Dell EMC PowerEdge R7515

Technical Specifications

Regulatory Model: E46S Series
Regulatory Type: E46S003
August 2022
Rev. A19

Notes, cautions, and warnings

NOTE: A NOTE indicates important information that helps you make better use of your product.

CAUTION: A CAUTION indicates either potential damage to hardware or loss of data and tells you how to avoid the problem.

WARNING: A WARNING indicates a potential for property damage, personal injury, or death.

Contents

1

Technical specifications

The technical and environmental specifications of your system are outlined in this section.

Topics:

System dimensions

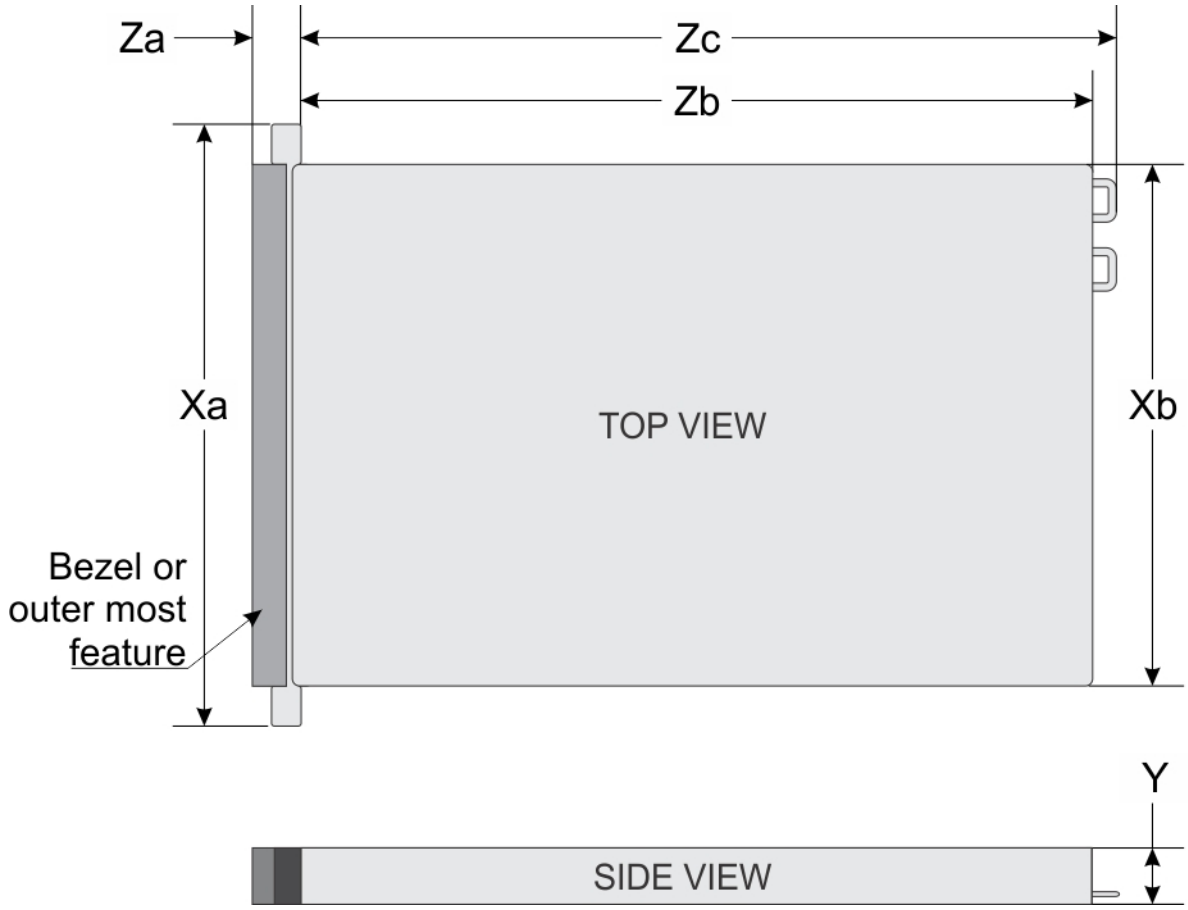

Figure 1. Dimensions of the PowerEdge R7515 system

Table 1. PowerEdge R7515 system dimensions

Xa	Xb	Y	Za (with bezel)	Za (without bezel)	Zb*	Zc
482 mm (18.97 inches)	434 mm (17.08 inches)	86.8 mm (3.41 inches)	35.84 mm (1.41 inches)	22 mm (0.87 inches)	647.07 mm (25.47 inches)	681.755 mm (26.84 inches)

