

U-C5300

SOSA™ Aligned - GPGPU 3U VPX AI Board



SOSA aligned U-C5300 multi-head GPGPU is the most powerful AI (Artificial Intelligence) enabled 3U VPX GPGPU board, providing remarkable performance in a compact and rugged form factor.

Available with powerful NVIDIA GPU options based on latest Turing architecture, the U-C5300 is ideally suited for AI Delivery, Video Analytics, Image Processing, and many other applications.

The RTX3000 includes 1920 CUDA Cores for parallel processing, 240 Tensor Cores for AI inference and 30 RT Ray-Tracing Cores for real time rendering.

POWERED BY



RuggedAI™ is Aitech

- Rugged SOSA aligned 3U VPX Form Factor
- NVIDIA® Quadro® GPU Options
 - ▶ NVIDIA® Quadro® RTX3000
 - Turing™ Architecture
 - 1920 CUDA® Cores
 - 30 RT Cores
 - 240 Tensor Cores
 - 5.3 TFLOPS (FP32)
 - 6 GB GDDR6
 - 80 W Max Power
 - ▶ NVIDIA® Quadro® T1000
 - Turing™ Architecture
 - 896 CUDA® Cores
 - 50 W Max Power
 - 2.6 TFLOPS (FP32)
 - 4 GB GDDR6
- Vulkan, CUDA®, OpenCL, OpenGL, DirectX 12
- Video Output
- PCIe x 4/8/16 Gen3 Host Interface
- OpenVPX Compliant
- Windows®, Linux® Support
- 2LM Option per VITA 48.2
- Conduction and Air Flow Through
- Vibration and Shock Resistant

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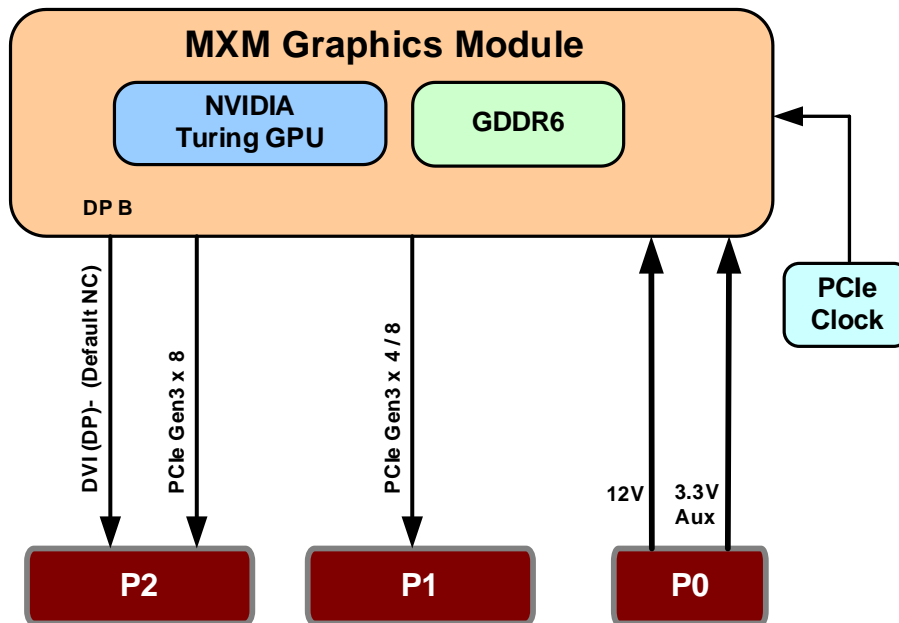


The parallel processing capabilities of today's multi-core GPUs make them ideal for both non-graphics and graphics applications with intensive computation requirements. Aitech's U-C5300 General Purpose AI GPU (GPGPU) board provides these capabilities, as well as high-performance graphics rendering capabilities and multiple video output channels, in a rugged 3U VPX form factor.

In addition to the increased throughput offered by parallel processing, GPGPU computing also allows the CPU and OS to remain responsive even when the system is under a heavy load, by offloading the intensive operations to the GPU. GPGPU application development can be performed on a standard PC that is equipped with a GPU of the same architecture.

The U-C5300 hosts an MXM GPU module (standardized GPU form factor), and new configurations of the U-C5300 are released as higher-performance MXMs become available. The U-C5300 currently supports the NVIDIA® Quadro® RTX3000 and NVIDIA® Quadro® T1000 GPUs.

The U-C5300 operates as a peripheral board with a compatible x86 VPX host SBC, such as Aitech's C875 (8th Gen. Intel® Xeon® E), and C877/U-C8770 (Intel® Xeon® D) 3U VPX SBCs. The U-C5300 and the host SBC interconnect over the VPX backplane, via a high speed PCIe Gen3 link of up to 16 lanes.



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Note - See more details in "SOSA Profile" section

