



7SL-3500-CC

3 Slot 3U VPX Conduction Cooled ATR

VPX VITA 48 – Rugged Thermal Solution

- ▶ The 7SL-3500-CC VPX System is a modular Military Rugged ATR enclosure, geared for 3U OpenVPX designs. The versatile design allows multiple customizable configurations based on proven components and design techniques. 7SL-3500-CC Hybrid conduction cold plate assisted by forced air sets with aggregate power demands over 300W.
- ▶ Standard 3 slot backplanes with VPX and SOSA aligned slot profiles in combinations supporting high speed signal processing applications.
- ▶ Scalable to Multi CPU-GPU requirement

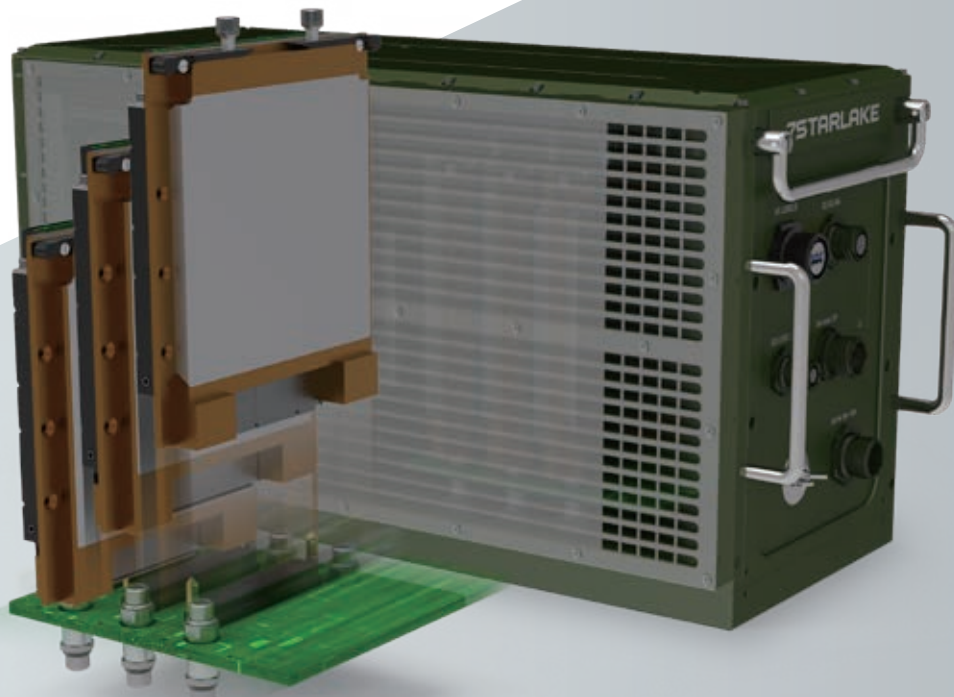
Features

- ▶ 3 Slot –3 Payload
- ▶ Intel i7-1185GRE
- ▶ NVIDIA MXM RTX A2000 (2560 CUDA)
- ▶ 28V DC Input
- ▶ 250W/300W Conduction cooled by forced Air cooled.
- ▶ Design to Meet MIL-STD-810 MIL-STD-901D
- ▶ Custom backplanes with VPX and SOSA aligned slot profiles
- ▶ Custom I/O options including MIL-STD Wiring & Connectors
- ▶ Hybrid Conduction Cooled
- ▶ Heat Exchanger Sidewalls
- ▶ Extreme Temperature -40°C to 60°C

7SL-3500-CC2	2 Payload (1-Xeon, 1-GPU)	250W Conduction Cooled
7SL-3500-CC3	3 Payload (1-Xeon, 2-GPU)	300W Forced-Air Cooled



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7SL-3500-CC



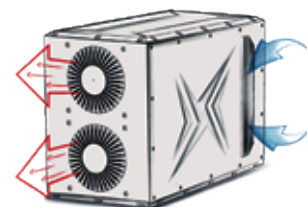
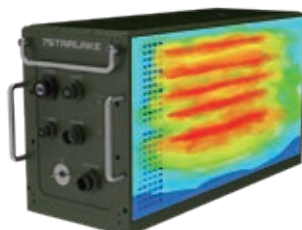
7SL-3500-CC 3U-VPX Introduction

7STARLAKE scalable and customizable, rugged VPX ATR System enables compute-intensive, SWaP constrained mission-critical applications for deployment in the world's most demanding military and aerospace environments

