

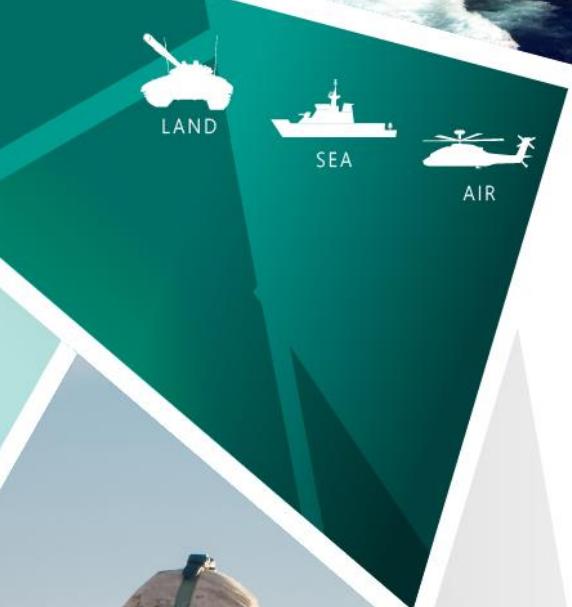


AV600V-GH

REFER 3/4 SHORT ATR (CUSTOMIZATION)



- Intel 9th Gen. Xeon E-2276ME (6 cores, 4.5GHz)
- High Memory Capacity DDR4- 128GB
- NVIDIA QUADRO MXM A4500 (16GB-GDDR6, CUDA 5888)
- MIL-STD 810 Anti-Vibration, Shock
- IP65 Rating with M12 Connectors
- Extreme Temperature -40~+60 degree
- MIL-461 18V~36V DC-DC 300W
- MIL-STD 810 500.6 Low Pressure Altitude



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1. INTRODUCTION_

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 810 & Full IP65 protection

AV600V-CH 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 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, 7Starlake team continues to product 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.

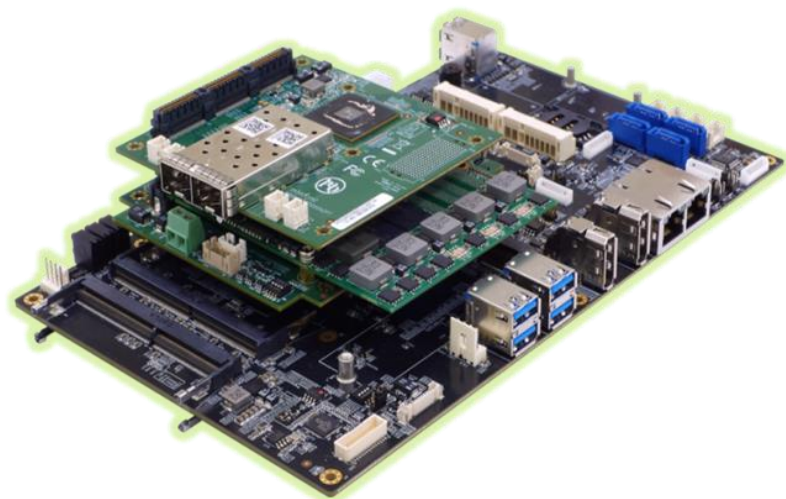
2. MAIN FEATURE

- **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-2276ME 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 PCIe4 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,



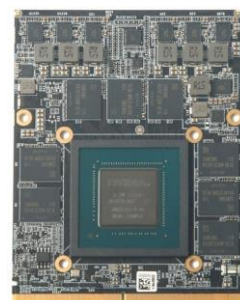
ruggedized , easily exp andable traits support a lot of expansion flexibility in systems. This architecture evolved to address these resulting issues by keeping the common background while eliminating limitations. OXY5741 employs PCIe/104 technology to reduce constraints and crea te flexibility of expansion. 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

- **NVIDIA MXM-GPU Quadro RTX A4500**

AV600V-CH support NVIDIA Quadro RTX A4500 which is equipped with the latest Ampere GPU architecture using the 7 nanometer (nm) chip process, third generation Tensor Cores with structural sparsity to improve AI performance. It is suitable for embedded, ruggedized, or mobile system designs. With its 5888 CUDA core Ampere GPU and additional 184 Tensors Cores and PCIe Gen4 x16 throughput, the EGXMXM-A4500 supports 4 FHD displays, delivering the latest leading-edge GPU performance for your embedded system with AI capabilities enabled. Its superior graphics performance, GPU computing and video capabilities are the ideal solution for systems such as digital signage, medical imaging, defense and aerospace applications.