Chassis weight

Table 2. Chassis weight

System	Maximum weight (with all drives)
8 x 3.5-inch	23.78 kg (52.42 lb)
12 x 3.5-inch	25.68 kg (56.61 lb)
12 x 3.5-inch + 2 x 3.5-inch (rear)	27.3 kg (60.18 lb)
24 x 2.5-inch	23.72 kg (52.29 lb)

Processor specifications

Table 3. PowerEdge R7515 processor specifications

Supported processor	Number of processors supported
AMD EPYC 7002 series processor	One
AMD EPYC 7003 series processor	One

PSU specifications

The PowerEdge R7515 system supports the following AC or DC power supply units (PSU):

Table 4. PSU specifications

PSU	Class	Heat dissipation (maximum)	Frequency	Voltage
1600 W AC	Platinum	6000 BTU/hr	50/60 Hz	100—240 V AC, autoranging
1100 W DC	NA	4416 BTU/hr	NA	-48 — -60 V DC
1100 W AC	Platinum	4100 BTU/hr	50/60 Hz	100—240 V AC, autoranging
1100 W HVDC	Platinum	4100 BTU/hr	50/60 Hz	100—240 V AC, autoranging
	NA	4100 BTU/hr	NA	200—380 V DC, autoranging
750 W AC	Platinum	2891 BTU/hr	50/60 Hz	100—240 V AC, autoranging
750 W HVDC	Platinum	2891 BTU/hr	50/60 Hz	100—240 V AC, autoranging
	Platinum	2891 BTU/hr	NA	240 V DC
750 W AC	Titanium	2843 BTU/hr	50/60 Hz	200—240 V AC, autoranging
495 W AC	Platinum	1908 BTU/hr	50/60 Hz	100—240 V AC, autoranging

NOTE: When selecting or upgrading the system configuration, to ensure optimum power utilization, verify the system power consumption with the Dell Energy Smart Solution Advisor available at **Dell.com/ESSA**.

NOTE: Heat dissipation is calculated using the PSU wattage rating.

NOTE: This system is also designed to connect to the IT power systems with a phase-to-phase voltage not exceeding 230 V.

NOTE: If a system with 1600 W AC PSU operates at low line 100-120 V AC, then the power rating per PSU is derated to 800 W.

NOTE: If a system with 1100 W AC PSU or 1100 W mixed mode PSU operates at low line 100-120 V AC, and then the power rating per PSU is derated to 1050 W.

Supported operating systems

The PowerEdge R7515 supports the following operating systems:

- Canonical Ubuntu Server LTS
- Citrix Xen Hypervisor
- Microsoft Windows Server with Hyper-V
- Red Hat Enterprise Linux
- SUSE Linux Enterprise Server
- VMware vSAN/ESXi

For more information, see www.dell.com/ossupport.

Cooling fans specifications

The PowerEdge R7515 system supports both the Standard fan (STD fan) and High Performance fan (HPR fan) and requires all six fans to be installed.

NOTE: Mixing of STD and HPR fans is not supported.

NOTE: The STD and HPR fans installation depends on the system configuration. For more information about the fan support configuration or matrix, see Thermal restriction matrix.

System battery specifications

The PowerEdge R7515 system supports CR 2032 3.0-V lithium coin cell system battery.

Expansion card riser specifications

WARNING: Consumer-Grade GPU should not be installed or used in the Enterprise Server products.

The PowerEdge R7515 system supports PCI Express (PCIe) Gen3/Gen4 expansion cards. This system supports low profile, full height, and 1U/2U expansion card risers.