7SL-3500-CC2	2 Payload (1-Xeon, 1-GPU)	250W Conduction Cooled
7SL-3500-CC3	3 Payload (1-Xeon, 2-GPU)	300W Forced-Air Cooled



SLOTS	7SL-3500-CC2	7SL-3500-CC3
WIDTH	190mm	
HEIGHT	269mm	
DEPTH	389.5mm	
WEIGHT	19kg	20kg
PAYLOAD THERMAL TYPE	Conduction cooled by Force-Air cooled	
MAX. PSU POWER	250W	300W
PSU V-INPUT	28 VDC (10V~40V) MIL-461/1275/704	
STD BACKPLANE	VPX 3U 1" pitch backplanes	
SLOT/BOARD FORMAT	Conduction-cooled slots only for conduction-cooled ANSI-VITA 48.2 wedge-lock boards	





250W Payload by
Conduction Cooled



Conduction Cooled

Conduction cooled SBC have traditionally been deployed in applications where heat evacuation with an airflow is impractical.

- ▶ As the most common heat-transfer device available, heat pipes can manage the transfer of heat between two solid interfaces effectively. Combining the advantages of thermal-conductivity and phase transition, heat pipes are extremely light-weight compared with traditional cooling methods,
- ▶ For the highest thermal dissipation and thermal density, heat pipes can be very effective in conduction cooled environments.
- ▶ The heat pipes are embedded in a symmetrical topology from the sidewall, allowing the assembly to be less sensible to gravity or acceleration
- ▶ This technique, not only improves thermal performance, but also helps to sustain a high level of shock and vibration by providing a rigid frame to attach the board at multiple points.

7Starlake Advanced Thermal Solutions

From ships at sea to high-altitude Drone, 7Starlake 3U VPX system enable electronics survivability in the harshest environments. As an ever-increasing number of data acquisition methods are utilized in military and aerospace, the need to convert that rising data tide into precise, real-time action only escalates. Applications like object targeting , ground vehicles tracking, thermal image monitoring, and multiple simultaneous sensors feeds. When a wealth of such sources need aggregation and immediate analysis, potentially with graphical visualization output to any number of displays, VPX-based systems can ensure proven solutions

Specification

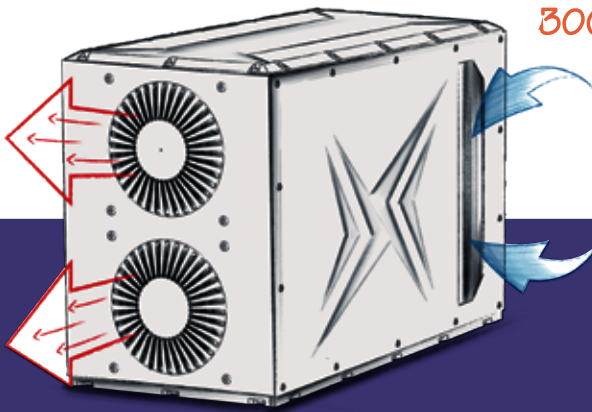
Physical	Backplane
Dimensions: 10.6" (H), 7.5" (W) x 15.3" (D) incl. handles and connectors 269mm x 193mm x 496mm including connectors and mounting plate Machined aluminum alloy 6061-T6, bolt together construction Weight: Approximately 38lbs, no payload boards	VPX aligned slot profiles 10GBase KR4 capable VITA 48.2
I/O Capabilities	Thermal
Custom I/O panel supporting high speed connectivity High density MIL-STD 38999 circular connectors Rugged SMA connectors for RF and optical I/O	Operating: -40°C to 60°C Conduction Cooled by sink
Payload Compatibility	Power Supply
3U VPX multi-core single board computers, high speed GPGPU modules, video processing and Ethernet switching	Input voltage: 18 to 36 VDC Output: up to 300W total
	Environmental
	Designed to meet MIL-STD-810