Specification

GPU Architecture	NVIDIA Ampere
Graphics Processing Unit	NVIDIA Quadro A4500m
NVIDIA CUDA Core	5888
Bus Type	MXM3 .1 / up to PCI Express 4.0
Graphics Clock	1020MHz / 1575MHz (Boost)
Tensor Core	232
RT Core	58
Memory Size	16G 256bit GDDR6
Memory Clock	2000MHz (16.0 Gbps)
Board Power	130W
Board Dimensions	105x82mm
output Channel	4
DirectX / OpenGL / OpenCL	12 / 4.6 / 1.2



3. SYSTEM SPEC

SYSTEM

CPU	INTEL 9th Gen. Xeon E-2276ME (6 cores, 4.5GHz) INTEL 9th Gen. i7-9850HE (6 cores, 4.4GHz) °
Memory type	4 x SO-DIMM DDR4 2666MHz, up to 128G
Chipset	CM246
GPU	NVidia® RTX A4500, 5888 CUDA Cores, PCIe Gen4.0 x16
Display	LVDS, Resolution up to 1920x1200@60Hz Display port, Up to 4096 x 2304 @60Hz
Chipset	Intel® UHD Graphics 630
Ethernet Controller	Dual LAN with 10G LAN via Intel® X550 Quad LAN with Gigabit LAN via Intel®i350
LAN	4 x 1GBase-T , 2 x 10GBase-T LAN, 2 x 25GBase SFP-
Storage	1 x 2.5" SSD hot-swap, with AES function, up to 2TB 1 x 128GB NVMe M.2 2280 by PCIe, up to 2TB
Power Type	18V~36V DC Input
Dimension	250(W) x 325(L) x 111(H) mm

FRONT I/O

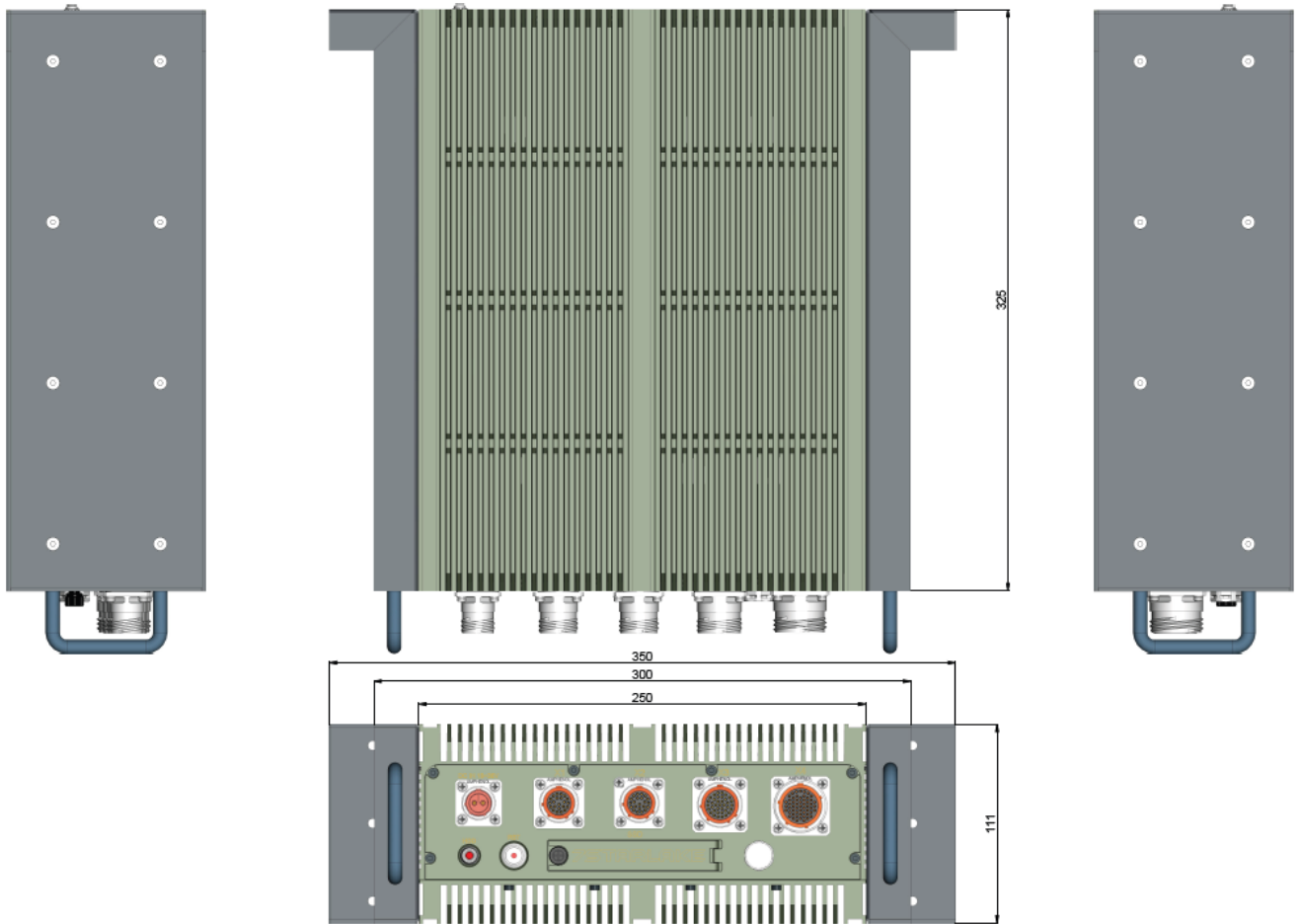
X1	DC-IN, with D38999 connector
X2	1 x DVI, with D38999 connector
X3	1 x DVI, with D38999 connector
X4	2 x 1GBase-T, RJ45 + 3 x USB2.0, with D38999 connector
X5	1 x RS232/422/485 + 1 x RS232 + 4 BIT DIO, with D38999 connector
	1 x IP65 Power button with LED indicator
	1 x SSD/HDD LED indicator
	1 x SSD swap tray

