree C (1.8 degrees F) for every 305m (1,000 ft) altitude over 1,524m (5,000 ft).
Humidity	Operating: 8% to 85% Non-operating: 8% to 90%
Maximum Altitude (non-pressurized)	Operating: 3,000 m (10,000 ft) Non-operating: 9,100 m (30,000 ft).
Power Supply	330W 92.6% Efficiency at 115Vac
Chipset	Intel® QM 175 chipset
Memory	2 SODIMM slots, supporting up to 32GB non-ECC, DDR4 2400 MT/s
Workstation ISV Certifications	See the latest list of certifications at http://www.hp.com/united-states/campaigns/workstations/partnerships.html

Supported Components

Processors		Factory Configured	Option Kit
	7th generation Intel® Core™ processor family		
	Intel® Core™ i7-7820HQ 2.9/3.9 8M 4C CPU	Y	N

Monitors / Displays

HP DreamColor Z24x Professional Display
HP DreamColor Z27x Professional Display
HP Z34c Curved Display
HP Z22n Narrow Bezel IPS Display
HP Z23n Narrow Bezel IPS Display
HP Z24n Narrow Bezel IPS Display
HP Z24nf Narrow Bezel IPS Display
HP Z24nq Narrow Bezel IPS Display
HP Z24s IPS UHD 4K Display
HP Z25n Narrow Bezel IPS Display
HP Z27n Narrow Bezel IPS Display
HP Z27n Narrow Bezel IPS Display

Notes Monitors purchased separately.

HP Z VR Backpack G1 Accessories	Factory Configured*	Option Kit	Option Kit Part Number
HP Z VR Backpack Harness[1]	Y	Y	2HY47AA
HP Z VR Backpack Battery Pack[2]	Y	Y	2HY48AA
HP Z VR Backpack Battery Charger[3]	Y	Y	2HY51AA
HP Z VR Backpack G1 Dock[4]	Y	Y	2LM71AA
HP Z VR Backpack HTC Vive Cables[5]	Y	Y	2HY49AA
HP 330W Smart AC Power Adapter[6]	Y	Y	TBD

* All Factory Configured items listed above are mandatory DIBs (drop-in-the-box items) as part of the product base unit offering.

NOTE 1: HP Z VR Backpack Harness includes integrated carbon fiber mounting plate, two external 74Whr battery holders, and HMD parking clip.

NOTE 2: HP Z VR Backpack Battery Pack includes quantity two 74Whr external batteries.

NOTE 3: HP Z VR Backpack Battery Charger includes one 74 Whr battery charger and one 180W HP Smart AC Power Adapter.

NOTE 4: HP Z VR Backpack G1 Dock Option Kit includes the 330W HP Smart AC Power Adapter. For Factory Configured solutions, the 330W HP Smart AC Power Adapter comes with the HP Z VR Compact Workstation base unit.

NOTE 5: HTC Vive cables include custom HDMI cable, custom HTC power cable, and a custom USB 3.0 cable.

NOTE 6: The HP 330W Smart AC Power Adapter is structured as part of HP Z VR Compact Workstation base unit out of the factory.

Supported Components

PCIe SSDs	M.2 PCIe SSDs for HP Workstations	Factory Configured	Option Kit	Option Kit Part Number
	256GB TLC	Y	N	
	512GB TLC	Y	N	
	1TB TLC	Y	N	
	** Choice of one installed in native M.2 slot on HP Z VR Compact Workstation motherboard			

NOTE: For storage drives, GB = 1 billion bytes. TB = 1 trillion bytes. Actual formatted capacity is less. Up to 36GB (for Windows 10) of system disk is reserved for system recovery software.

Graphics		Factory Configured	Option Kit	Option Kit Part Number	Supported # of cards
Discrete Graphics	NVIDIA® Quadro® P5200 16GB Graphics	Y	N		1
Notes	No CPU Integrated Graphics available. Only Discrete Graphics enabled.				

Supported Components

Memory

DDR4-2400 non-ECC Unbuffered SODIMMs

HP 16GB (2x8GB) DDR4-2400 ECC RAM

HP 32GB (2x16GB) DDR4-2400 ECC RAM

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

The CPUs determine the speed at which the memory is clocked. A 2400 MT/s CPU can support memory speed maximum rates of 2400 MT/s. To achieve maximum memory speed, 2400 MT/s memory must be used.

NOTE: Only unbuffered DDR4 SODIMMs are supported.