Conduction Cooled 7SL-3500-CC

7SL-3500-CCx

3 Payload

Conduction cooled
by force-Air cooled

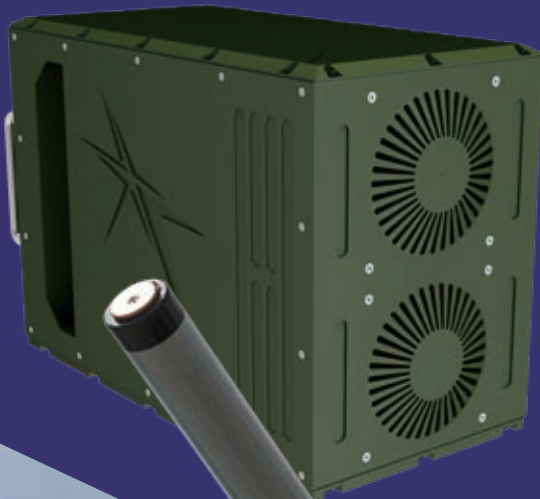


300W Payload by Conduction Cooled

	Thermal	Passive	Conduction Cooled by Forced Air
7SL-3500-CC2	Compute Node	2	1 x CPU 1 x GPU
	Max PSU	250W	28VDC
7SL-3500-CC3	Compute Node	3	1x CPU 2x GPU
	Max PSU	300W	28VDC
	NIC	1	1x 1G
	Backplane	3	3-Payload
	Operation Temp.	-40°C to 60°C	

Force Air Conduction Cooled

- ▶ 7SL-3500 Hybrid conduction cold plate assisted by forced air sets with aggregate power demands over 300W
- ▶ Internal recirculation fans ensure dry air is forced across conduction or air-cooled payload modules, minimizing hot-spots and dissipating heat homogeneously



Specification

Physical

Dimensions: 10.6" (H), 7.5" (W) x 15.3" (D) incl. handles and connectors 269mm x 193mm x 496mm including connectors and mounting plate Machined aluminum alloy 6061-T6, bolt together construction Weight: Approximately 38lbs, no payload boards

I/O Capabilities

Custom I/O panel supporting high speed connectivity
High density MIL-STD 38999 circular connectors
10GBase KR4 capable
Rugged SMA connectors for RF and optical I/O

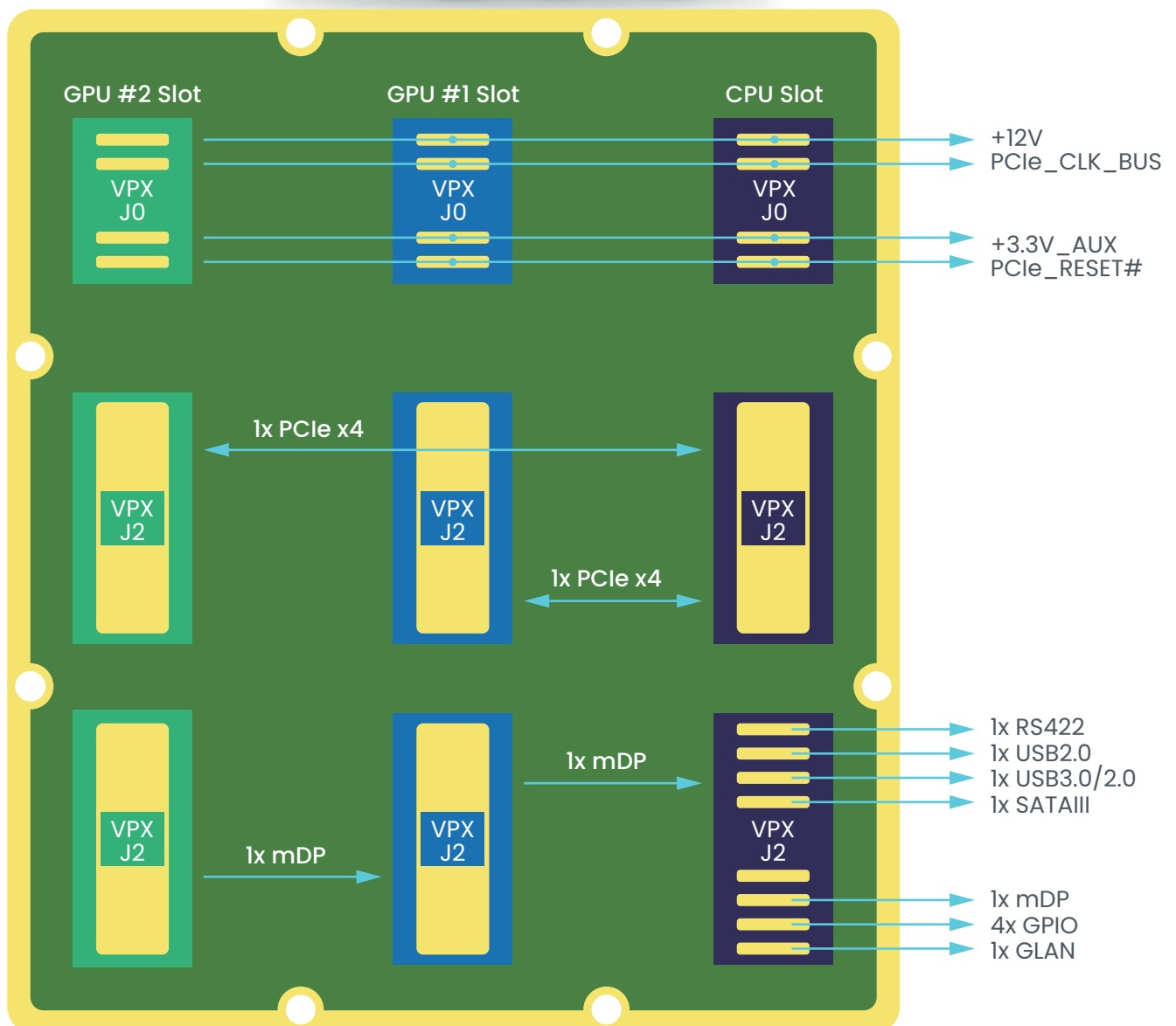
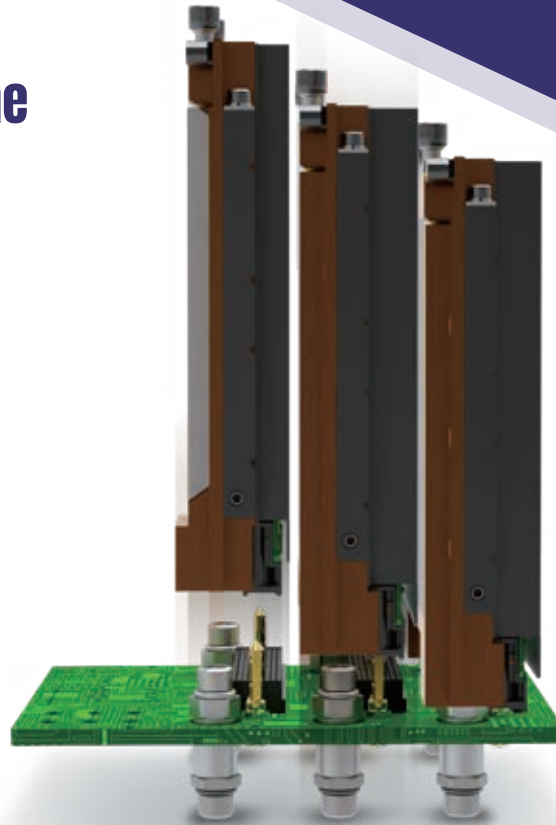
Payload Compatibility