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Board Architecture

MXM Site	Supports a single MXM 3.1 Type B/Type A module
MXM GPU	<ul style="list-style-type: none">• NVIDIA® Quadro® RTX3000 Option<ul style="list-style-type: none">▪ Turing Architecture▪ 6 GB GDDR6▪ 1920 CUDA Cores▪ 30 Ray-Tracing RT cores▪ 240 Tensor Cores▪ 5.3 TFLOPS (FP32)▪ 336 GB/s memory bandwidth▪ 192-bit Memory Interface Width• NVIDIA® Quadro® T1000 Option<ul style="list-style-type: none">▪ Turing Architecture▪ 4 GB GDDR6▪ 896 CUDA Cores▪ 2.6 TFLOPS (FP32)▪ 192 GB/s memory bandwidth▪ 128-bit Memory Interface Width• CUDA, CUDA Compute, OpenCL, OpenGL, DirectX 12, Vulkan• Dynamic clock frequency
PCIe Interface	<ul style="list-style-type: none">• PCIe x16 Gen3 port for connection to host SBC over the VPX backplane• 100 MHz PCIe reference clock generated on-board
SOSA Profile	<p>The PCIe interface supports the following SOSA slot profiles:</p> <p>SLT3-PAY-1F1U1S1S1U1U2F1H-14.6.11-0 3U Payload (Full-P) F2C - Conduction cooled, 1" pitch (PCIe to P1 expansion plan, P2 depopulated) P3F - PCIe-Gen 3 (x4) MODA3™ - 16.6.11-1-0-F2C-(NN)(P3F-N)(N)(NN)[N]<N></p> <p>F8H - Air-Flow Through cooled, 1.5" pitch (PCIe to P1 expansion plan, P2 depopulated) P3F - PCIe-Gen 3 (x4) MODA3™ - 16.6.11-1-0-F8H-(NN)(P3F-N)(N)(NN)[N]<N></p> <p>SLT3-PAY-1F1U1S1S1U1U2F1H-14.6.13-0 3U Payload (Half-P) F2C - Conduction cooled, 1" pitch (PCIe to P1 expansion plan, P2 depopulated) P3D - PCIe-Gen 3 (x8) MODA3™ - 16.6.13-1-0-F2C-(NN)(P3D-N)(N)(N)[N]<N></p> <p>F8H - Air-Flow Through cooled, 1.5" pitch (PCIe to P1 expansion plan, P2 depopulated) P3D - PCIe-Gen 3 (x8) MODA3™ - 16.6.13-1-0-F8H-(NN)(P3D-N)(N)(N)[N]<N></p>

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Variants

	Variants				
	A0	A1	A2	A3	A4
SOSA Profile	14.6.11-0		14.6.13-0		Custom
SOSA Profile Description	3U Payload (Full-P)		3U Payload (Half-P)		3U Payload Custom
AMPS Depth, Cooling, Pitch dash option	F2C	F8H	F2C	F8H	NA
Cooling	Conduction	Air-Flow Through	Conduction	Air-Flow Through	Conduction
Pitch [inch]	1	1.5	1	1.5	1
PCIe [lanes]	4		8		16
Video Outputs	NA		NA		DVI ¹

Note1 - DVI/HDMI - up to 1600x1200 @ 60 Hz
* - Contact an Aitech representative for more information

Software

Operating System Support	Windows and Linux
Drivers	Supported by NVIDIA driver packages
GPGPU Development Tools	NVIDIA's CUDA toolkit supports GPGPU application development

Mechanical

	Form Factor & Dimensions ⁽¹⁾	Weight
Conduction-Cooled 2LM	3U VPX REDI 2LM (Two Level Maintenance) per ANSI/VITA 48.2	< 850 g (1.9 lbs)
Air Flow Through Cooled	3U VPX REDI per ANSI/VITA 48.8	<900 g (2 lbs.)

Notes: (1) Pitch per ordering information

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Power

U-C5300 MXM	Power Consumption
NVIDIA Quadro T1000	50 W
NVIDIA Quadro RTX3000	80 W

Environmental

Specs per VITA 47	Air Flow Through Cooled		Conduction-Cooled	
	Rugged	Military	Rugged	Military
Operating Temp.	AC3 (-40 to +70 °C) ⁽²⁾	AC4 (-40 to +85 °C) ^(1,2)	CC3 (-40 to +70 °C) ⁽³⁾	CC4 (-40 to +85 °C) ^(1,3)
Non-Operating Temp.	C3 (-50 to +100 °C)	C4 (-55 to +125 °C)	C3 (-50 to +100 °C)	C4 (-55 to +125 °C)
Vibration	V2	V2	V3	V3
Operating Shock	OS1	OS1	OS2	OS2
Altitude	35,000 ft.	70,000 ft.	35,000 ft.	70,000 ft.
Relative Humidity ⁽⁴⁾	0 - 95% with Acrylic (Standard),			
Conformal Coating	0 - 100% with Urethane (Optional)			

Notes: (1) -55°C available, contact an Aitech representative for more information
(2) Operating ambient air temperature (with sufficient airflow)

(3) Operating card edge temperature
(4) Non-condensing

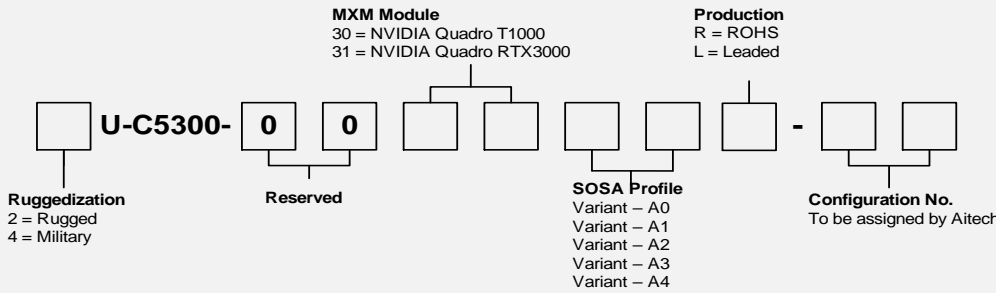
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Ordering Information



Example: 4U-C5300-0030A0R-00

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Optional Accessories

TMU-C5300 Rear Transition Module (RTM) providing convenient access to U-C5300 I/O interfaces via standard connectors. Supports both air and conduction-cooled U-C5300 when installed in a compatible system. See the TMU-5300 datasheet for more information.

Contact Aitech

Contact your Aitech sales representative for additional product information, and for inquiries regarding customized configurations of the U-C5300 and additional software support.

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