Multimedia and Audio Devices	Factory Configured	Option Kit	Option Kit Part Number
RealTek ALC3866-CG with Integrated DTS Headphone:X®	Y	N	

Optical and Removable Storage	Factory Configured	Option Kit	Option Kit Part Number
HP SlimTray Optical Drives			
HP External USB Optical Drive	N	Y	F2B56AA

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

Networking and Communications	Factory Configured	Option Kit	Option Kit Part Number
Realtek RTL8153B 10/100/1000 Mbit (no VPro)	Y	N	
Intel® 8265 Wireless LAN (802.11ac) and Bluetooth® 4.2 Module (with VPro™)	Y	N	

NOTE 1: Full Intel® vPro™ Technology enabling requires the Intel 8265 Wireless LAN to be enabled and active.
NOTE 2: Realtek Ethernet access is only possible through the HP Z VR Backpack G1 Dock. Intel VPro is not supported with Realtek Ethernet.
NOTE 3: "Gigabit" Ethernet indicates compliance with IEEE standard 802.3ab for Gigabit Ethernet, and does not connote actual operating speed of 1 Gb/sec. For high speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required.

Supported Components

Physical Security		Factory Configured	Option Kit	Option Kit Part Number
	HP Keyed Cable Lock 10mm	N	Y	T1A62AA
	HP Master Keyed Cable Lock 10mm	N	Y	T1A63AA
	HP Dual Head Keyed Cable Lock	N	Y	T1A64AA
	HP Dual Head Master Cable Lock	N	Y	T1A65AA
	HP Essential Combination Lock (Herb)	N	Y	T0Y16AA
	HP Combination Lock (Stuart)	N	Y	T0Y15AA

Input Devices		Factory Configured	Option Kit	Option Kit Part Number
	HP Slim USB Keyboard and Mouse	N	Y	T6T83AA
	HP Slim Wireless Keyboard and Mouse	N	Y	T6L04AA
	HP USB Essential Keyboard and Mouse	N	Y	H6L29AA

Other Hardware		Factory Configured	Option Kit	Option Kit Part Number
	HP Stereo 3.5mm Headset	N	Y	T1A66AA
	HP Stereo USB Headset	N	Y	T1A67AA

Software		Factory Configured	Option Kit	Support Notes
	HP Performance Advisor	Y	N	See Note 1
	HP Remote Graphics Software (RGS) 7.1	Y	N	See Note 2
	HP Client Security Software	Y	N	See Note 3

NOTE 1: Supports, and preinstalled with Windows 10 only. Also available as a free download from http://www.hp.com/go/performanceadvisor
NOTE 2: RGS available as a free download from http://www.hp.com/go/rgs
NOTE 3: Windows 10 OS only. HP Client Security available as a SoftPaq download.

Operating Systems	Windows 10 Pro 64

System Technical Specifications

System Board

System Board Form Factor	313 mm x 209 mm (12.3 x 8.23 inches)	
Processor Socket	FCBGA1440	
CPU Bus Speed	DMI link between CPU & PCH	
Chipset	Intel® QM175	
Memory Expansion Slots	2 SODIMM DDR4 memory slots	
Memory Type Supported	DDR4, SODIMM (Unbuffered), non-ECC	
Memory Modes	Non-Interleaved for single channel. Interleaved when both channels are populated.	
Memory Speed Supported	2400MHz DDR4	
Memory Protection	None	
Maximum Memory	32GB	
Memory Configuration (Supported)	8GB and 16GB non-ECC unbuffered SODIMMs are supported.	
Integrated Graphics	None NOTE: Integrated Graphics is NOT enabled in the HP Z VR Backpack G1 product	
Discrete Graphics	NVIDIA® Quadro® P5200 with 16GB GDDR5 memory Memory width: 256 bit NVIDIA® CUDA™ Cores: 2560 API support: DirectX 12, Shader Version 5.1, Open GL 4.5, OpenCL 1.2 Display outputs: 6 (only 4 are implemented) DisplayPort™ 1.3	
Network Controller	RealTek RTL 8153B 10/100/1000 Mbs LAN. Management capabilities: WOL, PXE 2.1.	
Wireless Network Controller	**M.2 PCIe**	Intel® 8265 WLAN/BT. Management capabilities: WOL, PXE 2.1, vPro™/iAMT
Supported Drive Interfaces	**M.2 PCIe**	NVMe SSD – 80mm size, 256GB, 512GB, 1TB
USB Connector(s)	**Top**	2 USB 3.0 Type-A 1 USB 3.1 Type-C™ with Thunderbolt™ 3
	Side	2 USB 3.0 Type-A