3U VPX multi-core single board computers, high speed GPGPU modules, video processing and Ethernet switching

Backplane	Environmental
VPX aligned slot profiles VITA 48.8	Designed to meet MIL-STD-810

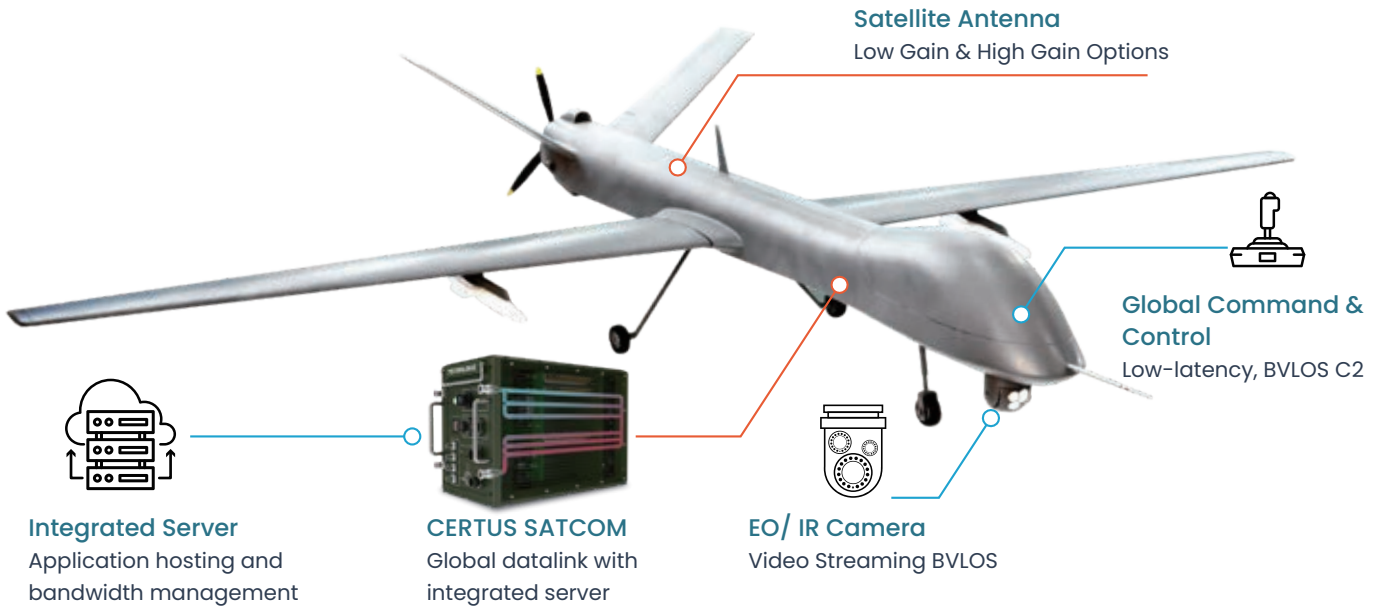
Thermal	Power Supply
Operating: -40°C to 60°C 2 x high cfm fans	Input voltage: 9 to 36 VDC Output: up to 300W total

