AVR800-X1A

Edge AI Inference Tesla T4 & Xeon®D-2183IT

MIL-STD 810

MIL-STD 461/1275

- Ultra-High Performance Intel® Xeon® D-2183IT (2.20GHz, 16 cores, 32 threads)
- NVIDIA TELSA T4 GPU Integrated (2560 CUDA, 16GB GDDR6)
- Up to 256GB DDR4 ECC RDIMM
- NVMe for Fast & Mass Storage
- MIL-STD-810 Temperature, Shock, Vibration, MIL-STD-810 Salt Fog
- MIL-STD 461 EMI/EMC; MIL-STD 1275

Features

Edge AI Inference, NVIDIA Tesla T4 & INTEL XEON D-2183IT

AVR800-X1A is 7STARLAKE ruggedized AI inference platform specifically designed for NVIDIA® Tesla T4 and supports Intel® XEON Skylake DE processor. Utilizing 7STARLAKE' s Open Modular, Scalable Architecture, AVR800-X1A provide optimized cooling solution for Tesla T4, ensure the stable system operation in harsh environments. In addition to Tesla T4, AVR800-X1A provides one M.2 NVMe slot for fast storage access. Combining stunning inference performance, powerful CPU and expansion capability, it is the perfect ruggedized platform for versatile edge AI applications.

AVR800-X1A ruggedized AI inference platforms designed for advanced inference acceleration applications such as voice, video, image and recommendation services. It supports NVIDIA® Tesla T4 GPU, featuring 8.1 TFLOPS in FP32 and 130 TOPs in INT8 for real-time inference based on trained neural network model.

SPECIFICATIONS

GPU Architecture	**NVIDIA Turing**
NVIDIA Turing Tensor Cores	**320**
NVIDIA CUDA® Cores	**2,560**
Single-Precision	**8.1 TFLOPS**
Mixed-Precision (FP16/FP32)	**65 TFLOPS**
INT8	**130 TOPS**
INT4	**260 TOPS**
GPU Memory	**16 GB GDDR6 300 GB/sec**
ECC	**Yes**
Interconnect Bandwidth	**32 GB/sec**
System Interface	**x16 PCIe Gen3**
Form Factor	**Low-Profile PCIe**
Thermal Solution	**Passive**
Compute APIs	**CUDA, NVIDIA TensorRT™, ONNX**

Features

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.

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

AVR800-X1A 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. AVR800-X1A is 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.

Specifications

System	
Processor	Intel® Xeon® Processor D-2183IT (Frequency 2.20GHz, Turbo Boost Frequency up to 3.00GHz), 16-Core, 32 Thread Support, 22MB Smart Cache.
Memory type	4 x DIMMs Up to 256GB ECC RDIMM DDR4 2400MHz
Chipset	SoC, integrated with CPU
GPU	
NVIDIA	TESLA T4
Turning Tensor Cores	320
CUDA Cores	2560
Memory	16 GB GDDR6, 300 GB/sec
Graphics Output	
1x VGA	ASPEED AST2500
Resolution	Up to 1920x1200@60Hz 32bpp
Storage	
HDD/SSD	1x M.2 2280 M key NVMe socket (PCIe Gen3 x4) for NVMe SSD installation 2 x 2.5" SATA SSD (Easy Swappable)
Side I/O	
X1 (2 x 10GbE Ethernet)	1x Amphenol TV07RW-13-35S (22PIN)
X2(VGA)	1 x Amphenol TV07RW-13-98S(10PIN)
X3(USB3.0x2)	1 x Amphenol TV07RW-13-35SB(22PIN)
X4 (DC-IN)	1 x Amphenol TV07RW-13-04P (4PIN)
Button	1 x Power Switch with Dedicated LED
SSD Tray	2 x Dual 2.5" HDD/SSD Easy Swap Tray
Dedicated LED	1 x Red LED (OVHT) ,1 x Green LEDs (SSD)
Power Requirement	
Power Input	DC-DC 18 to 36V (300W max) MIL-STD 461

Applications, Operating System

Applications	C4ISR, Commercial and Military Platforms Requiring Compliance to MIL-STD-810 Process Control, 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(W x D x H)	400 x 311 x 155mm (15.74" x 12.24" x 6.10")
Weight	15Kg (33.06lbs)
Chassis	Aluminum Alloy, Corrosion Resistant
Finish	Anodic aluminum oxide
Cooling	Natural Passive Convection/Conduction Cooling. No Moving Parts
Ingress Protection	IP65

