



# AV800-X1A

EDGE AI INFERENCE TESLA T4 &

XEON® D-2183IT



- Ultra-High Performance Intel® Xeon® D-2183IT (2.20GHz, 16 cores, 32 threads)
- NVIDIA TESLA 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<br>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<br>2 x 2.5" SATA SSD (Easy Swappable) |
|---------|--------------------------------------------------------------------------------------------------------------|

### SIDE I/O

|                             |                                           |
|-----------------------------|-------------------------------------------|
| X1<br>( 2 x 10GbE Ethernet) | 1x Amphenol TV07RW-13-35S (22PIN)         |
| X2(VGA)                     | 1 x Amphenol TV07RW-13-35S (22PIN)        |
| X3(USB3.0x2)                | 1 x Amphenol TV07RW-13-35S (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, where Harsh Temperature, Shock, Vibration, Altitude, Dust and EMI Conditions.                                                                             |
| Operating System | Windows 8.1 Enterprise, Windows 10 64Bit, Windows Server 2012 R2, Windows Server 2016, Windows Server 2019, Hyper-V Server 2016 R2, Ubuntu16.04/17.10/18.04.1, 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 284 x 180mm (15.74" x 11.18" x 7.08")                    |
| 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

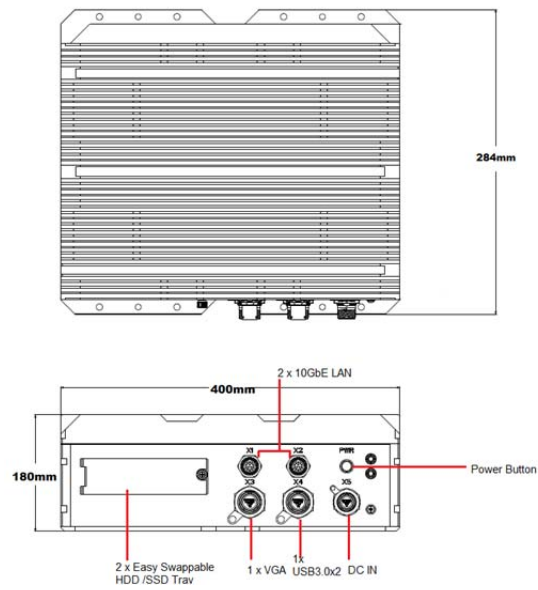
### Operating Test MIL-STD-810 Test

|                  |                              |                                                                     |
|------------------|------------------------------|---------------------------------------------------------------------|
| Low air pressure | Method 500.5<br>Procedure II | Operation/Air Carriage 4572m (15.000 ft)                            |
| Low Temperature  | Method 502.5<br>Procedure 2  | -20°C, 4 hours, ±3°C                                                |
| High Temperature | Method 501.5<br>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<br>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: $\leq 20^{\circ}\text{C}/\text{Hour}$ |
|                          |                                                                                                                                                                                                                                                                                                                                                                               | -15°C, 72hours (By request)                                        |
| High Temperature Storage | Method 501.5                                                                                                                                                                                                                                                                                                                                                                  | +71°C, 4 hours, change rate: $\leq 20^{\circ}\text{C}/\text{Hour}$ |
|                          | Procedure 1                                                                                                                                                                                                                                                                                                                                                                   | +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 $\pm$ 5)g/L                                         |
| EMC compliance           | MIL-STD-461 :<br>CE102 basic curve, 10kHz - 30 MHz<br>RE102-4, (1.5 MHz) -30 MHz - 5 GHz<br>RS103, 1.5MHz to 18GHz, 50V/m equal for all frequencies<br>EN 61000-4-2: Air discharge: 8 kV, Contact discharge: 6kV<br>EN 61000-4-4: Signal and DC-Net: 1 kV<br>EN 61000-4-5: Leads vs. ground potential 1kV, Signal und DC-Net: 0.5<br>EN 55022, class A<br>EN 61000-4-3: 10V/m |                                                                    |
|                          | Designed to Meet the following.<br>Options for testing (at additional cost):<br>CS101, CS114, CS115,CS116<br>CE106, RE103,RS101                                                                                                                                                                                                                                               |                                                                    |
|                          | MIL-STD-1275:<br>Steady State – 20V~33V<br>Surge Low – 18V/500ms<br>Surge High – 100V/500ms                                                                                                                                                                                                                                                                                   |                                                                    |
|                          |                                                                                                                                                                                                                                                                                                                                                                               |                                                                    |
| Operating Temperature    | -20°C to 55°C                                                                                                                                                                                                                                                                                                                                                                 |                                                                    |
| Storage Temperature      | -40°C to 85°C                                                                                                                                                                                                                                                                                                                                                                 |                                                                    |

## Appearance & Dimension



The image is for reference only.  
The final version may changes in enclosure.