Table 5. Expansion card riser configurations

Expansion card riser	PCIe slots on the riser	Processor connection	Height	Length	Slot width
Riser-1B (2U riser)	Slot 2	Processor 1	Full Height	Full Length	x16 (Gen 3)
Riser-1B (2U riser)	Slot 3	Processor 1	Full Height	Full Length	x16 (Gen 4)
Riser-1A (1U right riser with rear drives configuration)	Slot 2	Processor 1	Low Profile	Half Length	x16 (Gen 3)
Riser- 2 (1U left riser with rear drives configuration)	Slot 3	Processor 1	Low Profile	Half Length	x16 (Gen 4)

NOTE: The expansion-card slots are not hot-swappable.

Memory specifications

The PowerEdge R7515 system supports the following memory specifications for optimized operation.

Table 6. Memory specifications

DIMM type	DIMM rank	DIMM capacity	Minimum RAM	Maximum RAM
RDIMM	Single rank	8 GB	8 GB	128 GB
	Dual rank	16 GB	16 GB	256 GB
		32 GB	32 GB	512 GB
		64 GB	64 GB	1 TB

Table 6. Memory specifications (continued)

DIMM type	DIMM rank	DIMM capacity	Minimum RAM	Maximum RAM
3DS LRDIMM	Octa rank	128 GB	128 GB	2 TB

NOTE: The older 32 GB capacity RDIMM memory with x4 data width and 8Gb DRAM density cannot be mixed with the newer 32 GB capacity RDIMM memory with x8 data width and 16Gb DRAM density in the same AMD EPYC™ processor unit.

NOTE: The older 128 GB capacity LRDIMM memory at 2666 MT/s speed cannot be mixed with the new 128 GB capacity LRDIMM memory at 3200 MT/s speed.

Table 7. Memory module sockets

Memory module sockets	Speed
Sixteen 288-pin	3200 MT/s, 2933 MT/s, 2666 MT/s

Storage controller specifications

The PowerEdge R7515 system supports the following controller cards:

Table 8. PowerEdge R7515 system controller cards

Internal controllers	External controllers
• PERC H740P • PERC H730P • PERC H330 • HBA330 • S150 • Boot Optimized Storage Subsystem (BOSS-S1): HWRAID 2 x M.2 SSDs	• 12 Gbps SAS Ext. HBA • H840 • HBA355e

Drive specifications

Drives

The PowerEdge R7515 system supports:

- Up to 8 x 3.5 inch (SAS, SATA or SSD) front accessible drives in slots 0 to 7
- Up to 12 x 3.5 inch (SAS, SATA or SSD) front accessible drives in slots 0 to 11
- Up to 12 x 3.5 inch (SAS, SATA or SSD) front accessible drives in slots 0 to 11 + up to 2 x 3.5 inch (SAS, SATA or SSD) rear accessible drives in slots 12 to 13
- Up to 24 x 2.5 inch (SAS, SATA or SSD) front accessible drives in slots 0 to 23
- Up to 12 x 2.5 inch (SAS, SATA or SSD) front accessible drives in slots 0 to 11 and up to 12 x 2.5 inch NVMe drives in 12 universal slots 12 to 23
- Up to 24 x 2.5 inch front accessible NVMe drives in bay 0 (slot 0 to 11) and bay 1 (slots 0 to 11)
- Up to 8 x 2.5 inch (SAS, SATA or SSD) front accessible drives in Universal slots 0 to 7 (Bay 0) and up to 16 x 2.5 inch NVMe drives in bay 0 (slots 8 to 11) and bay 1 (slots 0 to 11)

NOTE: The front-accessible NVMe drives currently utilize PCIe Gen3.

NOTE: For more information about how to hot swap NVMe PCIe SSD U.2 device, see the *Dell Express Flash NVMe PCIe SSD User's Guide* at **Dell.com/support** > **Browse all Products** > **Data Center Infrastructure** > **Storage Adapters & Controllers** > **Dell PowerEdge Express Flash NVMe PCIe SSD** > **Documentation** > **Manuals and Documents**.

