

## A+ Server 2124GQ-NART (Complete System Only)

### 2U Dual Processor (AMD) GPU System with NVIDIA HGX A100 4-GPU 40GB/80GB, NVLink



Integrated Board



**H12DSG-Q-CPU6**

Views: | [Angled View](#) | [Top View](#) |  
| [Front View](#) | [Rear View](#) |

**Complete System Only:** To maintain quality and integrity, this product is sold only as a completely-assembled system (with minimum 2 CPUs, Min of 512GB Memory for 80G HGX-4 A100 OR Min of 256GB Memory for 40G HGX-4 A100, 1 Storage device, and 1 NIC included in IO board).

**Service:** OSNBD3 is highly recommended.

▶ [Drivers & Utilities](#) ▶ [BIOS](#) ▶ [IPMI](#) ▶ [Tested Memory](#) ▶ [Tested M.2 List](#) ▶ [NVMe Options](#) ▶ [Tested AOC](#) ▶ [Manuals](#) ▶ [OS Certification Matrix](#) ▶ [Drive Options](#)

Note: Image above may show a varied configuration of optional parts. Please refer to parts list for standard parts included.



#### Key Applications

- AI/ML, Deep Learning Training and Inference
- High-performance Computing (HPC)
- Cloud Computing
- Research Laboratory/National Laboratory
- Autonomous Vehicle Technologies
- Molecular Dynamics Simulation

#### Key Features

1. High Density 2U System with NVIDIA® HGX™ A100 4-GPU; Highest GPU communication using NVIDIA® NVLINK™, 4 NICs for GPUDirect RDMA (1:1 GPU Ratio)
2. Supports HGX A100 4-GPU 40GB (HBM2) or 80GB (HBM2e)
3. Direct connect PCI-E Gen4 Platform with NVIDIA® NVLink™ v3.0 up to 600GB/s interconnect
4. On board BMC supports integrated IPMI 2.0 + KVM with dedicated 10G LAN
5. Dual AMD EPYC™ 7003/7002 Series Processors (The latest AMD EPYC™ 7003 Series Processor with AMD 3D V-Cache™ Technology requires BIOS version 2.3 or newer)
6. 8TB Registered ECC DDR4 3200MHz SDRAM in 32 DIMMs
7. 4 PCI-E Gen 4 x16 (LP), 1 PCI-E Gen 4 x8 (LP)
8. 4 Hot-swap 2.5" drive bays (SAS/SATA/NVMe Hybrid)
9. 2x 2200W Platinum Level power supplies with Smart Power Redundancy



# Specifications

## Product SKUs

- AS -2124GQ-NART** ■ A+ Server 2124GQ-NART (Black)

## Motherboard

### Super H12DSG-Q-CPU6

## Processor/Cache

- CPU** ■ Dual AMD EPYC™ 7003/7002 Series Processors (The latest AMD EPYC™ 7003 Series Processor with AMD 3D V-Cache™ Technology requires BIOS version 2.3 or newer)
- Socket SP3
  - Supports CPU TDP up to 280W\*

- Cores** ■ Up to 128 Cores (64 per CPU)

- Note** \* Certain CPUs with high TDP may be supported only under specific conditions. Please contact Supermicro Technical Support for additional information about specialized system optimization

- GPU Support** ■ Supports HGX A100 4-GPU 40GB (HBM2) or 80GB(HBM2e) with NVLink GPU interconnect and PCI-E Gen4 host CPUs

## GPU

- Supported GPUs** ■ HGX A100 4-GPU 40GB/80GB SXM4 Multi-GPU Board

- CPU-GPU Interconnect** ■ PCI-E Gen 4 x16 Direct Connect CPU-GPU Dual-Root

- GPU-GPU Interconnect** ■ NVIDIA® NVLink™ GPU-to-GPU Interconnect

## System Memory

- Memory Capacity** ■ 32 DIMM slots  
■ Up to 8TB 3DS ECC DDR4-3200MH SDRAM

- Memory Type** ■ 3200MHz ECC DDR4 SDRAM

## On-Board Devices

- Chipset** ■ System on Chip (SoC)