System Technical Specifications

Display Connectors	**Top**	1 HDMI 2.0 1 mini-DisplayPort™ 1.3 1 USB 3.1 Type-C™ (DisplayPort through Thunderbolt™)
Power Connector	**Top**	12V DC out power jack for HTC Vive™ HMD
	Side	DC-in power jack for external 330W power supply
	Bottom	DC-in integrated with dock connector
Dock Connector	**Bottom**	Proprietary combo connector that mates with the HP Z VR Backpack Dock (HP Part Number: 2LM71AA)
HD Integrated Audio	RealTek ALC3866-CG with software integration of DTS Headphone:X® and DTS Studio Sound™	
Flash ROM	Yes	
Chassis Fan	Yes: 1 for CPU + memory + system, 1 for GPU + memory	
CMOS Battery Holder - Lithium	Yes	
Battery	55Whr Lithium Ion, internal	
Trusted Platform Module	Infineon SLB9670 TPM 2.0	
Power Supply Headers	Yes, One DC-in jack for external power supply One 12V DC-out jack for HTC Vive™ HMD	
Power Switch, Power LED	The power and Sleep State LED are combined in the Top-Side power switch.	
Storage LED Indicator	None	
Clear Password Jumper	Yes	
Keyboard/Mouse	Not provided with Base Unit. Separate AMO accessory.	
Power Supply	330W HP Smart AC Adapter, 92.6% efficiency, wide-ranging, active PFC Power Supply	
Operating Voltage Range	115-230 VAC	
Rated Voltage Range	100–240 VAC	
Rated Line Frequency	50-60 Hz	
Operating Line Frequency Range	47–63 Hz	
Rated Input Current	1.9A @ 90Vac	
ENERGY STAR® qualified (Config Dependent)	Yes	

System Technical Specifications

FEMP Standby Power Compliant	Yes, with Wake-on-LAN disabled: <1W in S5- Power Off	
Surge Tolerant Full Ranging Power Supply (Common mode power surges up to 2000V)	Yes	
Internal Battery	55Whr Battery operating information shown in table below	
Allowable Temperature Range	0°C ~ 50°C	Charge Initial Temperature
	0°C ~ 50°C	Continuous Charging
	-10°C ~ 60°C	For start of discharge below 0˚C, the battery pack must have a charge ≥ 80%
	-20°C ~ 60°C -20°C ~ 45°C -20°C ~ 30°C	Storage Temperature 1 month 3 month 6 month
External Battery	74Whr Battery operating information shown in table below	
Allowable Temperature Range	0°C ~ 45°C	Charge Initial Temperature
	0°C ~ 45°C	Continuous Charging
	-10°C ~ 60°C	For start of discharge below 0˚C, the battery pack must have a charge ≥ 80%
	-20°C ~ 60°C -20°C ~ 45°C -20°C ~ 30°C	Storage Temperature 1 month 3 month 6 month

System Technical Specifications

Declared Noise Emissions

Declared Noise Emissions			
System Configuration	**Processor Info**	Intel® Core™ i7-7820HQ 2.9-3.9G/8M/4c	
	Memory Info	2 - 16GB DDR4-2400 SO-DIMM Memory	
	Graphics Info	NVIDIA® Quadro® P5200 with 16GB GDDR5	
	Disks/SSD	1 - Samsung 1TB PCIe M.2 SSD	
Declared Noise Emissions (in accordance with ISO 7779 and ISO 9296)		**Sound Power** (LWAd, bels)	**Deskside Sound Pressure** (LpAm, decibels)
	Under Operating Load (playing VR content)	42	42