Backplane:

- 8 x 3.5-inch SAS, SATA drives

- 24 x 2.5-inch SAS, SATA drives
- 24 x 2.5-inch NVMe drives
- 12 x 3.5-inch SAS, SATA drives and 2 x 3.5-inch SAS, SATA drives
- 12 x 2.5-inch SAS, SATA drives and 12 x 2.5-inch NVMe drives
- 8 x 2.5-inch SAS, SATA drives and 16 x 2.5-inch NVMe drives

Optical drives

The PowerEdge R7515 system supports the following optical drives:

Table 9. Supported optical drive type

Supported drive type	Supported number of drives
Dedicated SATA DVD-ROM drive or DVD +/-RW drive	One

Ports and connectors specifications

USB ports specifications

Table 10. PowerEdge R7515 system USB specifications

Front		Rear		Internal	
USB port type	**No. of ports**	**USB port type**	**No. of ports**	**USB port type**	**No. of ports**
USB 2.0-compliant port	Two	USB 3.0-compliant ports	Two	Internal USB 3.0-compliant port	One
Micro USB 2.0-compliant port for iDRAC Direct	One				

NOTE: The micro USB 2.0 compliant port can only be used as an iDRAC Direct or a management port.

LOM Riser card specifications

The PowerEdge R7515 system supports up to two 10/100/1000 Mbps Network Interface Controller (NIC) ports that are located on the back panel. The system also supports LAN on Motherboard (LOM) on an optional riser card.

You can install one LOM riser card. The supported LOM riser options are:

- 2 x 1 Gb Base-T
- 2 x 10 Gb Base-T
- 2 x 10 Gb SFP+
- 2 x 25 Gb SFP+

NOTE:

- You can install up to four PCIe add-on NIC cards.
- For information about Linux network performance settings, see the *Linux Network Tuning Guide for AMD EPYC Processor Based Servers* white paper at AMD.com

Serial connector specifications

The serial connector connects a serial device to the system. The PowerEdge R7515 system supports one serial connector on the back panel, which is a 9-pin connector, Data Terminal Equipment (DTE), 16550-compliant.

VGA ports specifications

The Video Graphic Array (VGA) port enables you to connect the system to a VGA display. The PowerEdge R7515 system supports two 15-pin VGA ports one each on the front and back panels.

IDSDM module

The PowerEdge R7515 system supports optional Internal Dual SD module (IDSDM) module.

The module supports two microSD cards. The supported microSD card storage capacities are mentioned below:

- 16 GB
- 32 GB
- 64 GB

NOTE: There are two dip switches on the IDSDM for write-protection.

NOTE: One IDSDM card slot is dedicated for redundancy.

NOTE: Use Dell EMC branded microSD cards that are associated with the IDSDM configured systems.

Video specifications

The PowerEdge R7515 system system supports Matrox G200eR2 graphics card with 16 MB capacity.

NOTE: 1920 x 1080 and 1920 x 1200 resolutions are only supported in reduced blanking mode.

Table 11. Supported front video resolution options

Resolution	Refresh rate (Hz)	Color depth (bits)
1024 x 768	60	8, 16, 32
1280 x 800	60	8, 16, 32
1280 x 1024	60	8, 16, 32
1360 x 768	60	8, 16, 32
1440 x 900	60	8, 16, 32

Table 12. Supported rear video resolution options

Resolution	Refresh rate (Hz)	Color depth (bits)
1024 x 768	60	8, 16, 32
1280 x 800	60	8, 16, 32
1280 x 1024	60	8, 16, 32
1360 x 768	60	8, 16, 32
1440 x 900	60	8, 16, 32
1600 x 900	60	8, 16, 32
1600 x 1200	60	8, 16, 32
1680 x 1050	60	8, 16, 32
1920 x 1080	60	8, 16, 32
1920 x 1200	60	8, 16, 32

Environmental specifications

The following sections contain information about the environmental specifications of the system.

NOTE: For additional information about environmental certifications, please refer to the Product Environmental Datasheet located with the Manuals & Documents on www.dell.com/poweredgemanuals

Operational climatic range category A2

Table 13. Operational climatic range category A2

Allowable continuous operations	
Temperature ranges for altitude ≤900 meters (≤2,953 feet)	10 to 35°C (50 to 95°F) with no direct sunlight on the platform
Humidity percent ranges (Non-condensing at all times)	8% RH with -12°C minimum dew point to 80% RH with 21°C (69.8°F) maximum dew point
Operational altitude de-rating	Maximum temperature is reduced by 1°C/300 meters (1.8°F/984 feet) above 900 meters (2,953 feet)