- Network** ■ Dual RJ45 10GbE-aggregate host LAN, RJ45 1GbE IPMI

- IPMI** ■ Support for Intelligent Platform Management Interface v.2.0  
■ IPMI 2.0 with virtual media over LAN and KVM-over-LAN support

- Graphics & System Management** ■ ASPEED AST2600 BMC

## Input / Output

- SATA** ■ 4 SATA3 (6Gbps) ports

- LAN** ■ 2 RJ45 10GbE-aggregate host LAN ports  
■ 1 RJ45 1GbE Dedicated IPMI management port

- USB** ■ 2 USB 3.0 ports (rear)

## Chassis

- Form Factor** ■ 2U Rackmountable

- Model** ■ CSE-228GTS-R2K21P

## Dimensions

- Height** ■ 3.5" (89mm)

- Width** ■ 17.2" (437mm)

- Depth** ■ ~32.7" (830.3mm)

- Weight** ■ Net Weight: 78.5 lbs (35.6 kg)  
■ Gross Weight: 88.5 lbs (40.1 kg)

- Package Dimensions** ■ 45.5" L x 22.5" W x 11" H

- Available Colors** ■ Black

## Drive Bays / Storage

- Hot-swap** ■ 4 Hot-swap 2.5" drive bays (SATA/NVMe Hybrid or SAS with optional HBA)

## Expansion Slots

- PCI-Express** ■ 4 PCI-E Gen4 x16 (LP) slots - supporting HGX A100 4-GPU's 1:1 connection to 4 NICs  
■ 1 PCI-E Gen 4 x8 (LP) slot

## System Cooling

- Fans** ■ 4 Hot-swap heavy duty fans

## Power Supply

2200W Redundant Power Supplies with PMBus

- Total Output Power** ■ 1000W: 100 – 127Vac  
■ 2200W: 220 – 240Vac

- Dimension (W x H x L)** ■ 107 x 82 x 204 mm

- Input** ■ 100-127Vac / 12-9.5A / 50-60Hz  
■ 220-240Vac / 11-10A / 50-60Hz

- Output Type** ■ Gold Finger Connector

- Certification** ■  Platinum Level

## Operating Environment

- RoHS** ■ RoHS Compliant

- Environmental Spec.** ■ Operating Temperature: 10°C ~ 35°C (50°F ~ 95°F)  
■ Non-operating Temperature: -40°C to 60°C (-40°F to 140°F)  
■ Operating Relative Humidity: 8% to 90% (non-condensing)  
■ Non-operating Relative Humidity: 5% to 95% (non-condensing)

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<b>Video</b>	<ul style="list-style-type: none"><li>■ 1 VGA Connector (rear)</li></ul>
<b>Others</b>	<ul style="list-style-type: none"><li>■ 1 COM port (header)</li><li>■ 1 TPM 2.0 (header)</li></ul>

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#### System BIOS

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<b>BIOS Type</b>	<ul style="list-style-type: none"><li>■ AMI 256Mb SPI Flash ROM</li></ul>
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#### Management

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<b>Software</b>	<ul style="list-style-type: none"><li>■ <u>IPMI 2.0</u></li><li>■ KVM with dedicated LAN</li><li>■ <u>SSM, SPM, SUM</u></li><li>■ <u>SuperDoctor® 5</u></li><li>■ Watchdog</li></ul>
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#### PC Health Monitoring

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<b>CPU</b>	<ul style="list-style-type: none"><li>■ Monitors for CPU Cores, Chipset Voltages, Memory.</li><li>■ 4+1 Phase-switching voltage regulator</li></ul>
<b>FAN</b>	<ul style="list-style-type: none"><li>■ Fans with tachometer monitoring</li><li>■ Status monitor for speed control</li><li>■ Pulse Width Modulated (PWM) fan connectors</li></ul>
<b>Temperature</b>	<ul style="list-style-type: none"><li>■ Monitoring for CPU and chassis environment</li><li>■ Thermal Control for fan connectors</li></ul>

