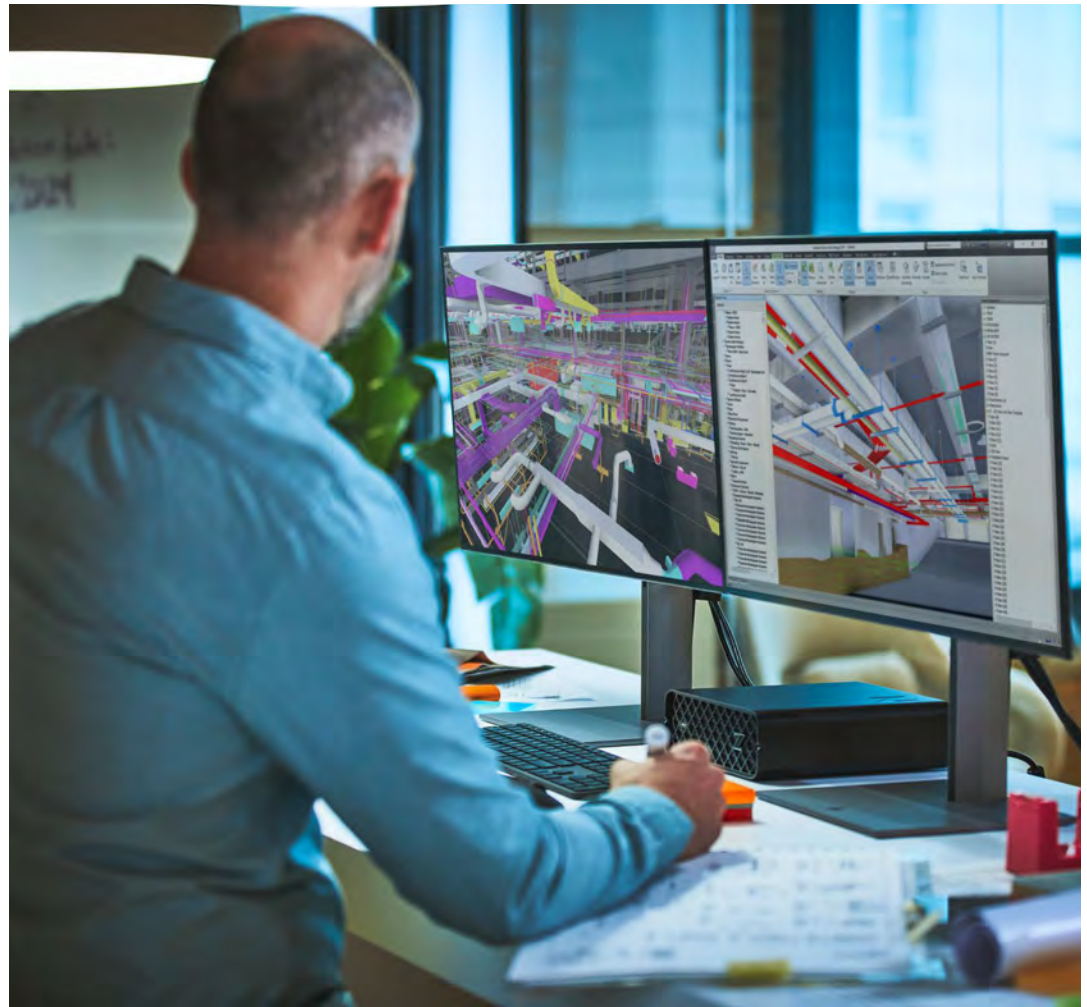




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Z by HP Discrete Graphics Quick Reference Guide

Discrete graphics solutions for Z by HP Workstations

HP is proud to offer discrete graphics choices on all of our Z by HP workstations—from the HP ZBook family to our ultimate workstation, the HP Z8.

HP's professional graphics line-up is perfect for users who are running business critical applications who require stability, reliability, great performance, additional support, and application-specific features and optimization for things like complex design modeling, dataset manipulation, visual effects and visualization.

Note: Currently, Z2 Mini, Z2 SFF, Z2 Tower, Z1 Entry Tower and all ZBooks support CPUs with built-in integrated graphics. Please refer to platform quickspecs for details on the CPU integrated graphics supported in that platform.