3 Slot Backplane

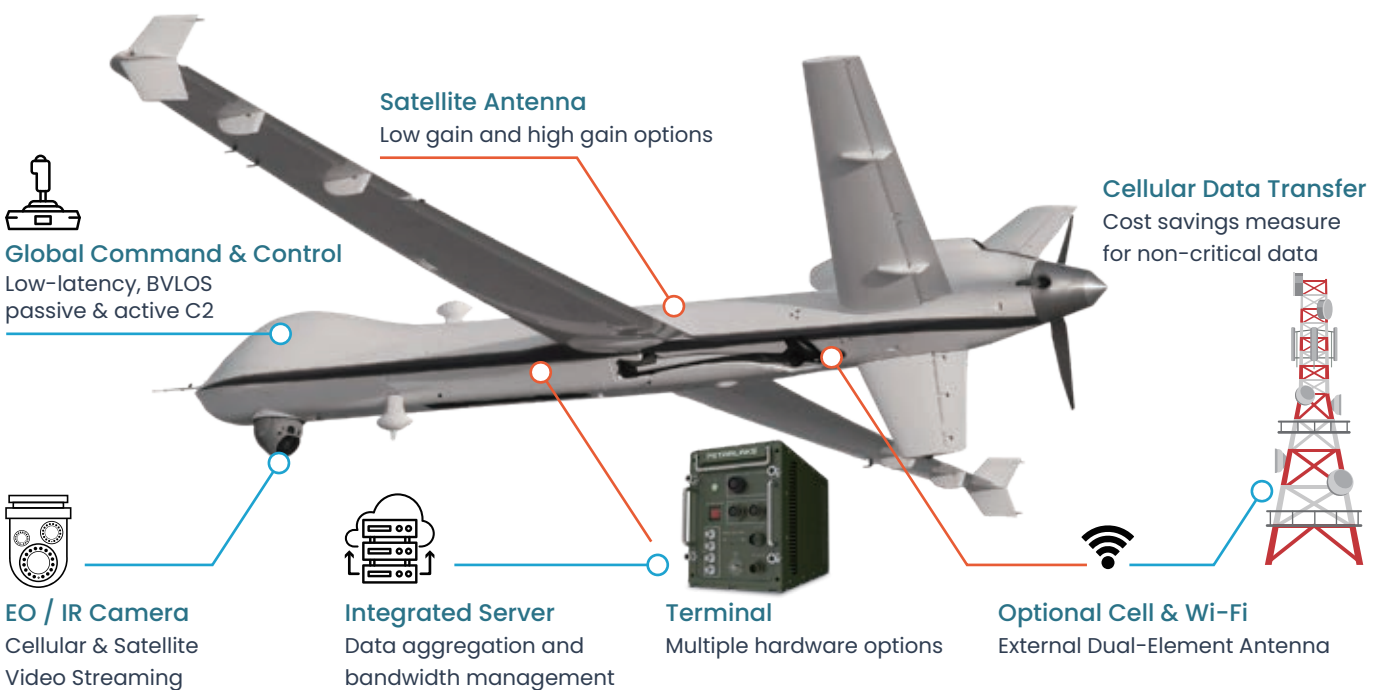


Typical Application 7SL-3500-CC

Quad 12G-SDI Video Over IP



Software Defined Radio System



3U VPX GPU List

SK901-AD5000 Spec & Block Diagram

VPX GPGPU CARD

VPX GPU

NVIDIA RTX 5000Ada GPU: Ada Lovelace Architecture

Interface

- ◆ 3U VPX Form Factor
- ◆ 1" Pitch (Conduction Cooled)
- ◆ PCIe Gen 4 (x4 or x8 support)

