SR800-D21

Edge AI Inference
Xeon®D-2183IT & Nvidia A2000

- **Ultra-High-Performance Intel® Xeon® D-2183IT (2.0GHz, 16 cores, 32 threads)**
- **NVIDIA Ampere A2000 Tensor Core GPU Integrated (2560 CUDA and 4GB GDDR6)**
- **DDR4-3200 MHz 128GB RDIMM ECC**
- **2 x 2TB MLC support hardware erase for Fast & Mass Storage**
- **MIL-STD-810 Temperature, Shock, Vibration**
- **MIL-STD 461 EMI/EMC; MIL-STD 1275 electrical systems in military vehicles**

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1. Introduction

Edge AI Inference, NVIDIA A2000 GPU & INTEL XEON D-2183IT

The SR800-D21 is a ruggedized AI inference platform designed specifically for advanced inference acceleration applications such as voice, video, image, and recommendation services. This platform is powered by the NVIDIA A2000 MXM is a high-performance mobile graphics solution that is based on the NVIDIA Ampere architecture. It features 2560 CUDA cores, 20 RT cores, and 80 Tensor cores, as well as 4GB of GDDR6 memory.

The A2000 offers blazing-fast processing speeds and superior responsiveness, enabling you to tackle complex workloads with ease. Experience seamless rendering, real-time simulation, and efficient data processing like never before.

PRODUCT FEATURES	NVIDIA RTX A4500	NVIDIA RTX A2000	NVIDIA RTX A1000	NVIDIA RTX A500
PNY Part Number	NRTXA4500-KIT	NRTXA2000-KIT	NRTXA1000-KIT	NRTXA500-KIT
GPU Architecture	NVIDIA Ampere	NVIDIA Ampere	NVIDIA Ampere	NVIDIA Ampere
Interface	MXM 3.1, PCIe 4.0 x16 support	MXM 3.1, PCIe 4.0 x8 support		MXM 3.1, PCIe 4.0 x4 support
Form Factor	Standard MXM 3.1 Type B	Standard MXM 3.1 Type A		
Dimensions	82 x 105 x 4.8 mm	82 x 70 x 4.8 mm		
Peak FP32	17.66 TFLOPS	8.25 TFLOPS	6.66 TFLOPS	6.54 TFLOPS
CUDA Cores	5888	2560	2048	2048
RT Cores	40	20	16	16
Tensor Cores	160	80	64	64
GPU Memory	8 GB	16 GB	8 GB	4 GB	4 GB	2 GB	4 GB
Memory Type	GDDR6			
Memory Interface	256-bit	128-bit	128-bit	64-bit
Memory Bandwidth	512 GB/s	192 GB/s	192 GB/s	96 GB/s
Maximum Power	115W	80W	60W	35W		40W	25W
Operating Temperature	0° C to 55° C	ETT: -20°C to 70°C			
Storage Temperature	-40° C to 85° C			
Lifecycle Availability	Five Years			
Graphics APIs	DirectX® 12, OpenGL 4.6			
Compute APIs	CUDA Compute 8.0 and above, OpenCL™ 1.2			
Operating Systems	Windows 11, 10 and Linux Drivers	64-bit			

The SR800-D21 utilizes 7STARLAKE's Open Modular, Scalable Architecture and provides an optimized cooling solution for the NVIDIA A2000 GPU, seamlessly integrates into your existing workflow, empowering professionals across industries such as architecture, engineering, media, and entertainment. With compatibility across popular software applications and support for NVIDIA RTX™ technology, you can accelerate your creative process, reduce rendering times, and streamline your work. The A2000 is your gateway to efficient and effortless productivity.

Overall, the SR800-D21 is an ideal solution for customers looking for a ruggedized AI inference platform that can handle a variety of edge computing applications with ease.

I. Ultra-High Performance Intel® Xeon® Performance with VMware Support

Skylake DE: The Intel® Xeon® processor D-2183IT product family is Intel's 64-bit system on a chip (SOC) and the first Intel® Xeon® SoC based on Intel* 14 nm silicon technology. This lineup offers hardware and software scalability from two up to sixteen cores, making it the perfect choice for a broad range of high-performing, low-power solutions that will bring intelligence and Intel® Xeon® reliability, availability, and serviceability (RAS) to the edge. For applications where space is a premium, an integrated Platform Controller Hub (PCH) technology and Intel® Ethernet in a ball grid array (BGA) package offer an inspiring level of design simplicity. The Intel® Xeon® processor Skylake DE product family is offered with a seven-year extended supply life and 10-year reliability for Internet of Things designs.

II. Design to Meet MIL-STD-810, MIL-STD-461

SR800-D21 is designed to meet strict size, weight, and power (SWaP) requirements and to withstand harsh environments, including temperature extremes, shock/vibe, sand/dust, and salt/fog.