Physical Security and Serviceability

Access Panel	No access panel. Tools required to remove top cover (rubber feet covers must be removed first). System is not designed for customer access.
Hard Drives	None
Expansion Cards	M.2 module requires a screwdriver to service and replace.
Processor Socket	No CPU socket. CPU soldered on motherboard.
Memory	Tool-less. Must remove shielding cover (for EMI) first (requires tools).
System Board	Screw-In
Single Color Power and HD LED on Front of Computer	The Power LED is on the front of the system. No HDD LED on the system.
Over-Temp Warning on Screen	No. System will automatically throttle in over-temperature situations.
Restore CD/DVD Set	None
Dual Function Front Power Switch	Yes, causes a fail-safe power off when held for 4 seconds (default)
Cable Lock Support	Yes, but requires use of the HP Z VR Backpack Dock with a Kensington Cable Lock solution (optional): Locks HP Z VR Compact Workstation to the Dock once cable lock is engaged on the docking station. Secures HP Z VR Compact Workstation to docking station. 3 mm x 7 mm slot on the HP Z VR Backpack Dock station.
Serial, Parallel, Enable/Disable Port Control	No serial or parallel ports are available on the HP Z VR Compact Workstation.
USB Enable/Disable Port Control	Yes – enable/disable per port control.
Removable Media Write/Boot Control	Yes, prevents ability to boot from removable media on supported devices (and can disable writes to media)
Power-On Password	Yes, prevents an unauthorized person from booting up the workstation
Setup Password	Yes, prevents an unauthorized person from changing the workstation configuration
NIC LEDs (integrated) (Green & Amber)	No. RJ45 NIC port is on the HP Z VR Backpack Dock only
CPUs and Heatsinks	Not serviceable.

System Technical Specifications

Power Supply Diagnostic LED	No. Not applicable.
Front Power LED	Yes, white
Internal Speaker	No
System/Emergency ROM Flash Recovery	Crisis recovery feature recovers from corrupted system BIOS by using Boot Block support.
Cooling Solution	Air cooled forced convection
CPU Heatsink Fan	Yes. Heatsink is common between CPU and GPU assembly areas.
GPU Heatsink Fan	Yes. Heatsink is common between CPU and GPU assembly areas.
Chassis Fan	Two fan system.
Memory Heatsink Fan	No
HP PC Hardware Diagnostics UEFI	HP PC Hardware Diagnostics (UEFI) enables hardware level testing outside the operating system on many components. The diagnostics can be invoked by pressing F2 at POST, and is available as a download from HP Support.
Access Panel Key Lock	Not applicable. No chassis access panel.
ACPI-Ready Hardware	Advanced Configuration and Power Management Interface (ACPI). • Allows the system to wake from a low power mode. • Controls system power consumption, making it possible to place individual cards and peripherals in a low-power or powered-off state without affecting other elements of the system
Trusted Platform Module Chip	Yes
M.2 Card Retention	Yes, all M.2 modules are retained by a single screw
Flash ROM	Yes
DIMM Connectors	Yes, 2 SODIMM connectors

System Technical Specifications

BIOS

PCI 3.0 Support	Full BIOS support for PCI Express through industry standard interfaces.
BBS	BIOS Boot Specification v1.01. Provides more control over how and from what devices the workstation will boot.
WMI Support	WMI is Microsoft's implementation of Web-Based Enterprise Management (WBEM) for Windows. WMI is fully compliant with the Distributed Management Task Force (DMTF) Common Information Model (CIM) and WBEM specifications.
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. BIOS Configuration Utility (BCU) utility can then replicate these settings on machines being deployed without entering Computer Configuration Utility (F10 Setup).
SMBIOS	System Management BIOS 2.8., for system management information.
Boot Control	Disables the ability to boot from removable media on supported devices.
Thermal Alert	Monitors the temperature state within the chassis. Three modes: • NORMAL - normal temperature ranges. • ALERTED - excessive temperatures are detected. Raises a flag so action can be taken to avoid shutdown or provide for a smoother system shutdown. • SHUTDOWN - excessive temperatures are encountered. Automatically shuts down the computer without warning before hardware component damage occurs.
Remote ROM Flash	Provides secure, fail-safe ROM image management from a central network console. Updates can be performed before starting the OS. Updates can be periodically scheduled.
ACPI (Advanced Configuration and Power Management Interface)	Allows the system to enter and resume from low power modes (sleep states). Enables an operating system to control system power consumption based on the dynamic workload. Makes it possible to place individual cards and peripherals in a low-power or powered-off state without affecting other elements of the system. Supports ACPI 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.
ASF 2.0 Compliant	Yes.