Graphics Processor

- ◆ NVIDIA RTX 5000 Ada GPU DirectX 12, OpenGL 4.6, Vulkan 1.3

Graphics Memory

- ◆ 16GB GDDR6 with ECC
- ◆ 256-bit Memory Interface
- ◆ 576GB/s Memory Bandwidth

GPU Capabilities

- ◆ 9,728 CUDA Cores, 304 Tensor Cores, 76RT Cores.
- ◆ Up to 41.15 TFLOPS SFP32 Single Floating Point Performance
- ◆ Support CUDA, CUDA-X, OpenCL™ and Shader Model 6.7

HIGH-SPEED DATA TRANSFER

VPX GPU

9,728 CUDA Core, 304 Tensor & 76RT Cores

Shock (MIL-STD-810)

40g

Vibration (MIL-STD-810)

3g rms

Power

3.3Vaux, 12V VSS
(115W)

Humidity (MIL-STD-810)

95% without
Condensation

SOSA ALIGNED SOLUTION

VPX GPU

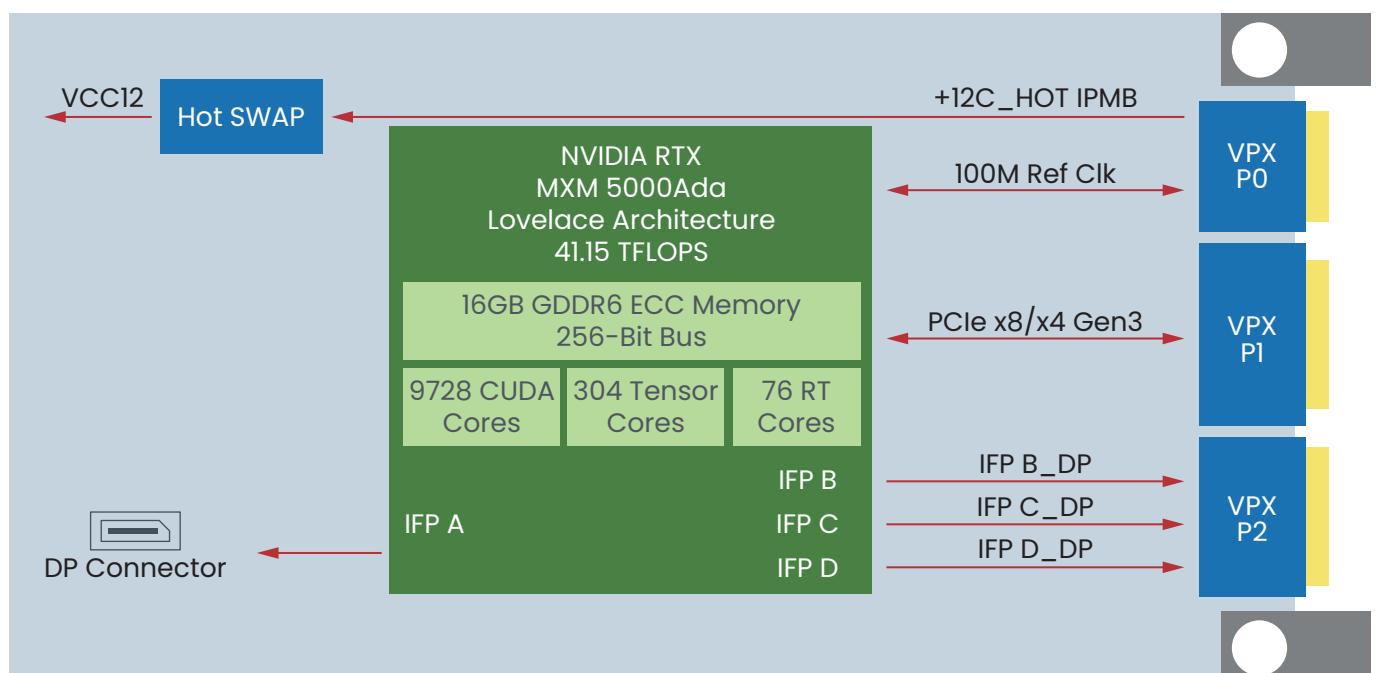
Available with SOSA™-aligned Slot profiles and vita standard