SR800-D21 MIL-461 EMI/EMC compliant rugged Edge AI Inference server. It passes numerous environmental tests including Temperature, Altitude, Shock, Vibration, Voltage Spikes, Electrostatic Discharge and more. The sealed compact chassis shields circuit cards from external environmental conditions such as sand, dust, and humidity.

2. Specifications

System

Processor	Intel® Xeon® Processor D-2183IT (Frequency 2.0GHz, Turbo Boost Frequency up to 3.0GHz), 16 Core, 32 Thread Support, 22MB Smart Cache
Memory type	4 x Up to 512GB LRDIMM/256GB RDIMM, 4CH DDR4 3200MHz
Chipset	SoC, integrated with CPU

GPU

NVIDIA	Nvidia A2000 MXM GPU
TFLOPS	8.25
CUDA Cores	2560
Memory	4 GB GDDR6, 192 GB/sec

Graphics Output

1x VGA	ASPEED AST2500
Resolution	Up to 1920x1200@60Hz 32bpp

Storage

HDD/SSD	2 x 2.5" 2TB MLC SSD (Easy Swappable)

Front and Side I/O

X1(DC-IN)	1 x Amphenol TV07RW-13-04P (4PIN)
X2(USB2.0x2)	1 x Amphenol TV07RF11-35S
X3(USB3.0)	1 x Amphenol USB3FTV7AZNF312
X4 (2x10G SFP+)	1 x Amphenol FSI MPOFTV70ZNN
X5 (1G RJ45)	1x Amphenol RJFTV62A1N
X6 (1G RJ45)	1x Amphenol RJFTV62A1N
VGA	D-sub15 connector with waterproof cap
Button	1 x Power Switch with Dedicated LED
SSD Tray	2 x Dual 2.5" HDD/SSD Easy Swap Tray Dedicated LED
Dedicated LED	2 x Red/Green LEDs (SSD)
Secure Erase Button	1 x AES hardware erase button

Power Requirement

Power Input	DC-DC 18 to 36V (300W max) MIL-STD 461

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Applications, Operating System

Applications	C4ISR, Commercial and Military Platforms Requiring Compliance to MIL-STD-810 Process Control, where Harsh Temperature, Shock, Vibration, Altitude, Dust and EMI Conditions
Operating System	Windows 10 64Bit, Windows Server 2019 64bit, Windows 2016 64bit, Hyper-V Server 2016 R2, Ubuntu16.04.3 LTS/17.10/18.04.1LTS, Fedora 25/26, RedHat Linux EL 6.8/6.9/7.3/7.4/7.6, VMware ESXi 6.5u1 ,Vmware ESXi 6.7U2

Physical

Dimension	432x 138 x281 mm (D x H x W)
Weight	15Kg (33.06lbs)
Chassis	Aluminum Alloy, Corrosion Resistant
Finish	Anodic aluminum oxide
Cooling	Natural Passive Convection/Conduction Cooling. No Moving Parts Ingress Protection
Ingress Protection	IP65

Environmental

Operating Test MIL-STD-810

Low air pressure	Method 500.5	Operation/Air Carriage 4572m (15.000 ft)
	Procedure 2	
Low Temperature	Method 502.5	-20°C, 4 hours, ±3°C
	Procedure 2	
High Temperature	Method 501.5	+55°C, 4 hours, ±3°C
	Procedure 2	
Humidity	Method 507.5	85%-95% RH without condensation, 24 hours/ cycle, conduct 10 cycle
Vibration	Method514.6	5-500Hz, Vertical 7.7Grms, 40mins x 3axis
	Category 24	
Shock	Method 516.6	20 Grms, 11ms, 3 axes

Non-Operating Test MIL-STD-810

Low Temperature	Method 502.5	-33°C, 4 hours, change rate: ≦20°C/ Hour -15°C, 72hours (By request)
High Temperature	Method 501.5	+71°C, 4 hours, change rate: ≦20°C/ Hour
	Procedure 1	+68°C, 240 hours (By request)
Vibration	Method514.6	5-500Hz, Vertical 7.7Grms, 40mins x 3axis

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Shock	Method 516.6	20 Grms, 11ms, 3 axes
Salt Fog	Method 509.7	Salt Spray (50±5)g/L