Operational climatic range category A3

Table 14. Operational climatic range category A3

Allowable continuous operations	
Temperature ranges for altitude ≤900 meters (≤2,953 feet)	5 to 40°C (41 to 104°F) with no direct sunlight on the platform
Humidity percent ranges (Non-condensing at all times)	8% RH with -12°C minimum dew point to 85% RH with 24°C (75.2°F) maximum dew point
Operational altitude de-rating	Maximum temperature is reduced by 1°C/175 meters (1.8°F/574 feet) above 900 meters (2,953 feet)

Thermal restriction for ASHRAE A3/Fresh air environment (UI)

- Two PSUs are required in redundant mode. Single PSU failure is not supported
- LRDIMM is not supported
- Processor TDP equal or greater than 180 W are not supported
- 128 GB or greater capacity DIMMs are not supported
- Non-Dell qualified peripheral cards greater than 25 W are not supported
- Both SW and DW GPGPU are not supported
- PCIe SSD is not supported
- Rear drive configuration is not supported

Thermal restriction for ASHRAE A4/Fresh air environment (UI)

- Two PSUs are required in redundant mode. Single PSU failure is not supported
- LRDIMM is not supported.
- Processor TDP equal or greater than 155 W are not supported.
- 128 GB or greater capacity DIMMs are not supported.
- Both SW and DW GPGPU are not supported.
- PCIe card without EOT (max 65°C inlet temperature) and cooling tier 5 and above are not supported (UI).
- PCIe SSD is not supported.
- BOSS and OCP are not supported (UI).

- PCIe card TDP greater than 25 W is not supported.
- Rear drive configuration is not supported.

Shared requirements across all categories

Table 15. Shared requirements across all categories

Allowable operations	
Maximum temperature gradient (applies to both operation and non-operation)	20°C in an hour* (36°F in an hour) and 5°C in 15 minutes (9°F in 15 minutes), 5°C in an hour* (9°F in an hour) for tape hardware
Non-operational temperature limits	-40 to 65°C (-40 to 149°F)
Non-operational humidity limits	5% to 95% RH with 27°C (80.6°F) maximum dew point
Maximum non-operational altitude	12,000 meters (39,370 feet)
Maximum operational altitude	3,048 meters (10,000 feet)

*: Per ASHRAE thermal guidelines, these are not instantaneous rates of temperature change.

Table 16. Maximum vibration specifications

Maximum vibration	Specifications
Operating	0.26 Grms at 5 Hz to 350 Hz (all operation orientations)
Storage	1.88 Grms at 10 Hz to 500 Hz for 15 minutes (all six sides tested)

Table 17. Maximum shock pulse specifications

Maximum shock pulse	Specifications
Operating	24 executed shock pulses in the positive and negative x, y, and z axis of 6 G for up to 11 ms. (4 pulse on each side of the system)
Storage	Six consecutively executed shock pulses in the positive and negative x, y, and z axis (one pulse on each side of the system) of 71 G for up to 2 ms.

Thermal restriction matrix

Table 18. Label references

Label references	
STD	Standard
HPR	High Performance
HSK	Heat sink
LP	Low Profile (Riser)
FH	Full Height (Riser)
DW	Double Wide (Xilinx FPGA accelerator)

Table 19. Thermal restriction matrix

Drive type	Configuration	8 x 3.5-inch drives	12 x 3.5-inch drives	12 x 3.5-inch drives	24 x 2.5-inch drives		12 x 2.5-inch drives SAS + 12 x 2.5-inch drives NVMe		24 x 2.5-inch drives NVMe	
Rear Configuration		2LP+2FH	2LP+2FH	Rear 2x3.5-inch	2LP+2FH	2LP+1DW	2LP+2FH	2LP+1DW	2LP+2FH	2LP+1DW

Table 19. Thermal restriction matrix (continued)