System Technical Specifications

Instantly Available PC (Suspend to RAM - ACPI sleep state S3)	Allows for very low power consumption with quick resume time.
Remote System Installation via F12 (PXE 2.1) (Remote Boot from Server)	Allows a new or existing system to boot over the network and download software, including the operating system.
ROM revision levels	Reports the system BIOS revision level in Computer Configuration Utility (F10 Setup). Version is available through an industry standard interface (SMBIOS) so that management SW applications can use and report this information.
System board revision level	Allows management SW to read revision level of the system board. Revision level is digitally encoded into the HW and cannot be modified.
Start-up Diagnostics (Power-on Self-Test)	Assesses system health at boot time with selectable levels of testing.
Auto Setup when new hardware installed	System automatically detects addition of new hardware.
Keyboard-less Operation	The system can be booted without a keyboard.
Localized ROM Setup	Common BIOS image supports System Configuration Utility (F10 Setup) menus in 5 languages with local keyboard mappings.
Asset Tag	The user or IT administrator to set a unique tag string in non-volatile memory.
Per-slot Control	Allows I/O slot parameters (option ROM enable/disable) to be configured individually.
Adaptive Cooling	Control parameters are set according to detected hardware configuration for optimal acoustics.
Pre-boot Diagnostics	(Pre-video) critical errors are reported via beeps and blinks on the power LED.
Digitally and Cryptographically Signed BIOS	Helps to prevent the installation of unauthorized versions of a BIOS (a rogue BIOS) from a virus, malware, or other code that could lead to compromised system security, data access, physical service, or even system board replacement.
Boot Block Emergency Recovery Mode (BIOS Recovery)	The HP BIOS offers a write-protected boot block ROM that provides recovery from a failed flashing of the computer BIOS. This special recovery mode prevents the system from becoming unusable or “bricked” when a BIOS update is interrupted.
UEFI Specification Revision	UEFI 2.5.0
ACPI	Advanced Configuration and Power Management Interface, Version 6.0
ASF	Alert Standard Format Specification, Version 2.0

System Technical Specifications

EDD	- Enhanced Disk Drive Specification Version 1.1 - BIOS Enhanced Disk Drive Specification Version 3.0
PCI Express	PCI Express Base Specification, Revision 3.0.
PMM	POST Memory Manager Specification, Version 1.01
SATA	- Serial ATA Specification, Revision 1.0a - Serial ATA II: Extensions to Serial ATA 1.0, Revision 1.0a - Serial ATA II Cables and Connectors Volume 2 Gold - SATA-IO SATA Revision 3.0 Specification
SPD	PC SDRAM Serial Presence Detect (SPD) Specification, Revision 1.2B
TPM	Trusted Computing Group TPM Specification Version 2.0
USB	Universal Serial Bus Revision 1.1 Specification Universal Serial Bus Revision 2.0 Specification Universal Serial Bus Revision 3.0 Specification

Social and Environmental Responsibility

Eco-Label Certifications & Declarations

This product is low halogen except for power cords, cables and peripherals. Service parts obtained after purchase may not be Low Halogen.

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

Batteries

The battery in this product complies with EU Directive 2006/66/EC
Battery size: CR2032 (coin cell)
Battery type: Lithium Metal

The battery in this product does not contain:

- Mercury greater than 5ppm by weight
- Cadmium greater than 10ppm by weight
- Lead greater than 40ppm by weight

Batteries – Internal 55Whr

The battery in this product complies with EU Directive 2006/66/EC
Battery size: 6 cell
Battery type: Lithium ion Metal

The battery in this product does not contain:

- Mercury greater than 5ppm by weight
- Cadmium greater than 10ppm by weight
- Lead greater than 40ppm by weight

Lead greater than 40ppm by weight

Restricted Material Usage

This product meets the material restrictions specified in HP's General Specification for the Environment. http://www.hp.com/hpinfo/globalcitizenship/environment/pdf/gse.pdf
HP Inc. is committed to compliance with all applicable environmental laws and regulations, including the European Union Restriction of Hazardous Substances (RoHS) Directive. HP's goal is to exceed compliance obligations by meeting the requirements of the RoHS Directive on a worldwide basis.

Low Halogen Statement

This product is low halogen except for power cords, cables and peripherals. Service parts obtained after purchase may not be Low Halogen.

End-of-Life Management and Recycling

HP Inc. offers end-of-life HP product return and recycling programs in many geographic areas. To recycle your product, please go to: http://www.hp.com/recycle or contact your nearest HP sales office. Products returned to HP will be recycled, recovered or disposed of in a responsible manner. This product is greater than 90% recyclable by weight when properly disposed of at end of life.

HP Inc. Corporate Environmental Information

For more information about HP's commitment to the environment:
Living Progress Report http://www.hp.com/hpinfo/globalcitizenship/gcreport/index.html

Eco-label certifications
http://www.hp.com/hpinfo/globalcitizenship/environment/productdesign/ecolabels.html

ISO 14001 certificates:
http://www.hp.com/hpinfo/globalcitizenship/environment/operations/envmanagement.html

Additional Information

- This HP product is designed to comply with the Waste Electrical and Electronic Equipment (WEEE) Directive - 2002/96/EC.
- Plastic parts weighing over 25 grams used in the product are marked per ISO 11469 and ISO1043.
- This product is >90% recycle-able when properly disposed of at end of life
- EPEAT® Silver registered in the U.S. EPEAT registration varies by country. See http://www.epeat.net for registration status by country.

