AV701-X2

MultiGPU Server with 2x Nvidia P5000 & Xeon® E-2276ML

MIL-STD 461G

- SFF Rugged PCIe/104 computer with Intel® 9th Gen Xeon® E-2276ML CPU (6 cores, 4.2GHz)
- 2x NVIDIA® Quadro Embedded P5000 MXM GPU (2048 CUDA, 16GB GDDR5)
- DDR4-2666 Up to 128GB
- DC-DC 18V~36V, MIL-STD 461/1275
- MIL-STD 810 Shock up to 75Grms
- Operating Temp. -40℃~+55℃

STAR LAKE

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1. Key Feature

1.1. CPU GPU Platform – AI Training / Inference
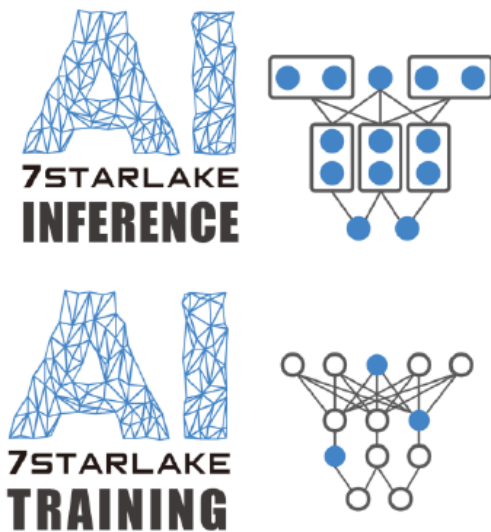
Artificial Intelligence (AI) is accelerating the tactical capability of the military more than ever before. Many new combat and weapons systems utilize embedded AI, making them more efficient and less dependent on human operation.

Furthermore, SWaP (Reduced Size, Weight, and Power) requirements are also impacting artificial intelligence design. Now and in the future, many military systems will be susceptible to SWaP-constraints, which challenge the assumptions of today's AI solutions. 7Starlake excels in designing unparalleled military computers for harsh environments. From polar regions to the desert, from jungle environments to high altitude, 7Starlake's rugged computers have the capability to withstand the operational environment. Tested to MIL-STD standards exacting levels of conformity, 7Starlake products can operate at full capacity in extreme conditions. 7Starlake believes in meeting 100% of our customers' expectations for the design, quality of build, and customer service levels in the supply of rugged and custom-built computer systems.

1.2. MIL-STD-810G & Full IP65 Protection

AV701-X2 is designed to meet strict SWaP requirements and to withstand harsh environments,   including extreme temperature, shock/vibration, sand/dust, and salt/fog. With ruggedized design and high functionality, the IP65 and MIL-STD resistance AV701-X2 is the ideal tactical vehicle on the battlefield.

1.3. Why does MIL-STD-461 matter

On the battlefield, where every second counts, a rugged HPEC connected to multiple sensors should be capable of tackling all affairs simultaneously in regard to processing a great amount of data identity, sorting data, and passing along the correct path. In this frame, EMC ability is undoubtedly indispensable. MIL-STD-461 testing offers an added layer of EMI protection for military systems and reassurance to military personnel that their systems won't be disrupted by EMI.

No matter what kind of robust CPU/GPU configuration a client requests, such as Intel XEON plus NVIDIA Quadro, or Intel Xeon Scalable paired with NVIDIA Tesla T4, TDW might become 500W even up to 1000W. That may present a big challenge for both power and thermal system design. Despite such challenges, the 7Starlake team continues to produce high-spec and unrivalled MIL-STD-461 computing systems by using the full range of EMI filter power modules. These include both the SK710 (10V-40V 150W) and SK711 (18V-36V 300W) which succumb to and pass the strictest and most rigorous EMI/EMS tests.

1.4. System main board: EBX SBC-OXY5741A
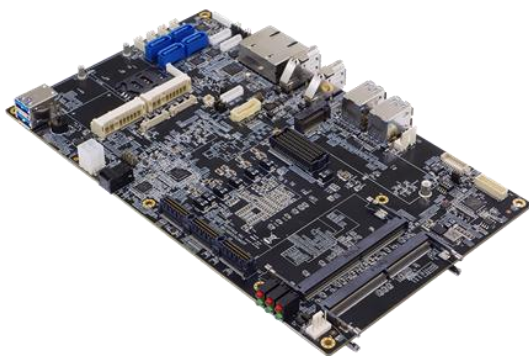
The 3.5 EBX SBC OXY5741A provides extraordinary computing performance under extreme environment. It is powered by 9th/8th Gen Intel® Xeon® / Core™. Featuring Intel's Xeon E-2276ML and ruggedized open-standard EBX architecture, 7Starlake EBX series is built tentatively and triumphs on environmental testing. It still operates effectively under harsh environments ranging from -40 to 85°C so that it is a perfect solution for defense, transportation, and automation applications. More key functions such as stackable PCIe/104 expansion ability, flexible I/O, and NVMe Gen 3.0 PCIex4 for fast and large capacity storage, all contribute to this versatile architecture that can meet clients' needs.