Update October 2022



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HP Z Desktops: Current Discrete Graphics Offerings

Platform		Z2 Mini G5	Z2 Mini G9	Z2 SFF G5	Z2 SFF G8	Z2 SFF G9	ZCentral 4R
Graphics	Category						
NVIDIA® T400	Entry 3D	-	● ●	● ● ● ●	● ●	● ● ● ●	● ●
AMD Radeon™ Pro WX 3200	Low-end 3D	-	-	● ●	●	-	-
NVIDIA® T600	Low-end 3D	-	●	● ●	● ●	● ●	-
NVIDIA® T1000	Mid-range 3D	-	● ●	●	●	● ● ● ●	●
NVIDIA® Quadro® T1000 MXM	Mid-range 3D	●	-	-	-	-	-
NVIDIA® Quadro® T2000 MXM	Mid-range 3D	●	-	●	-	-	-
NVIDIA® RTX™ A2000	Mid-range 3D	-	● ●	-	●	● ●	● ●
AMD Radeon™ Pro W6600	High-mid 3D	-	-	-	-	●	-
AMD Radeon™ RX 6700 XT	High-end 3D	-	-	-	-	●	-
NVIDIA® Quadro RTX™ 3000 MXM	High-end 3D	●	-	●	●	-	-
NVIDIA® Quadro RTX™ 4000	High-end 3D	-	-	-	-	-	● ●
NVIDIA® RTX™ A4000	High-end 3D	-	-	-	-	●	● ●
NVIDIA® RTX™ A4500	High-end 3D	-	-	-	-	-	●
NVIDIA® Quadro RTX™ 5000	Ultra 3D	-	-	-	-	-	●
NVIDIA® RTX™ A5000	Ultra 3D	-	-	-	-	-	●
NVIDIA® RTX™ A6000	Ultra 3D	-	-	-	-	-	●

Key Legend:

- single
- ● dual
- ● single (2x memory)
- ● dual (2x memory)

NOTE

***Please refer to platform specifications and ordering guides for applicable configuration restrictions**

****MXM are custom graphics modules for space-constrained designs – T1000 (4 GB), T2000 (4 GB), RTX™ 3000 (4 GB)**



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HP Z Desktops: Current Discrete Graphics Offerings

Platform		Z2 Tower G5	Z2 Tower G8	Z2 Tower G9	Z1 G9
Graphics	Category				
NVIDIA® T400	Entry 3D	● ● ● ●	● ●	● ● ● ●	● ● ● ●
AMD Radeon™ Pro WX 3200	Low-end 3D	● ●	● ●	-	● ●
NVIDIA® T600	Low-end 3D	● ●	● ●	● ●	● ●
AMD Radeon™ RX 6400		-	-	●	-
AMD Radeon™ Pro W5500	Mid-range 3D	●	●	●	● ●
AMD Radeon™ Pro W5700	High-end 3D	●	●	-	● ●
AMD Radeon™ Pro W6600	High-mid 3D	●	●	●	● ●
AMD Radeon™ RX 6700 XT	High-end 3D	-	●	●	●
AMD Radeon™ Pro W6800	Ultra 3D	-	●	●	● ●
NVIDIA® T1000	Mid-range 3D	● ●	● ●	● ● ● ●	● ● ● ●
NVIDIA® Quadro® GV100	Ultra 3D	-	-	-	● ●
NVIDIA® Quadro RTX™ 4000	High End 3D	-	●	-	● ●
NVIDIA® Quadro RTX™ 5000	Ultra 3D	-	●	-	● ●
NVIDIA® RTX™ A2000	Mid-range 3D	● ●	●	● ● ● ●	● ● ● ●
NVIDIA® RTX™ A4000	High End 3D	●	●	●	● ●
NVIDIA® RTX™ A4500	High End 3D	-	●	●	● ●
NVIDIA® RTX™ A5000	Ultra 3D	-	●	●	● ●
NVIDIA® RTX™ A6000	Ultra 3D	-	-	-	● ●

Key Legend:

●	single	● ● ●	triple	●	single (2x memory)	● ● ●	triple (2x memory)
NOTE	● ●	dual	● ● ● ●	quad	● ●	dual (2x memory)	

***Please refer to platform specifications and ordering guides for applicable configuration restrictions**



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HP Z Desktops: Current Discrete Graphics Offerings