Drive type Configuration		8 x 3.5-inch drives	12 x 3.5-inch drives	12 x 3.5-inch drives	24 x 2.5-inch drives		12 x 2.5-inch drives SAS + 12 x 2.5-inch drives NVMe		24 x 2.5-inch drives NVMe	
				drives SAS						
Ambient temperature		Up to 35°C	Up to 35°C	Up to 35°C	Up to 35°C	Up to 30°C	Up to 35°C	Up to 30°C	Up to 35°C	Up to 30°C
TDP (W)	120	STD Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 2U HPR HSK	STD Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK
	155	STD Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 2U HPR HSK	STD Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK
	170	STD Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 2U HPR HSK	STD Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK
	180	STD Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 2U HPR HSK	STD Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK
	200	STD Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 2U HPR HSK	STD Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK
	225	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 2U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK
	240	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 2U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK
	280*	HPR Fan 1U HPR HSK	NA	* HPR Fan 2U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	*HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	*HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK
	280 W - 64C/32C	HPR Fan 1U HPR HSK	NA	*HPR Fan 2U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	*HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	*HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK
Double Wide FPGA		No	No	Not supported	No	Yes	No	Yes	No	Yes

NOTE: To ensure proper cooling in the system with 280 W processor, memory module blank should be installed in the memory sockets that are not populated.

NOTE: *For 12 x 3.5-inch drive (Rear 2 x 3.5-inch drives SAS)/24 x 2.5-inch drive/12 x 2.5-inch drives SAS + 12 x 2.5-inch drives NVMe configuration support 280 W CPU up to 30°C ambient temperature.

Table 20. Thermal restriction matrix for T4 and A2 GPU Card

Drive Configuration type		8 x 3.5-inch drives	12 x 3.5-inch drives	12 x 3.5-inch drives	24 x 2.5-inch drives	12 x 2.5-inch drives SAS + 12 x 2.5-inch drives NVMe	24 x 2.5-inch drives NVMe
Rear Configuration		2LP+2FH	2LP+2FH	Rear 2x3.5-inch drives SAS	2LP+2FH	2LP+2FH	2LP+2FH
Ambient temperature		Up to 30°C	Up to 30°C	Up to 30°C	Up to 30°C	Up to 30°C	Up to 30 °C
	Slot 2	HPR Fan 1U HPR HSK	N/A	N/A	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK
	Slot 3	HPR Fan 1U HPR HSK	N/A	N/A	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK
	Slot 4	HPR Fan 1U HPR HSK	N/A	N/A	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK
	Slot 5	HPR Fan 1U HPR HSK	N/A	N/A	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK
	Slot 2/ Slot 3	HPR Fan 1U HPR HSK	N/A	N/A	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK
	Slot 4/ Slot 5	HPR Fan 1U HPR HSK	N/A	N/A	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK
	Slot 2/ Slot 3 Slot 4/ Slot 5	HPR Fan 1U HPR HSK	N/A	N/A	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK	HPR Fan 1U HPR HSK

NOTE: The table shows ambient restriction according to T4 and A2in specific PCIe slots of R7515 PCIex4 rear end configuration. R7515 rear drive x2 + PCIe x2 does not support T4 and A2 is not considered in this table.

Table 21. Thermal restriction matrix for MI210, A16 and V100S GPU Cards

Drive Configuration type		8 x 3.5-inch drives	12 x 3.5-inch drives	12 x 3.5-inch drives	24 x 2.5-inch drives	12 x 2.5-inch drives SAS + 12 x 2.5-inch drives NVMe	24 x 2.5-inch drives NVMe
Rear Configuration		2LP+2FH	2LP+2FH	Rear 2x3.5-inch drives SAS	2LP+2FH	2LP+2FH	2LP+2FH
Ambient temperature		Up to 30°C	Up to 30°C	Up to 30°C	Up to 30°C	Up to 30°C	Up to 30 °C
	Slot 2	N/A	N/A	N/A	N/A	N/A	N/A
	Slot 3	N/A	N/A	N/A	HPR Fan 1U HPR HSK	N/A	N/A
	Slot 4	N/A	N/A	N/A	N/A	N/A	N/A
	Slot 5	N/A	N/A	N/A	N/A	N/A	N/A

NOTE: 8 x 3.5-inch drives chassis do not support AUX power cable, and therefore do not support A16 and V100S GPU cards.