Packaging

HP Workstation product packaging meets the HP General Specification for the Environment at http://www.hp.com/hpinfo/globalcitizenship/society/gen_specifications.html

- Does not contain restricted substances listed in HP Standard 011-1 General Specification for the Environment
- Does not contain ozone-depleting substances (ODS)
- Does not contain heavy metals (lead, mercury, cadmium or hexavalent chromium) in excess of 100 ppm sum total for all heavy metals listed
- Maximizes the use of post-consumer recycled content materials in packaging materials
- All packaging material is recyclable
- All packaging material is designed for ease of disassembly
- Reduced size and weight of packages to improve transportation fuel efficiency
- Plastic packaging materials are marked according to ISO 11469 and DIN 6120 standards formatting

Packaging Materials

Internal Cushions made from fabricated recycled expanded-polyethylene (EPE) or recycled expanded-polypropylene (EPP). May also be made from recycled molded paper-pulp (MPP).

External Carton made from corrugated fiberboard with at least 25% recycled content.

Manageability

Intel® Active Management Technology (AMT)	The HP Z VR Compact Workstation supports Intel® vPro™ technology when purchased with a vPro™ technology capable CPU: Intel® Core™ i7 processors with Intel® VT-d/VT-x and Intel® TXT technology.
Remote Manageability Software Solutions	Visit: http://www.hp.com/go/easydeploy
System Software Manager	Visit: http://www.hp.com/go/ssm
Service, Support, and Warranty	Limited 1-year limited warranty. Batteries have a default one year limited warranty. Optional HP Care Pack Services are extended service contracts which go beyond your standard limited warranties. 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/cpc. Sold separately or as an optional feature. Service levels and response times for HP Care Packs may vary depending on your geographic location. Service starts on date of hardware purchase. Restrictions and limitations apply. HP services are governed by the applicable HP terms and conditions of service provided or indicated to Customer at the time of purchase. Customer may have additional statutory rights according to applicable local laws, and such rights are not in any way affected by the HP terms and conditions of service or the HP Limited Warranty provided with your HP Product. Consult your local HP Customer Support Center for details.

Technical Specifications - Processors

Name	Cores	Clock Speed (GHz)	Intel® Turbo Boost Technology[1]	Cache (MB)	Memory Speed (MT/s)	Hyper-Threading	Integrated Graphics	Featuring Intel® vPro™ Technology	TDP (W)
Z2 Mini G3 Performance base unit									
Intel® Core i7® processor 7820HQ	4	2.9	3.9	8	2400	Y	Intel® HD Graphics 630[2]	Y	45W

[1]The specifications shown in this column represent the maximum turbo frequency with one core active. Turbo boost stepping occurs in 100MHz increments. Processors that do not have turbo functionality are denoted as N/A.
[2]Intel HD Graphics630 is not enabled in the HP Z VR Backpack G1. All graphics for the platform is provided by the NVIDIA Quadro P5200 GPU.

Technical Specifications - Storage

M.2 NVMe SSD	**1TB TLC**	**Capacity**	1024GB
		Protocol	NVMe
		Form Factor	M.2 2280
		Controller	NVMe
		Rated for 24/7/365 operation	NO
		Physical Size (Height)	0.14 in; 3.65 mm
		Physical Size (Width)	0.87 in; 22 mm
		Drive Weight	0.02; 10 g
		Interface	PCIe NVMe Gen3 x4
		Synchronous Transfer Rate (Maximum)	Read: Up to 3300 MB/s; Write: Up to 1,775 MB/s
		Operating Temperature	32° to 158° F (0° to 70° C)
M.2 NVMe SSD	**512GB TLC**	**Capacity**	512GB
		Protocol	NVMe
		Form Factor	M.2 2280
		Controller	NVMe
		Rated for 24/7/365 operation	NO
		Physical Size (Height)	0.14 in; 3.65 mm
		Physical Size (Width)	0.87 in; 22 mm
		Drive Weight	0.02; 10 g
		Interface	PCIe NVMe Gen3 x4
		Synchronous Transfer Rate (Maximum)	Read: Up to 3200 MB/s; Write: Up to 1300 MB/s
		Operating Temperature	32° to 158° F (0° to 70° C)
M.2 NVMe SSD	**256GB TLC**	**Capacity**	256GB
		Protocol	NVMe
		Form Factor	M.2 2280
		Controller	NVMe
		Rated for 24/7/365 operation	NO
		Physical Size (Height)	0.14 in; 3.65 mm
		Physical Size (Width)	0.87 in; 22 mm
		Drive Weight	0.02; 10 g
		Interface	PCIe NVMe Gen3 x4
		Synchronous Transfer Rate (Maximum)	Read: Up to 3200 MB/s; Write: Up to 1255 MB/s
		Operating Temperature	32° to 158° F (0° to 70° C)