Platform		Z4 G4	Z6 G4	Z8 G4
Graphics	Category			
NVIDIA® T400	Entry 3D	● ● ● ●	● ● ● ●	● ● ● ●
AMD Radeon™ Pro WX 3200	Low-end 3D	● ●	● ●	● ● ● ●
NVIDIA® T600	Low-end 3D	● ●	● ●	● ●
AMD Radeon™ RX 6400		-	-	-
AMD Radeon™ Pro W5500	Mid-range 3D	● ●	● ●	● ●
AMD Radeon™ Pro W5700	High-end 3D	● ●	●	● ●
AMD Radeon™ Pro W6600	High-mid 3D	● ●	●	● ●
AMD Radeon™ RX 6700 XT	High-end 3D	●	-	-
AMD Radeon™ Pro W6800	Ultra 3D	● ●	●	●
NVIDIA® T1000	Mid-range 3D	● ● ● ●	● ● ● ●	● ● ● ● ● ●
NVIDIA® Quadro® GV100	Ultra 3D	● ●	-	● ● ●
NVIDIA® Quadro RTX™ 4000	High End 3D	● ●	● ●	● ● ● ●
NVIDIA® Quadro RTX™ 5000	Ultra 3D	● ●	●	● ●
NVIDIA® RTX™ A2000	Mid-range 3D	● ● ● ●	● ● ● ●	● ● ● ● ● ●
NVIDIA® RTX™ A4000	High End 3D	● ●	● ●	● ● ● ●
NVIDIA® RTX™ A4500	High End 3D	● ●	● ●	● ● ●
NVIDIA® RTX™ A5000	Ultra 3D	● ●	● ●	● ● ●
NVIDIA® RTX™ A6000	Ultra 3D	● ●	●	● ●

Key Legend:

●	single	● ● ●	triple	●	single (2x memory)	● ● ●	triple (2x memory)
NOTE	● ●	dual	● ● ● ●	quad	● ●	dual (2x memory)	

*Please refer to platform specifications and ordering guides for applicable configuration restrictions



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HP Z Desktops: Discrete Graphics Spec Summary

Graphics Module	NVIDIA® T400	NVIDIA® T600	AMD Radeon™ RX 6400
Graphics Category	Entry 3D	Low-end 3D	-
Graphics Memory	2 GB 4 GB GDDR6	4 GB GDDR6	4 GB GDDR6
Memory Bandwidth	Up to 80 GB/s	Up to 160 GB/s	Up to 128 GB/s
Cores ¹¹	384	640	768
Power	30 W	40 W	53 W
Form Factor ⁶	Single slot, Half Height	Single slot, Half Height	Single slot, Low Profile (2.713" H x 6.137" L)
DirectX Support	12_1	12_1	12 Ultimate
OpenGL Support	4.6	4.6	4.6
Max Resolution (DP) ¹	7680 x 4320 @60 Hz	7680 x 4320 @60 Hz	Up to 4x 5120 x 2880 x 24 bpp @60 Hz
Max Displays	4 with MST	4	-
Video Outputs	3x mini-DP 1.4	4x mDP 1.4	-
Included Video Adapters:			
CTO	None	None	-
AMO	2 mDP-to-mDP	2 mDP-to-mDP	-
ISV Certified	Yes	Yes	-
Other	Vulkan™, CUDA®, Mosaic™	Vulkan™, CUDA®, Mosaic™	-



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HP Z Desktops: Discrete Graphics Spec Summary

Graphics Module	AMD Radeon™ Pro WX 3200	NVIDIA® Quadro® T1000 MXM ¹⁰	NVIDIA® T1000	AMD Radeon™ RX 6700 XT
Graphics Category	Low-end 3D	Mid-range 3D	Mid-range 3D	High-end 3D
Graphics Memory	4 GB GDDR5	4 GB GDDR6	4 GB 8 GB GDDR6	12 GB GDDR6
Memory Bandwidth	Up to 96 GB/s	-	Up to 160 GB/s	Up to 384 GB/s
Cores ¹¹	640	768	896	2560
Power	56 W	50 W	50 W	230 W
Form Factor ⁶	Single slot, Half Height	MXM ¹⁰	Single slot, Half Height	Dual Slot, Full Length
DirectX Support	12	12_1	12_1	12_1
OpenGL Support	4.5	4.6	4.6	4.6
Max Resolution (DP) ¹	5120 x 2880 @60 Hz ²	5120 x 2880 @60 Hz	5120 x 2880 @60 Hz	5210 x 3200 @60 Hz
Max Displays	4 or 5 with DP MST	4	4	4
Video Outputs	4x mDP 1.4	-	4x mini-DP	4x mDP 1.4
Included Video Adapters:				
CTO	None	-	None	None
AMO	2x mDP-to-mDP	-	2x mDP-to-mDP	-
ISV Certified	Yes	Yes	Yes	No
Other	AMD Sync, OpenCL 2.0, Eyefinity, DirectGMA, FreeSync, HDR Ready	CUDA®	GPU Boost 3.0, CUDA®, Mosaic™	-