Display Outputs

- ◆ One Display Port internal
- ◆ Three Display Ports active output

Software & Platform Support

- ◆ Windows or Linux on X86



3U VPX GPU List

SK901-A4500 Spec & Block Diagram

VPX GPGPU CARD

VPX GPU

NVIDIA Ampere™ Architecture: RTX A4500 GPU

Interface

- ◆ 3U VPX Form Factor
- ◆ 1" Pitch (Conduction Cooled)
- ◆ PCIe Gen 4 (x4 or x8 support)

Graphics Processor

- ◆ NVIDIA RTX A4500 GPU
- ◆ DirectX 12, OpenGL 4.5, and Vulkan 1.2

Graphics Memory

- ◆ 16GB GDDR6 with ECC
- ◆ 256-bit Memory Interface
- ◆ 512GB/s Memory Bandwidth

GPU Capabilities

- ◆ 5,888 CUDA Cores, 184 Tensor Cores, 46RT Cores.
- ◆ Up to 17.66 TFLOPS SFP32 Single Floating Point Performance
- ◆ Support CUDA, CUDA-X, OpenCL™ and Shader Model 5.1

AI & DEEP LEARNING

VPX GPU

5,888 CUDA cores, 184 Tensor & 46RT Cores

Vibration (MIL-STD-810)

3g rms

Shock (MIL-STD-810)

40g

Power

3.3V, 5V, and 12V
(80 - 115W)

Humidity (MIL-STD-810)