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## Parts List

### Parts List - (Items Included)

	Part Number	Qty	Description
<b>Motherboard / Chassis</b>	MBD-H12DSG-Q-CPU6	1	Super H12DSG-Q-CPU6 Motherboard
	CSE-228GTS-R2K21P	1	2U 228G Chassis w/ Redundant 2200W PSU
<b>Add-on Card / Module</b>	AOM-228G-FAN	1	Fan board for SC228G
<b>Add-on Card / Module</b>	AOM-PCIE4-SXM4-Q	1	PCIe Transition board for nVidia Quad GPU module
<b>Add-on Card / Module</b>	AOM-PIO-I2XT-P	1	AOM-PIO-I2XT
<b>Backplane</b>	BPN-NVMe4-228N-S4	1	2U 4-Slot SFF BPN Supports 4xSAS3/SATA3/NVMe4 Storage Device
<b>Drive Tray</b>	MCP-220-00178-0B	4	NVMe Orange Drive Carrier, tool-less with lock feature
<b>Cable 1</b>	CBL-OTHR-0794	1	VGA cable to internal 2x8 header for IO card
<b>Cable 2</b>	CBL-PWEX-1028	4	GPU,2x4F/CPU to 2x4F/CPU,P4.2, 30CM,16AWG, 10A/pin, -40~105C
<b>Cable 3</b>	CBL-PWEX-1080	2	Mini-Fit 2x2 F, to Mini-Fit 2x2 F, 10A/pin,7cm,16AWG,RoH
<b>Cable 4</b>	CBL-PWEX-1092-23	1	2x2, P3.0 to 2x2, P3.0,23CM,10A/pin,16AWG
<b>Cable 5</b>	CBL-PWEX-1093-26	1	2x2, P3.0 to 2x2, P3.0,26CM,10A/pin,16AWG
<b>Cable 6</b>	CBL-PWEX-1094-43	4	2x4, P3.0 to 2x4, P3.0,43CM,9A/pin,16AWG
<b>Cable 7</b>	CBL-SAST-1224LP-85	3	SlimlineLP x8 (STR) to SlimlineLP x8 (STR),24CM,85 OHM
<b>Cable 8</b>	CBL-SAST-1228LP-85	1	SlimlineLP x8 (STR) to Slimline x8 (STR),28CM,85 OHM
<b>Cable 9</b>	CBL-SAST-1237LP-85	4	SlimlineLP x8 (STR) to SlimlineLP x8 (STR),37CM,85 OHM
<b>Cable 10</b>	CBL-SAST-1264LP-85	1	SlimlineLP x8 (STR) to Slimline x8 (STR),64CM,85 OHM
<b>Cable 11</b>	CBL-SAST-1266LP-85	10	SlimlineLP x8 (STR) to SlimlineLP x8 (STR),66CM,85 OHM
<b>Cable 12</b>	CBL-SAST-1272-100	1	Slimline x4 (STR) to Slimline x4 (STR),72CM,100 OHM
<b>Riser Card</b>	SC-G-66G4	3	1U LHS GPU Riser card with two PCI-E 4.0 x16 slots,RoHS
<b>Heatsink / Retention</b>	SNK-P0063P	2	2U Passive CPU Heat Sink for AMD Socket SP3 Processors
<b>GPU Heatsink</b>	SNK-P4006PV	4	2U Passive GPU Heat Sink for NVIDIA A100 SMX4 GPU
<b>Fan Module</b>	FAN-0197L4-1	4	80x80x80 mm, 12K-11.3K RPM Counter-rotating Fan for CSE-228G
<b>Rail Set</b>	MCP-290-00144-1N	1	2U fixed rail set, quick release, default for 2,3U 17.6"W, 26.5-33.5
<b>Power Supply</b>	PWS-2K21G-2R	2	AC-DC 2200W at high and 1200W at low line multi-output
<b>Software</b>	<u>SFT-OOB-LIC</u> • eStore	1	OOB Management Package (per node license)