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HP Z Desktops: Discrete Graphics Spec Summary

Graphics Module	NVIDIA® RTX™ A2000	AMD Radeon™ Pro W5500	AMD Radeon™ Pro W5700	NVIDIA® Quadro RTX™ 3000 MXM ¹⁰
Graphics Category	Mid-range 3D	Mid-range 3D	High-end 3D	High-end 3D
Graphics Memory	6 GB 12 GB GDDR6	8 GB GDDR6	8 GB GDDR6	6 GB GDDR6
Memory Bandwidth	Up to 288 GB/s	Up to 224 GB/s	Up to 448 GB/s	-
Cores ¹¹	3328	1408	2304	2304
Power	70 W	130 W	205 W	60 W
Form Factor ⁶	dual slot, Half Height	single slot, Full Height	dual slot, Full Height	MXM ¹⁰
DirectX Support	12_1	12_1	12_1	12_1
OpenGL Support	4.6	4.6	4.6	4.6
Max Resolution (DP) ¹	5120 x 2880 @60 Hz	7690 x 4320 @60 Hz ^{7,9}	7690 x 4320 @60 Hz ^{7,8}	5120 x 2880 @60 Hz
Max Displays	4	4	6	4
Video Outputs	4x DP 1.4	4x DP 1.4a	5x mDP 1.4a and 1x USB-C® AltMode port	-
Included Video Adapters:				
CTO	None	None	None	-
AMO	2x mDP-to-mDP	None	None	-
ISV Certified	Yes	Yes	Yes	Yes
Other	CUDA®, OpenCL™ 2.0	OpenCL 2.0, FreeSync, HDR Ready, Radeon™ Pro Software, AMD Eyefinity, Radeon™ ProRender, Unified Video Decoder, Video Code Engine, VR Ready	OpenCL 2.0, FreeSync, HDR Ready, Radeon™ Pro Software, AMD Eyefinity, Radeon™ ProRender, Unified Video Decoder, Video Code Engine, VR Ready	CUDA®



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HP Z Desktops: Discrete Graphics Spec Summary

Graphics Module	AMD Radeon™ Pro W6600	NVIDIA® Quadro RTX™ 4000	NVIDIA® Quadro RTX™ 5000	NVIDIA® Quadro® GV100
Graphics Category	High-Mid 3D	High-end 3D	Ultra 3D	Ultra 3D
Graphics Memory	8 GB GDDR6	8 GB GDDR6	16 GB GDDR6	32 GB HBM2
Memory Bandwidth	Up to 224 GB/s	Up to 416 GB/s	Up to 448 GB/s	Up to 870 GB/s
Cores ¹¹	1792	2304	3072	5120
Power	130 W	160 W	265 W	250 W
Form Factor ⁶	single slot, Full-height	single slot, Full Height	dual slot, Full Height	dual slot, Full Height
DirectX Support	12_1	12_1	12_1	12
OpenGL Support	4.6	4.6	4.6	4.5
Max Resolution (DP) ¹	5120 x 2880 @60 Hz	7680 x 4320 @60 Hz	7680 x 4320 @60 Hz	5120 x 2880 @60 Hz
Max Displays	4	4	4	4
Video Outputs	4x DP 1.4	3x DP 1.4a and VirtualLink4	4x DP 1.4a and VirtualLink4	4x DP 1.4
Included Video Adapters:				
CTO	None	None	None	None
AMO	None	None	None	None
ISV Certified	Yes	Yes	Yes	Yes ³
Other	Vulkan™ 1.2, OpenCL™ 2.1	Quadro® Sync II, CUDA®, Mosaic™, VR Ready	Quadro® Sync II, GPUDirect, GPU Boost 3.0, NVLink/SLI®, CUDA®, Mosaic™, VR Ready	Quadro® Sync II, GPUDirect, GPU Boost 3.0, CUDA®, Mosaic™, VR Ready, Multi-GPU Scalability NVLink (2-way)



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HP Z Desktops: Discrete Graphics Spec Summary