Technical Specifications - Graphics

NVIDIA® Quadro® P5200 16GB Graphics	**Maximum Resolution**	DisplayPort 1.3: - up to 4096x2160 x 30 bpp @ 60Hz - supports High Bit Rate 2 (HBR3) and Multi-Stream Transport (MST) HDMI 2.0 output: - up to 4096x2160 x 30 bpp @ 60Hz
	Image Quality Features	Stereoscopic 3D display support including NVIDIA® 3D Vision™ technology, 3D DLP, Interleaved, and passive stereo
	Display Output	Maximum number of displays: - 4 direct attached monitors Maximum number of DisplayPort™ displays possible per DisplayPort™ output (Multiple displays daisy-chained from one DisplayPort™ 1.3 port requires DisplayPort™ 1.2 MST capable displays or DP1.3 MST capable hub): - 4 1920x1200 @ 60 Hz - 2 2560x1600 @ 60 Hz - 1 4096x2160 @ 60 Hz Maximum number of monitors across all available Quadro P5200 outputs is 4.
	Supported Graphics APIs	OpenGL 4.5 DirectX 12 API support includes: CUDA C, CUDA C++, DirectCompute 5.0, OpenCL, Java, Python, and Fortran
	Available Graphics Drivers	Microsoft Windows 10 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 - Network

Realtek RTL8153B GbE Controller	**Connector**	RJ-45
	Controller	Realtek RTL8153B GbE platform LAN connect networking controller, USB 3.0 bus connection to host.
	Memory	Tx and Rx 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
	Bus Architecture	USB 3.0
	Data Transfer Mode	USB-based interface for active state operation (S0 state) and SMBus for host and management traffic (Sx low power state)
	Power Requirement	Requires 3.3V (integrated regulators for core Vdc)
	Boot ROM Support	Yes
	Network Transfer Mode	Full-duplex; Half-duplex (not supported for the 1000BASE-T transceiver)
	Network Transfer Rate	10BASE-T (half-duplex) 10 Mbps 10BASE-T (full-duplex) 20 Mbps 100BASE-TX (half-duplex) 100 Mbps 100BASE-TX (full-duplex) 200 Mbps 1000BASE-T (full-duplex) 2000 Mbps
	Management Capabilities	WOL, auto MDI crossover, PXE, RSS, ACPI, Advanced cable diagnostic, loopback modes, LPM, VLAN, Multicast Listener Discovery (MLD)

Intel® 8265 Wireless LAN (802.11ac) and Bluetooth 4.2 Module	**Connector**	M.2 (Supports 2230 form factor; E Key) Motherboard Interface
	Controller	Intel® Dual Band Wireless-AC 8265
	Compliance	Wireless LAN: IEEE 802.11abgn, 802.11ac, 802.11d, 802.11e, 802.11i, 802.11h, 802.11w, WMM, WMM-PS, WPA, WPA2, WPS2, Protected Management Frames FIPS, FISMA Bluetooth®: Dual Mode Bluetooth® 2.1, 2.1+EDR, 3.0, 4.0, BLE, and 4.2
	Antenna	2x2
	Tx/Rx Streams	2x2
	Bands	2.4 GHz, 5GHz
	Bus Architecture	PCI Express Gen3 x1 and USB 2.0
	Management Capabilities	Wake on WLAN (in all sleep states, excluding Max Power Savings mode), WFA Management Frame Protection (802.11w), F10 BIOS Menu option to disable/enable WLAN and Bluetooth® radios, supports seamless roaming between 802.11 wireless access points
	Throughput	Max PHY throughput 867 Mbps (802.11ac) for WLAN
	Notes	Wireless access point and internet service required. Availability of public wireless access points limited. The specifications for the 802.11ac WLAN are draft specifications and are not final. If the final specifications differ from the draft specifications, it may affect the ability of the notebook to communicate with other 802.11ac WLAN devices.