ENVIRONMENTAL

MIL-STD-810 Test	Method 500.5, Procedures I and II (Altitude, Operation): 12,192M, (40,000 ft) for the initial cabin altitude (18.8Kpa or 2.73 Psia) Method 500.5, Procedures III and IV (Altitude, Non-Operation): 15,240, (50,000 ft) for the initial cabin altitude (14.9Kpa or 2.16 Psia) Method 501.5, Procedure I (Storage/High Temperature) Method 501.5, Procedure II (Operation/High Temperature) Method 502.5, Procedure I (Storage/Low Temperature) Method 502.5, Procedure II (Operation/Low Temperature) Method 503.5, Procedure I (Temperature shock) Method 507.5, Procedure II (Temperature & Humidity) Method 509.7 Salt Spray (50±5)g/L
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	Method 514.6, Vibration Category 24/Non-Operating (Category 20 & 24,Vibration) Method 514.6, Vibration Category 20/Operating (Category 20 & 24,Vibration) Method 516.6, Shock-Procedure V Non-Operating (Mechanical Shock) Method 516.6, Shock-Procedure I Operating (Mechanical Shock)
Reliability	Conduction Cooling. Designed & Manufactured using ISO 9001 Certified Quality Program.
MIL-STD-461	CE102 basic curve, 10kHz - 30 MHz RE102-4, (1.5 MHz) -30 MHz - 5 GHz RS103, 200 MHz - 3.2 GHz, 50 V/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: 0.5 kV CE and FCC
MIL-STD-1275	Steady State – 20V~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 Temp.	-40°C to +60°C
Storage Temp.	-40°C to +85°C
Relative Humidity	5% to 95%, non-condensing.
OPERATING SYSTEM	
Operating System	Windows 10 64Bit, Linux by option
RoHS	RoHS compliant

4. DIMENSION



5. Order information

Model	AV600V-CX-A37	AV600V-CxE-A24	AV600V-CxE-A28
CPU	Xeon E-2276ME (6C)	Xeon E-2276ME (6C)	Xeon E-2276ME (6C)
Memory	128GB DDR4-2400 MHz	128GB DDR4-2400 MHz	128GB DDR4-2400 MHz
GPU	Intel® Arc A370M	NVidia® RTX A2000 4G	NVidia® RTX A2000 8G
Ethernet	2x 25GbE + 2x 10 GbE	4 PAL + 4 HD-SDI	4 PAL + 4 HD-SDI
Video Output	2x PAL 2x SDI	2x PAL 2x SDI	2x PAL 2x SDI
Storage	2x SATA III SATA SSD	2x SATA III SATA SSD	2x SATA III SATA SSD
I/O	2x RS232/485 2x USB 2.0 2x GbE (Option) 1x USB 3.0 1x DC	2x RS232/485 2x USB 2.0 2x GbE (Option) 1x USB 3.0 1x DC	2x RS232/485 2x USB 2.0 2x GbE (Option) 1x USB 3.0 1x DC
Power	18V~36V EMI DC-DC		
Dimension	250 x 350 x 100mm (W x L x H)		