Graphics Module	AMD Radeon™ Pro W6800	NVIDIA® RTX™ A4000	NVIDIA® RTX™ A4500	NVIDIA® RTX™ A5000	NVIDIA® RTX™ A6000
Graphics Category	Ultra 3D	High-End 3D	High-End 3D	Ultra 3D	Ultra 3D
Graphics Memory	32 GB GDDR6	16 GB GDDR6	20 GB GDDR6	24 GB GDDR6	48 GB GDDR6
Memory Bandwidth	Up to 512 GB/s	Up to 448 GB/s	Up to 640 GB/s	Up to 768 GB/s	Up to 768 GB/s
Cores ¹¹	3840	6144	7168	8192	10752
Power	261W	140W	200W	230 W	300 W
Form Factor ⁶	dual slot, Full Height	single slot, Full Length	dual slot, Full Height	dual slot, Full Height	dual slot, Full Height
DirectX Support	12 Ultimate	12_1	12_1	12_1	12_1
OpenGL Support	4.6	4.6	4.6	4.6	4.6
Max Resolution (DP) ¹	5120 x 2880 @60 Hz	7680 x 4320 @60 Hz	5120 x 2880 @60 Hz	5120 x 2880 @60 Hz	5120 x 2880 @60 Hz
Max Displays	6	4	4	4	4
Video Outputs	6x mDP 1.4a	4X DP 1.4	4X DP 1.4	4x DP 1.4a	4x DP 1.4a
Included Video Adapters:					
CTO	None	None	None	None	None
AMO	2x mDP-to-mDP	None	None	None	None
ISV Certified	Yes	Yes	Yes	Yes	Yes
Other	Vulkan™ 1.2, OpenCL™ 2.1	Quadro® Sync II, GPUDirect, GPU Boost 3.0, CUDA®, Mosaic™, VR Ready, Vulkan™	Quadro® Sync II, GPUDirect, GPU Boost 3.0, NVLink, CUDA®, Mosaic™, VR Ready	Quadro® Sync II, GPUDirect, GPU Boost 3.0, NVLink, CUDA®, Mosaic™, VR Ready	Quadro® Sync II, GPUDirect, GPU Boost 3.0, NVLink, CUDA®, Mosaic™, VR Ready



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HP ZBooks: Current Discrete Graphics Offerings

Platform		ZBook Firefly G8	ZBook Power G8	ZBook Studio G8	ZBook Fury G8
Graphics	Category				
NVIDIA® T500	Entry 3D	●	-	-	-
NVIDIA® T600	Low-end 3D	-	●	-	-
NVIDIA® T1200	Mid-range 3D	-	●	●	●
NVIDIA® RTX™ A2000	Mid-range 3D	-	●	●	●
NVIDIA® RTX™ A3000	High-end 3D	-	-	●	●
NVIDIA® RTX™ A4000	High-end 3D	-	-	●	●
NVIDIA® RTX™ A5000	Ultra 3D	-	-	●	●
NVIDIA® RTX™ 3060	High-end 3D	-	-	●	-
NVIDIA® RTX™ 3070	High-end 3D	-	-	●	-
NVIDIA® RTX™ 3080	High-end 3D	-	-	●	-
AMD RADEON™ Pro W6600M	High-end 3D	-	-	-	●

Key Legend:

- single



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HP ZBooks: Current Discrete Graphics Offerings

Platform		ZBook Firefly G9	ZBook Power G9	ZBook Studio G9	ZBook Fury G9
Graphics	Category				
NVIDIA® T550	Entry 3D	●	-	-	-
NVIDIA® T600	Low-end 3D	-	●	-	-
NVIDIA® RTX™ A500	Low-end 3D	●	-	-	-
NVIDIA® RTX™ A1000	Mid-range 3D	-	●	●	●
NVIDIA® RTX™ A2000 8 GB	Mid-range 3D	-	●	●	●
NVIDIA® RTX™ A3000 12 GB	High-end 3D	-	-	●	●
NVIDIA® RTX™ A4500	High-end 3D	-	-	●	●
NVIDIA® RTX™ A5500	Ultra 3D	-	-	●	-
NVIDIA® RTX™ 3060	High-end 3D	-	-	●	-
NVIDIA® RTX™ 3070 Ti	High-end 3D	-	-	●	-
NVIDIA® RTX™ 3080 Ti	High-end 3D	-	-	●	-
AMD RADEON™ Pro W6600M	High-end 3D	-	-	-	●

Key Legend:

- single



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HP ZBooks: Discrete Graphics Spec Summary