Choosing an embedded architecture for computer systems can be a formidable task. This kind of stackable and mezzanine architecture often results in tradeoffs that include off-the-shelf or custom design requirements. PCIe/104 compact, ruggedized, easily expandable traits support a lot of expansion flexibility in systems. This architecture evolved to address these resulting issues by keeping the common background while eliminating limitations. OXY5741 employs PCIe/104 technology to reduce constraints and create flexibility of expansion. Its M.2 extension offers M-key (M-Key 2280 optional), and PCIe 3.0 x 4 NVMe. Additionally, OXY5741 provides 3.0 ports for data redundancy by supporting RAID 0/1.
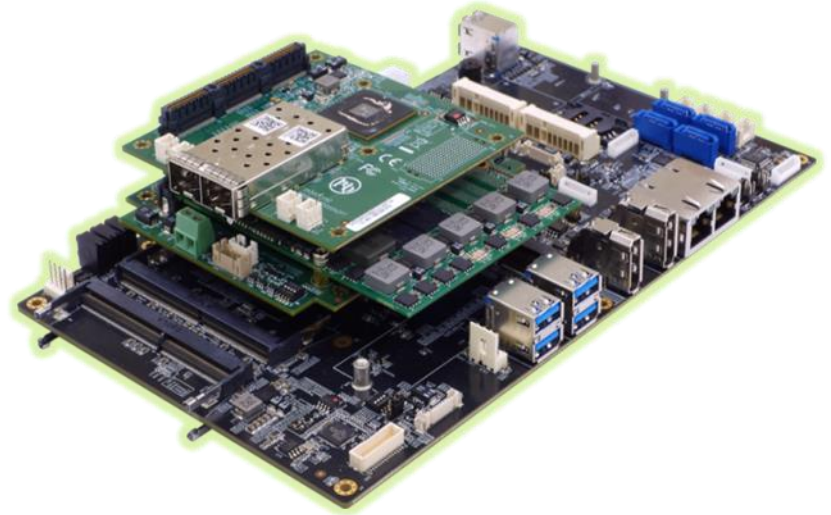
## 1.5. Intel® Xeon® E2200 Processor

Featuring improvements in processor speeds, higher core count options, expanded enclave capacities, and more, Intel Xeon® E-2200 processors deliver a significant impact, especially compared with hardware that is just a few years old. With up to a 2X overall performance increase, 1 compared to 2015 Intel® Xeon® E3-1200v5 processors, Intel Xeon® E-2200 processors deliver performance to manage today's most demanding entry server workloads and offer significant advantages over much of the existing installed base. Even compared to the prior generation of Intel Xeon® E-2100 processors, Intel Xeon® E-2200 processors deliver up to a 1.2X increase in performance.2 And both of these latest generations are pin compatible, and use the same Intel® 240 series chipsets.

1.6. Nvidia Quadro P5000

The Quadro P5000 workstation graphics card, powered by NVIDIA Pascal™ GPU technology, features 16 GB memory capacity and enables an expansive visual workspace with quad display outputs. Work with larger models, complex visual effects and simulations, larger rendering tasks, and more life-like VR experiences in your workflow today and be well prepared for the challenges of tomorrow.
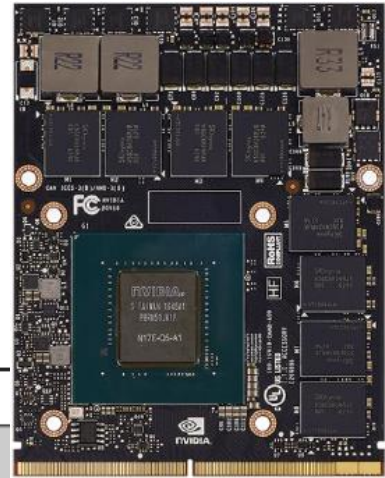
SPECIFICATION

GPU Architecture	NVIDA Pascal
Graphics Processing Unit	NVIDA Quadro Embedded P5000m
NVIDA CUDA Core	2048SP
Memory Size	16G 256 bit GDDR5
Graphics Clock	1278MHz/1582MHz(Boost)
Memory Clock	1502MHz(6.0 Gbps)
Single Precision FLOPS	6494 GFLOPS
Double Precision FLOPS	209.1 GFLOPS
Board Dimensions	MXM Graphics Module Version 3.1 Type B (105 X 82 mm)
Display Features	DP A: Display Port 1.3 DP B: Display Port 1.3 DP C: Display Port 1.3 DP D: Display Port 1.3
Board Power	112W
Operation System	Windows 10 64 bit、Linux 64bit
Operation Temperature	0° to 55° C

2. Specification

System

CPU	Intel® 9th Gen. Xeon E-2276ML (6 cores, 4.2GHz)
Memory type	4x SO-DIMM DDR4 2666MHz, up to 128GB

Display

GPU	2x NVIDIA Quadro P5000 GPU (2048 CUDA, 16GB GDDR5)

Storage

Storage 1	1x NVMe (M.2), Up to 2TB
Storage 2	1x mSATA, Up to 1TB

Ethernet

Ethernet	1x Intel® i210IT Gigabit LAN 1x Intel® i219LM Gigabit LAN

Front I/O

USB	2x USB, Rugged M12 connectors
Ethernet	2x LAN, Rugged M12 connectors
Serial port	2x COM, Rugged M12 connectors
DVI	3x DVI, Rugged M12 connectors
DC-IN Power	1x DC-IN 18V~36V, Rugged M12 connector

Power Requirement

Power Input	18V~36V DC-DC 300W

OS support list

OS	Windows 10, Window Server2016, Ubuntu 18.04 / 20.04

3. Dimension