Technical Specifications – Power

HP 330W Smart AC Adapter (for HP Z VR Compact Workstation)	**Dimensions**	5.9 x 5.9 x 1.48 in (150 x 150 x 37.5 mm)	
	Weight	2.43lb / 1.1kg nominal	
	Input	100 to 240 VAC	
		Input Efficiency	92.6% average at 115Vac and 93.2% average at 230Vac
		Input frequency range	47 to 63 Hz
		Input AC current	4.2A RMS at 90 VAC, maximum
	Output	Output power	330W nominal
		DC output	19.5 VDC nominal
		Hold-up time	10 msec at 115 VAC input with maximum load
		Output current limit	34A (5ms)
		Over voltage protection	Shall not exceed 29 Volts for no longer than 250ms, auto shutdown
	Connector	3 pin/grounded, mates with interchangeable cords	
	Environmental Design	Operating temperature	32° to 95° F (0° to 35° C)
		Non-operating (storage) temperature	-4° to 185° F (-20° to 85° C)
		Altitude	Up to 16400 ft (5000 m)
		Humidity	up to 95%, non-condensing
		Storage Humidity	up to 95%, non-condensing
	EMI and Safety Certifications	CE Mark- full compliance with LVD and EMC directives; Worldwide safety standards- IEC950, EN60950, UL1950, Class 1, SELV; Agency approvals- C-UL-US, NORDICS, DENAN, EN55032 Class B, FCC Class B, CISPR22 Class B, CCIB, NOM-1 NYCE; MTBF- over 200,000 hours at 25°C ambient condition.	
HP 180W Smart AC Adapter (for external battery charger)	**Dimensions**	7.1 x 3.35 x 1.65 in (180 x 85 x 42mm)	
	Weight	1.81 lb (820 g)	
	Input	90 to 264 VAC	
		Input Efficiency	89% min at 115 VAC
		Input frequency range	47 to 63 Hz
		Input AC current	2.5 A at 90 VAC, 1.45 A at 180 VAC
	Output	Output power	180W nominal
		DC output	19.5V nominal
		Hold-up time	>5 msec at 115 VAC input
		Output current limit	Not exceed 240VA for more than 60s, automatic shutdown
		Over voltage protection	29V max for no longer than 250ms, automatic shutdown
	Connector	3 pin/grounded, mates with interchangeable cords	
	Environmental Design	Operating	
		temperature	41° to 95° F (5° to 35° C)
		Non-operating (storage) temperature	-4° to 185° F (-20° to 85° C)
		Altitude	0 to 16405 ft (0 to 5000 m) with 32° C max ambient temperature at max altitude
		Humidity	20% to 95%

EMI and Safety Certifications	Worldwide safety and EMC approvals including CE, UL, CSA or cUL, GS, Australian Electric Permit, C-tick, NOM, CCC, KC, GOST, SABS, S mark, BSMI, ISC, PSE, PSB and SII.

Technical Specifications – Options and Accessories (sold separately and availability may vary by country)

Option Type	Description	Part Number
HP Z VR Backpack	HP Z VR Backpack Harness	2HY47AA
	HP Z VR Backpack Battery Pack	2HY48AA
	HP Z VR Backpack Battery Charger	2HY51AA
	HP Z VR Backpack HTC Vive Combo Cable	2HY49AA
	HP Z VR Backpack G1 Dock	2LM71AA
Input/Output	HP Slim USB Keyboard and Mouse	T6T83AA
	HP Slim Wireless Keyboard and Mouse	T6L04AA
	HP USB Essential Keyboard and Mouse	H6L29AA
	HP Stereo 3.5mm Headset	T1A66AA
	HP Stereo USB Headset	T1A67AA
	USB-C to HDMI 1.4	N9K77AA
	HP USB-C to DisplayPort Adapter	N9K78AA
Power	HP 180W AC adapter	TBD
	HP 330W Smart AC Adapter	TBD
Security	HP Essential Combination Lock (Herb)	T0Y16AA
	HP Combination Lock (Stuart)	T0Y15AA
	HP Dual Head Keyed Cable Lock (Sumo)	T1A64AA
	HP Dual Head Master Cable Lock (Sumo MK)	T1A65AA
	HP Keyed Cable Lock 10mm	T1A62AA
	HP Master Keyed Cable Lock	T1A63AA
Storage - external	HP External USB Optical Drive	F2B56AA

Summary of Changes

Date of change:	Version History:		Description of change:
	From v1 to v2		

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