Graphics Module	NVIDIA® T500	NVIDIA® T550	NVIDIA® RTX™ 3060	NVIDIA® RTX™ 3070	NVIDIA® RTX™ 3080	AMD RADEON™ Pro W6600M
Graphics Category	Entry 3D	Entry 3D	High-end 3D	High-end 3D	High-end 3D	High-end 3D
Memory	4 GB GDDR6	4 GB GDDR6	6 GB GDDR6	8 GB GDDR6	16 GB GDDR6	8 GB GDDR6
Cores ²	896	1024	3840	5120	6144	1972
Power	18 W	20 W	60 W	80 W	80 W	80 W
DirectX Support	12	12	12 Ultimate	12 Ultimate	12 Ultimate	12 Ultimate
OpenGL Support	4.5	4.5	4.6	4.6	4.6	4.6
Max Resolution (DP) ¹	Determined by CPU ³	Determined by CPU ³	5120 x 2880 @60 Hz	5120 x 2880 @60 Hz	5120 x 2880 @60 Hz	5120 x 2880 @60 Hz
Display Pipelines ¹	4	4	4	4	4	4
ISV Certified	Yes	Yes	Yes	Yes	Yes	Yes
Other	CUDA®	CUDA®	CUDA®	CUDA®	CUDA®	OpenCL 2.0, Vulkan™ 1.2

HP ZBooks: Discrete Graphics Spec Summary

Graphics Module	NVIDIA® T600	NVIDIA® T1200	NVIDIA® RTX™ A2000	NVIDIA® RTX™ A3000	NVIDIA® RTX™ A4000	NVIDIA® RTX™ A5000
Graphics Category	Low-end 3D	Mid-range 3D	Mid-range 3D	High-end 3D	High-end 3D	Ultra 3D
Memory	4 GB GDDR6	4 GB GDDR6	4 GB GDDR6	6 GB GDDR6	8 GB GDDR6	16 GB GDDR6
Cores ²	896	1024	2560	4096	5120	6144
Power	25 W	35 W	35 W	80 W	80 W	80 W
DirectX Support	12_1	12_1	12 Ultimate	12 Ultimate	12 Ultimate	12 Ultimate
OpenGL Support	4.6	4.6	4.6	4.6	4.6	4.6
Max Resolution (DP) ¹	5120 x 2880 @60 Hz	5120 x 2880 @60 Hz	5120 x 2880 @60 Hz	5120 x 2880 @60 Hz	5120 x 2880 @60 Hz	5120 x 2880 @60 Hz
Display Pipelines ¹	4	4	4	4	4	4
ISV Certified	Yes	Yes	Yes	Yes	Yes	Yes
Other	CUDA®	CUDA®	CUDA®	CUDA®	CUDA®	CUDA®



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Graphics Module	NVIDIA® RTX™ A500	NVIDIA® RTX™ A1000	NVIDIA® RTX™ A2000 8 GB	NVIDIA® RTX™ A3000 12 GB	NVIDIA® RTX™ A4500	NVIDIA® RTX™ A5500
Graphics Category	Entry 3D	Mid-range 3D	Mid-high 3D	High-end 3D	High-end 3D	Ultra 3D
Memory	4 GB GDDR6	4 GB GDDR6	8 GB GDDR6	12 GB GDDR6	16 GB GDDR6	16 GB GDDR6
Cores ²	2048	2048	2560	4096	5888	7424
Power	20 W	35 W	35 W	60 W	80 W	80 W
DirectX Support	12 Ultimate	12 Ultimate	12 Ultimate	12 Ultimate	12 Ultimate	12 Ultimate
OpenGL Support	4.6	4.6	4.6	4.6	4.6	4.6
Max Resolution (DP) ¹	Determined by CPU	5120 x 2880 @60 Hz	5120 x 2880 @60 Hz	5120 x 2880 @60 Hz	5120 x 2880 @60 Hz	5120 x 2880 @60 Hz
Display Pipelines ¹	4	4	4	4	4	4
ISV Certified	Yes	Yes	Yes	Yes	Yes	Yes
Other	CUDA®	CUDA®	CUDA®	CUDA®	CUDA®	CUDA®

Graphics Module	NVIDIA® RTX™ 3070 Ti	NVIDIA® RTX™ 3080 Ti
Graphics Category	High-end 3D	High-end 3D
Memory	8 GB GDDR6	16 GB GDDR6
Cores ²	5888	7424
Power	80 W	80 W
DirectX Support	12 Ultimate	12 Ultimate
OpenGL Support	4.6	4.6
Max Resolution (DP) ¹	5120 x 2880 @60 Hz	5120 x 2880 @60 Hz
Display Pipelines ¹	4	4
ISV Certified	Yes	Yes
Other	CUDA®	CUDA®



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Z1 Entry Tower: Current Discrete Graphics Spec Offering
and Spec Summary