MIL-STD 461

Conducted Emissions	CE102 basic curve	10kHz – 30MHz
Power Leads		
Conducted Emissions	RE102-4	1.5HMz - 30MHz – 5GHz
Electric Field		
Radiated Susceptibility	RS103	1.5 MHz – 3GHz, 50 V/m equal for all frequencies
		2MHz – 80MHz, 50 V/m equal for all frequencies
Electric Field		80MHz – 3GHz, 50 V/m equal for all frequencies
		3GHz – 5GHz, 50 V/m equal for all frequencies
Electrostatic Discharge	EN 61000-4-2	Air DISCHARGE: 8 Kv, Contact discharge : 6kV
Electromagnetic compatibility	EN61000-4-4	Signal and DC Net: 1 kV
Electromagnetic compatibility	EN61000-4-5	Lead vs. ground potential 1Kv, ignal und DC Net: 1 kV
Radio disturbance	EN55022	Class A
Electromagnetic compatibility	EN61000-4-3	10V/m
Electromagnetic compatibility	EN 61000-4-5	Lead vs. ground potential 1Kv, ignal und DC Net: 0.5 kV

MIL-STD-1275 Specifications

Steady State	20V~33V
Surge Low	20V~33V
Surge High	18V/500ms

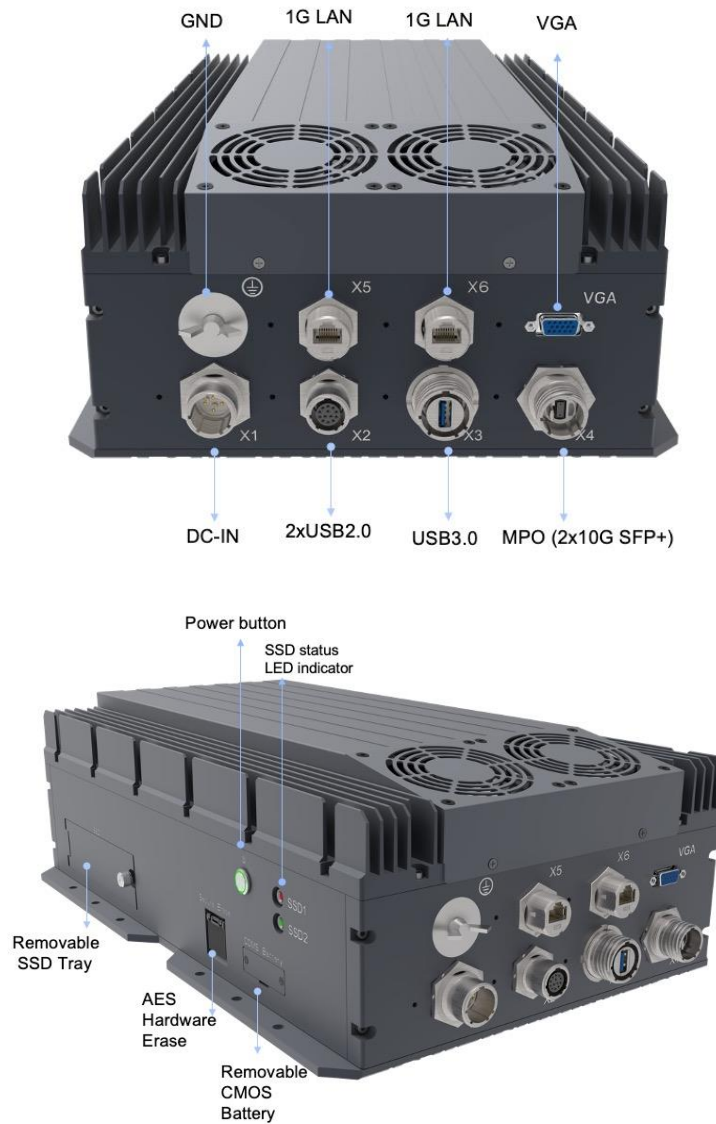7STARLAKE

3.   Ordering Information

SR800-D21
Military MXM-GPU System GPGPU AI Inference Computer with Intel® Xeon D-2183IT Processor, NVIDIA A2000, DDR4-3200 MHz 128GB RDIMM ECC, 2x2TB MLC support hardware erase for Fast & Mass Storage, IP65 rating, MIL-STD-D38999 Connectors, 18~36V DC-IN, Extreme Rugged operating temperature -20~+60°C

SR800-D21-8C
Military MXM-GPU System GPGPU AI Inference Computer with Intel® Xeon D-2146NT Processor, NVIDIA A2000, DDR4-3200 MHz 128GB RDIMM ECC, 2x2TB MLC support hardware erase for Fast & Mass Storage, IP65 rating, MIL-STD-D38999 Connectors, 18~36V DC-IN, Extreme Rugged operating temperature -20~+60°C

4.   I/O Placement

5. Dimensions

281

432.05

138.17

SSD

Secure Erase

COMS Battery

SSD1

SSD2

X5   X6   VGA

X1   X2   X3   X4

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