Table 22. Processor support matrix

TDP (W)	Fan type	Fan type (8 x 3.5-inch/ 24 x 2.5-inch)	HSK Type(8 x 3.5-inch/24 x 2.5/12x2.5-inchSAS+ 12 x 2.5-inchNVMe/ 24x2.5-inchNVMe)	HSK Type(12 x 3.5-inch)	HSK Type(12 x 3.5-inch+Rear 2 x 3.5-inch)	ASHRAE A3 support	ASHRAE A4 support
280	HPR Fan	HPR Fan	1U HPR	NA	2U HPR	No	No
240	HPR Fan	HPR Fan	1U HPR	1U HPR	2U HPR	No	No
225	HPR Fan	HPR Fan	1U HPR	1U HPR	2U HPR	No	No
200	HPR Fan	STD Fan	1U HPR	1U HPR	2U HPR	No	No
180	HPR Fan	STD Fan	1U HPR	1U HPR	2U HPR	No	No
155	HPR Fan	STD Fan	1U HPR	1U HPR	2U HPR	Yes	No
120	HPR Fan	STD Fan	1U HPR	1U HPR	2U HPR	Yes	Yes

NOTE: HPR fan is required for T4 GPU, A16 GPU, V100S GPU, NVMe, and Double wide FPGA supporting.

NOTE: NVMe configuration with drive install/Nvidia T4/ Double Width FPGA

NOTE: Except for 8 x 3.5-inch/24 x 2.5-inch(without NVMe), all other configurations have only high-performance fan type.

NOTE: 12 x 3.5-inch does not support 280 W processor.

NOTE: Need DIMM blank support for Evans HDD (RJT6H, 7KT9W, PY7WD, CNXPV, WGXDC, V308G, 3JTD3, 39XRY) in 12 x 3.5-inch drive configuration.

Other thermal restrictions

- Mellanox CX5 with QSFP28 is restricted to slot 4 and slot 5 in no rear drive configuration. Non-Dell qualified cables are not supported.
- Mellanox CX6 with QSFP56 (Mellanox MFS1S00) is restricted to slot 4 and slot 5 in no rear drive configuration. Non-Dell qualified cables are not supported.
- Solarflare XtremeScale X2522-25G adapter is restricted to slot 4 and slot 5 in no rear drive configuration.
- 750 GB PCIe SSD Adapter (P4800) by Intel is restricted to slot 4 and slot 5 in no rear drive configuration.
- 25 G LOM riser is not supported with 128 G LRDIMM or higher on 12 x 3.5-inch drives configuration.
- DIMM blank is required at 12 x 3.5-inch and 12 x 3.5-inch + 2 x 3.5-inch (rear) storage configuration.

Particulate and gaseous contamination specifications

The following table defines the limitations that help avoid any damages to the IT equipment and/or, or both failure from particulate and gaseous contamination. If the levels of particulate or gaseous pollution exceed the specified limitations and results in equipment damage or failure, you must rectify the environmental conditions. Remediation of environmental conditions is the responsibility of the customer.

Table 23. Particulate contamination specifications

Particulate contamination	Specifications
Air filtration	Data center air filtration as defined by ISO Class 8 per ISO 14644-1 with a 95% upper confidence limit. **NOTE:** This condition applies to data center environments only. Air filtration requirements do not apply to IT

Table 23. Particulate contamination specifications (continued)

Particulate contamination	Specifications
	equipment designed to be used outside a data center, in environments such as an office or factory floor. **NOTE:** Air entering the data center must have MERV11 or MERV13 filtration. **NOTE:** Air filtering can also be accomplished by filtering room air with MERV8 filter per ANSI/ASHRAE Standard 127
Conductive dust	Air must be free of conductive dust, zinc whiskers, or other conductive particles. **NOTE:** This condition applies to data center and non-data center environments. **NOTE:** Common sources of conductive dust include manufacturing processes, and zinc whiskers from the plating on the bottom of raised floor tiles
Corrosive dust	• Air must be free of corrosive dust. • Residual dust present in the air must have a deliquescent point less than 60% relative humidity. **NOTE:** This condition applies to data center and non-data center environments.

Table 24. Gaseous contamination specifications

Gaseous contamination	Specifications
Copper Coupon Corrosion rate	<300 Å/month per Class G1 as defined by ANSI/ISA71.04-2013
Silver Coupon Corrosion rate	<200 Å/month as defined by ANSI/ISA71.04-2013

NOTE: Maximum corrosive contaminant levels measured at ≤50% relative humidity.