Z1 G9		
Graphics	Category	
AMD Radeon™ R7 430 (DP+VGA)	Office 2D	-
AMD Radeon™ R7 430 (2DP)	Office 2D	-
NVIDIA® T400	Entry 3D	● ●
NVIDIA® T1000	Mid-range 3D	●
AMD Radeon™ RX 550X	Mid-range 3D	-
NVIDIA® GeForce RTX™ 2060 Super	High-end 3D	-
NVIDIA® GeForce RTX™ 3060	High-end 3D	●
NVIDIA® GeForce RTX™ 3070	High-end 3D	●
NVIDIA® Quadro RTX™ 4000	High-end 3D	-
NVIDIA® Quadro RTX™ 5000	Ultra 3D	-

Key Legend:

- single ● single (2x memory)
- ● dual

*2nd PCIe slot is not x16, may only be x4 electrically



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Z1 Entry Tower: Discrete graphics spec summary

Graphics Module	AMD Radeon™ R7 430 (DP+VGA)	AMD Radeon™ R7 430 (2DP)	AMD Radeon™ RX 550X
Graphics Category	Office 2D	Office 2D	Mid-range 3D
Graphics Memory	2GB GDDR5	2GB GDDR5	4GB GDDR5
Memory Bandwidth	Up to 17 GB/s	Up to 17 GB/s	Up to 192 GB/s
Graphics Memory Bus	64-bit	64-bit	128-bit
Power	<50W	<50W	50W
Auxiliary Power Connector(s)	-	-	-
Form Factor ²	Single slot, Half Height	Single slot, Half Height	Single slot, Half Height
Max Resolution (DP) ¹	4096x2160 @60 Hz	4096x2160 @60 Hz	5120x2880 @60 Hz
Max Displays	2	2	2
Video Outputs	DP+VGA	2xDP	HDMI+2xDP
ISV Certified	No	No	No

Graphics Module	NVIDIA® GeForce RTX™ 3060	NVIDIA® GeForce RTX™ 3070
Graphics Category	High-end 3D	High-end 3D
Graphics Memory	12 GB GDDR6	8 GB GDDR6
Memory Bandwidth	Up to 360 MB/s	Up to 448 MB/s
Graphics Memory Bus	192-bit	256-bit
Power	170W	220W
Auxiliary Power Connector(s)	8pin PCI	12pin (adapter)
Form Factor ²	Dual slot, Full Height	Dual slot, Full Height
Max Resolution (DP) ¹	7680x4320 @60 Hz	7680x4320 @60 Hz
Max Displays	4	4
Video Outputs	3xDP+HDMI	3xDP+HDMI
ISV Certified	No	No



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Z1 Entry Tower: Discrete Graphics Spec Summary

Graphics Module	NVIDIA® Quadro RTX™ 4000
Graphics Category	High-end 3D
Graphics Memory	8 GB GDDR6
Memory Bandwidth	Up to 416 MB/s
Graphics Memory Bus	256-bit
Power	160W
Auxiliary Power Connector(s)	8pin
Form Factor ²	Single slot, Full Height
Max Resolution (DP) ¹	7680x4320 @60 Hz
Max Displays	4
Video Outputs	3xDP 1.4a and VirtualLink ³
ISV Certified	Yes