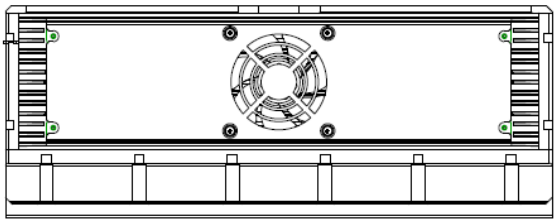
Environmental

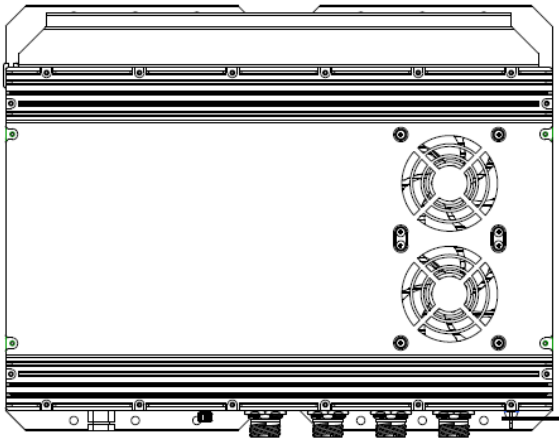
Operating Test	MIL-STD-810 Test	
Low air pressure	Method 500.5 Procedure II	Operation/Air Carriage 4572m (15.000 ft)
Low Temperature	Method 502.5 Procedure 2	-20°C, 4 hours, ±3°C
High Temperature	Method 501.5 Procedure 2	+55°C, 4 hours, ±3°C
Humidity	Method 507.5	85%-95% RH without condensation, 24 hours/ cycle, conduct 10 cycle.
Vibration	Method514.6 Category 24	5-500Hz, Vertical 7.7Grms, 40mins x 3axis.
Shock	Method 516.6	20 Grms, 11ms, 3 axes.

Non-Operating Tests

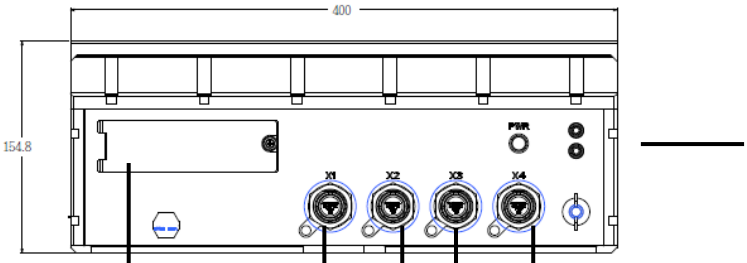
Low Temperature Storage	Method 502.5	-33°C, 4 hours, change rate:≦20°C/ Hour -15°C, 72hours (By request)
High Temperature Storage	Method 501.5 Procedure 1	+71°C, 4 hours, change rate:≦20°C/ Hour +68°C, 240 hours (By request)
Vibration	Method 514.6	5-500Hz, Vertical 2.20Grms, 40mins x 3axis.
Shock	Method 516.6	20 Grms, 11ms, 3 axes.
Salt Fog	Method 509.7	Salt Spray (50±5)g/L
EMC compliance	MIL-STD-461 : CE102 basic curve, 10kHz - 30 MHz RE102-4, (1.5 MHz) -30 MHz - 5 GHz RS103, 1.5MHz to 18GHz, 50V/m equal for all frequencies EN 61000-4-2: Air discharge: 8 kV, Contact discharge: 6Kv EN 61000-4-3: 10V/m EN 61000-4-4: Signal and DC-Net: 1 kV EN 61000-4-5: Leads vs. ground potential 1kV, Signal und DC-Net: 0.5KV EN 55022, class A As per Ground Army (Options) CS101, CS114, CS115,CS116 CE106, RE103,RS101 MIL-STD-1275: Steady State – 18V~33V Surge Low – 18V/500ms Surge High – 100V/500ms Emitted spikes Injected Voltage surges Emitted voltage surges Voltage ripple (2V) Voltage spikes Starting Operation Reverse polarity	
Operating Temperature	-20°C to 55°C	
Storage Temperature	-40°C to 85°C	

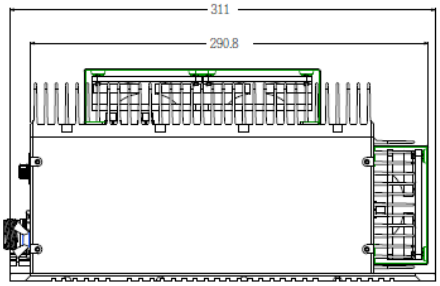
Appearance & Dimension





Screws M5x 0.8 around the bottom case.





2 x Easy swappable HDD tray

10GbE x2

USB x 2

VGA x1

DC in