95% without
Condensation

HIGH PERFORMANCE EMBEDDED COMPUTING

VPX GPU

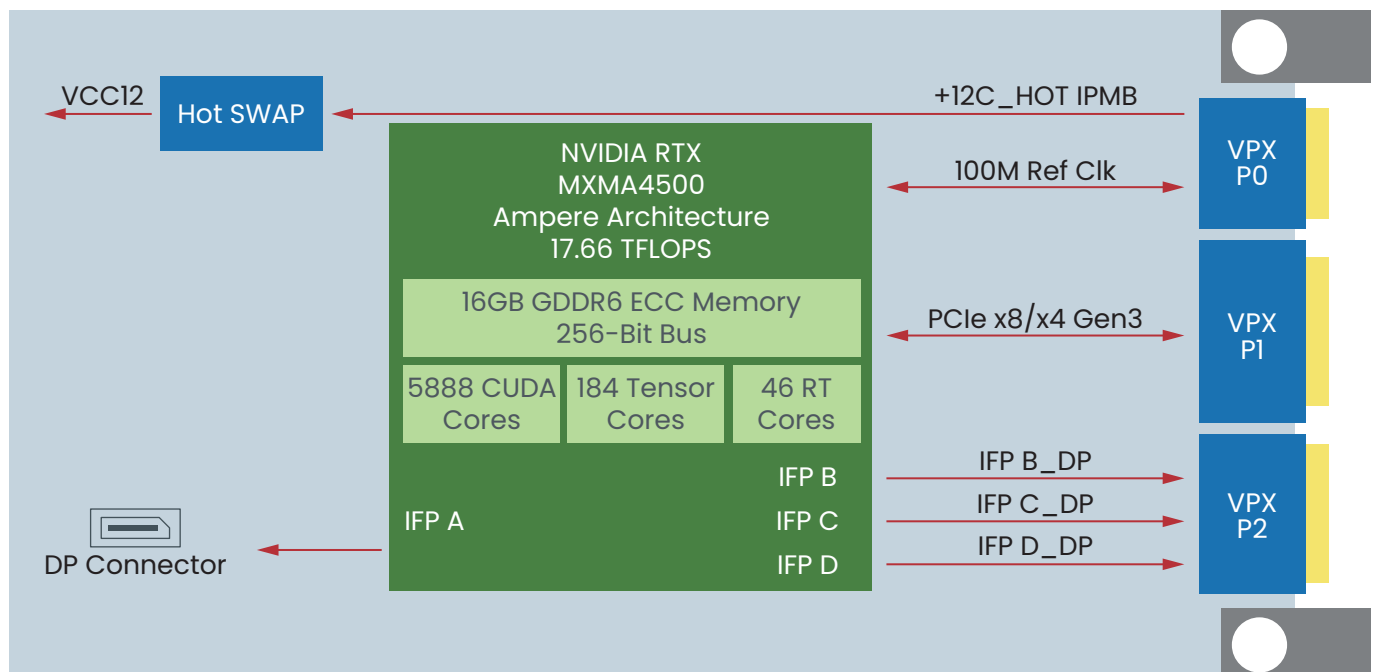
AI inferencing, deep learning

Display Outputs

- ◆ One Display Port internal
- ◆ Three Display Ports active output

Software & Platform Support

- ◆ Windows or Linux on X86

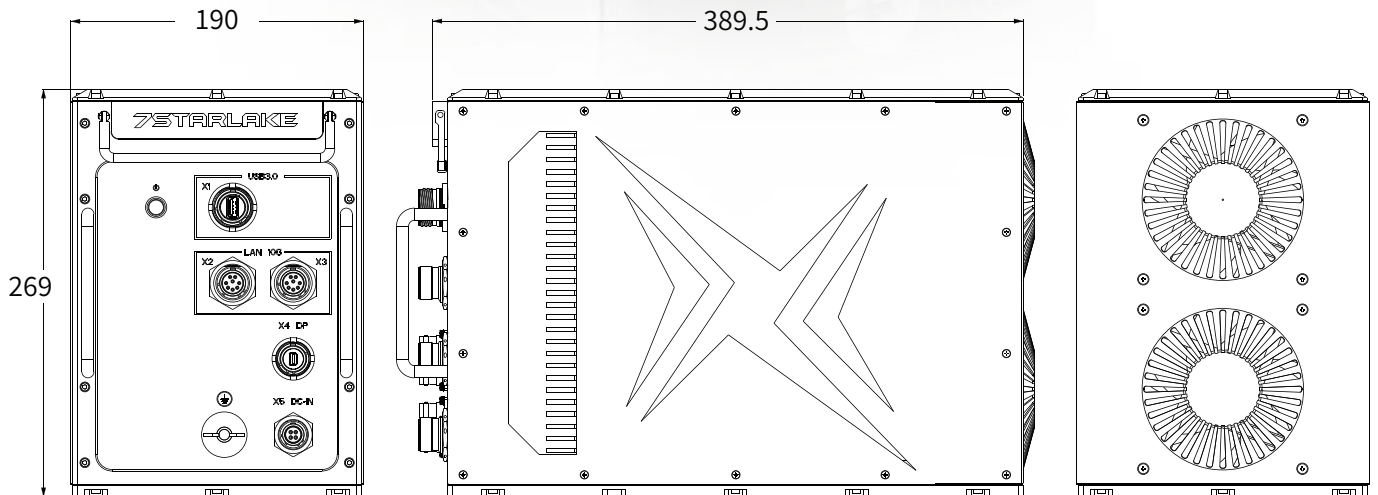


System SPEC

Memory	Up to 32 GB DDR4-2666 soldered with IB ECC		
CPU	Intel® i7-1185GRE processor (formerly Tiger Lake-U), Up to 4 cores (TDP 28W)		
GPU option 1	1x NVIDIA RTX A2000, 8GB GDDR6, 2560 CUDA		
GPU Option 2	2x NVIDIA RTX A2000, 8GB GDDR6, 2560 CUDA		
BIOS	Dual 256Mbit SPI flash		
OS	Windows 10 64bit (180921H2), Linux (RHEL 8.6U 20.04.4)		
Application	Military Platforms Requiring Compliance MIL-STD-810G Embedded Computing and applications subject to Harsh Temperature, Shock, Vibration, Altitude, Dust and EMI Conditions.		
Storage	1x M.2 2242 on top side (M-key)		
Environment	Front I/O (D38999)	X1	1x USB3.0
Power Requirement	18V~36V DC-IN	X2	1x GLAN
Dimension	190 x 269 x 389.5mm	X3	1x USB2.0
Weight	Max. 20kg	X4	1x Mini-DP
Storage Temp	-40°C to 60°C	DC-IN	1x
Relative Humidity	5% to 95%, non-condensing	GND	1x
MIL-STD-810 Test	<ul style="list-style-type: none"> ▶ Method 501.5, Procedure I (Storage/High Temperature) ▶ Method 502.5, Procedure I (Storage/Low Temperature) ▶ Method 503.5, Procedure I (Temperature shock) ▶ Method 509.7 Salt Spray (50±5)g/L ▶ Method 501.5, Procedure II (Operation/High Temperature) ▶ Method 502.5, Procedure II (Operation/Low Temperature) ▶ Method 507.5, Procedure II (Temperature & Humidity) ▶ 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) 		




Appearance/Dimension/ Drawing Diagram





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