### Optional Parts List

	Part Number	Qty	Description
<b>GPU Baseboard *</b>	GPU-NVTHGX-A100-SXM4-4	-	NVIDIA Redstone GPU Baseboard, 4 A100 40GB SXM4
	GPU-NVTHGX-A100-SXM4-48	-	NVIDIA Redstone GPU Baseboard, 4 A100 80GB SXM4
	<b>* Note:</b> Required as Complete System		
<b>Drive Tray</b>	MCP-220-00187-0B	-	SATA or SAS Maroon Drive Carrier, tool-less with lock feature
<b>Storage Controller Card &amp; Cable(s)</b>	<u>AOC-S3108L-H8IR-16DD</u> & 1x CBL-SAST-1285-100	-	8 int 12Gb/s ports, 8xGen3, ROC – LP, 16 HDD w/ exp; Slimline x4 (STR) to MiniSAS HD (STR) x4, 85cm, 100OHM, R
	<u>AOC-SLG3-2H8M2</u>	-	2x Hybrid NVMe/SATA M.2 RAID Carrier, Standard LP,RoHS
	<u>AOC-SLG3-2M2</u>	-	LP, PCIe3 x8, Dual port NVMe M.2 carrier
	AOC-S3908L-H8IR-16DD & 1x CBL-SAST-1285-100	-	8 int 12Gb/s ports, x8 Gen4, ROC - LP, 16 HDD w/ exp,RoHS
<b>Network Card(s)</b>	AOC-653106A-ECAT	-	ConnectX-6 VPI Card. 100Gb/s InfiniBand & Ethernet Adapter Card, dual ports, QSFP56, PCIe 3.0/4.0 x16. HF, RoHS
	AOC-653106A-HDAT	-	Mellanox ConnectX-6 VPI 200Gb/s InfiniBand & Ethernet Adapter Card dual ports, QSFP56 PCIe 3.0/4.0 x16. HF, RoHS

	<u>AOC-S25G-m2S</u>	-	Standard low-profile 2-port 25GbE SFP28, based on Mellanox ConnectX-4 LX EN chipset.,RoHS
	AOC-STG-i4S	-	Intel XL710-BM1 4-port SFP+ (10Gb/port) Gen3 x8, Standard Low Profile
	AOC-STG-i4T	-	Std LP 4-port 10G RJ45, Intel XL710+ X557
	AOC-MCX556A-ECAT	-	MCX556A-ECAT, CX-5 VPI,EDR IB,100GbE,2p,QSFP28,PCIe3x16
	AOC-623106AN-CDAT	-	ConnectX-6 Dx 100GbE Ethernet Adapter Card, dual port QSFP56 PCIe 4.0 x16, RoHS
	AOC-653105A-ECAT	-	ConnectX-6 VPI Card. 100Gb/s InfiniBand & Ethernet Adapter Card, dual ports, QSFP56, PCIe 3.0/4.0 x16. HF, RoHS
	AOC-653105A-HDAT	-	Mellanox ConnectX-6 VPI 200Gb/s InfiniBand & Ethernet Adapter Card single port, QSFP56, PCIe 3.0/4.0 x16, RoHS
	AOC-MCX512A-ACAT	-	Mellanox MCX512A-ACAT PCIe 2-port 25GbE SFP28 Gen3x8 CX-5 EN. RoHS
	AOC-MCX555A-ECAT	-	CX-5 VPI EDR IB adapter & 100GbE, 1p, QSFP28, PCIe3x16
	AOC-S100GC-i2C	-	Standard PCIe 4.0 x 16 dual port 100GbE with QSFP28 based on Intel E810-CAM2,RoHS
<b>TPM security module</b>	<u>AOM-TPM-9655V</u>	-	TPM 1.2 module with Infineon 9655, RoHS/REACH,PBF;
	<u>AOM-TPM-9665V</u>	-	TPM 2.0 module with Infineon 9665, RoHS/REACH,PBF;
<b>Global Services &amp; Support</b>	<u>QS4HR3/2/1</u>	-	3/2/1-year onsite 24x7x4 service
	<u>OSNBD3/2/1</u>	-	3/2/1-year onsite NBD service