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Graphics Accesories

DisplayPort™ to DVI-D	Single link DVI-D support (max 1920x1200 @60 Hz) Part number: FH973AA
DisplayPort™ to HDMI True 4K Adapter	Supports audio over DP, supports UHD up to 30 Hz and True 4K up to 24 Hz (HDMI 1.4) Part number: 2JA63AA
DisplayPort™ to VGA	VGA support Part number: AS615AA
6-pin to 8-pin Power Adapter	HP Z Workstation PSU adaptor for graphics Part number: N1G35AA
NVIDIA® 3D Stereo Bracket	For NVIDIA® Quadro® M4000, M5000, M6000, P5000, P6000, RTX 4000, RTX A4500, RTX 5000, RTX 6000, RTX 8000, and NVIDIA® RTX A4000, A4500, RTX A5000, RTX A6000 applications Part number: K0A25AA
NVIDIA® Quadro® Sync II	For NVIDIA® Quadro® P4000, P5000, P6000, GP100, GV100, RTX 4000, RTX A4500, RTX 5000, RTX 6000, RTX 8000, and NVIDIA® RTX A4000, A4500, RTX A5000, RTX A6000 multi-display applications Part number: 1WT20AA
HP (Bulk 12) miniDP-to-DP Adapter Cables	To connect additional displays to graphics cards with miniDP ports Part number: 2KW87A6
HP Single miniDP-to-DP Adapter Cable	To connect one additional display to graphics card's miniDP port Part number: 2MY05AA
HP NVIDIA® GV100 NVLink Bridge Kit (Pair)	To connect two GV100 graphics cards for GPU-compute scaling Part number: 3NZ66AA
Quadro RTX™ NVLink 2-slot Bridge	To connect two RTX 5000 graphics cards for GPU-compute scaling in Z4 G4 or Z8 G4 Part number: 6FY12AA
Quadro RTX™ NVLink 3-slot Bridge	To connect two RTX 5000 graphics cards for GPU-compute scaling in Z6 G4 Part Number: 6FY14AA
Quadro RTX™ NVLink High-Bandwidth 2-slot Bridge	To connect two RTX 6000 or two RTX 8000 graphics cards for GPU-compute scaling in Z4 G4 or Z8 G4 Part number: 6FY11AA
Quadro RTX™ NVLink High-Bandwidth 3-slot Bridge	To connect two RTX 6000 or two RTX 8000 graphics cards for GPU-compute scaling (not currently recommended for normal Z4/Z6/Z8 G4 configurations) Part number: 6FY13AA
NVIDIA® NVLink 2-slot Bridge	To connect two RTX A4500, RTX A5000 or RTX A6000 graphics cards for GPU-compute scaling in Z4 G4 or Z8 G4 Part Number: 340L2AA
NVIDIA® NVLink 3-slot Bridge	To connect two RTX A4500 or RTX A5000 graphics cards for GPU-compute scaling in Z6 G4 Part Number: 340L3AA



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Additional Resources

Resources, contacts, or additional links

AMD Radeon™ Pro Professional Graphics <https://www.amd.com/en/graphics/workstations>

NVIDIA® Quadro® and RTX Graphics [nvidia.com/object/hp_workstations.html](https://www.nvidia.com/object/hp_workstations.html)

- Desktop Workstations
<https://www.nvidia.com/en-us/design-visualization/desktop-graphics/>
- Professional Laptops
<https://www.nvidia.com/en-us/design-visualization/rtx-professional-laptops/>

Learn more about our Z workstations at hp.com/go/z

Sources and Legal Disclaimers

HP Z Desktop Workstation notes

- 1 Not all video outputs of the graphics card may support the stated Max Resolution. See the card QuickSpecs for details and any restrictions.
- 2 2x dual DP 1.3 cabled 5k displays max., or 1x single cable DP 1.4.
- 3 Tested by select ISVs.
- 4 As of December 2019, VirtualLink's USB-C® (data) can be disabled via BIOS setting.
- 5 6x DP 1.3 4K @60 Hz or 3x 5K @60 Hz or 1x 8K @60 Hz.
- 6 "Half Height" is also known as "Low Profile", "Single Slot" is also known as "Single Width", and "Dual Slot" is also known as "Dual Width".
- 7 Some video display modes such as 7680x4320 @60 Hz require the use of DSC (Display Stream Compression).
- 8 Up to 6x 4K @60 Hz, up to 3x 5K or 8K @60 Hz, up to 3x 4K @120 Hz.
- 9 Up to 4x 4K @60 Hz, up to 2x 5K or 8K @60 Hz, up to 2x 4K @120 Hz.
- 10 HP custom graphics module using mobile GPU for space-constrained designs.
- 11 Different graphics architectures 'Cores' cannot be directly compared. Cores is useful for comparing graphics that are of the same architecture, usually designated by common prefix letter(s) in the model name.

HP ZBook Mobile Workstation notes

- 1 See mobile workstation system specifications for display output types and max displays and resolutions supported.
- 2 Different graphics architectures 'Cores' cannot be directly compared. Cores is useful for comparing graphics that are of the same architecture, usually designated by common prefix letter(s) in the model name.
- 3 The entry notebook design used here requires the CPU's graphics engine to drive all display signals. Hence, it is the CPU's graphics that determines what maximum display resolution is possible to support. The maximum resolutions of the notebook's CPUs are documented in the respective notebook's QuickSpecs.

HP Z1 notes

- 1 Not all video outputs of the graphics card may support the stated Max Resolution. See the card QuickSpecs for details and any restrictions.
- 2 "Half Height" is also known as "Low Profile", "Single Slot" is also known as "Single Width", and "Dual Slot" is also known as "Dual Width".
- 3 As of December 2019, VirtualLink's USB-C® (data) can be disabled via BIOS setting.

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