C530

GPGPU 3U VPX AI Board

The updated C530 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 the latest ADA architecture, the C530 is ideally suited for AI Delivery, Video Analytics, Image Processing, and many other applications.

The RTX ADA 5000 includes 9,728 CUDA Cores for parallel processing, 304 Tensor Cores for AI inference, and 76 RT Ray-Tracing Cores for real time rendering.

POWERED BY NVIDIA

RuggedAI™ *is* Aitech

- Rugged 3U VPX Form Factor
- NVIDIA® RTX™ ADA GPU Options
  - NVIDIA® RTX™ ADA 5000
    - ADA Architecture
    - 9,728 CUDA® Cores
    - 76 RT Cores
    - 304 Tensor Cores
    - 35.8 TFLOPS (FP32)
    - 16 GB GDDR6
    - 80 W Max Power
  - NVIDIA® RTX™ ADA 2000
    - ADA Architecture
    - 3,072 CUDA® Cores
    - 24 RT Cores
    - 96 Tensor Cores
    - 14.5 TFLOPS (FP32)
    - 8 GB GDDR6
    - 60 W Max Power
- CUDA®, OpenCL, OpenGL, DirectX 12
- 4 Video Output Channels
- PCIe x16 Gen4 Host Interface
- OpenVPX Compliant
- Windows®, Linux® Support
- 2LM Option per VITA 48.2
- Conduction-Cooled
- Vibration and Shock Resistant

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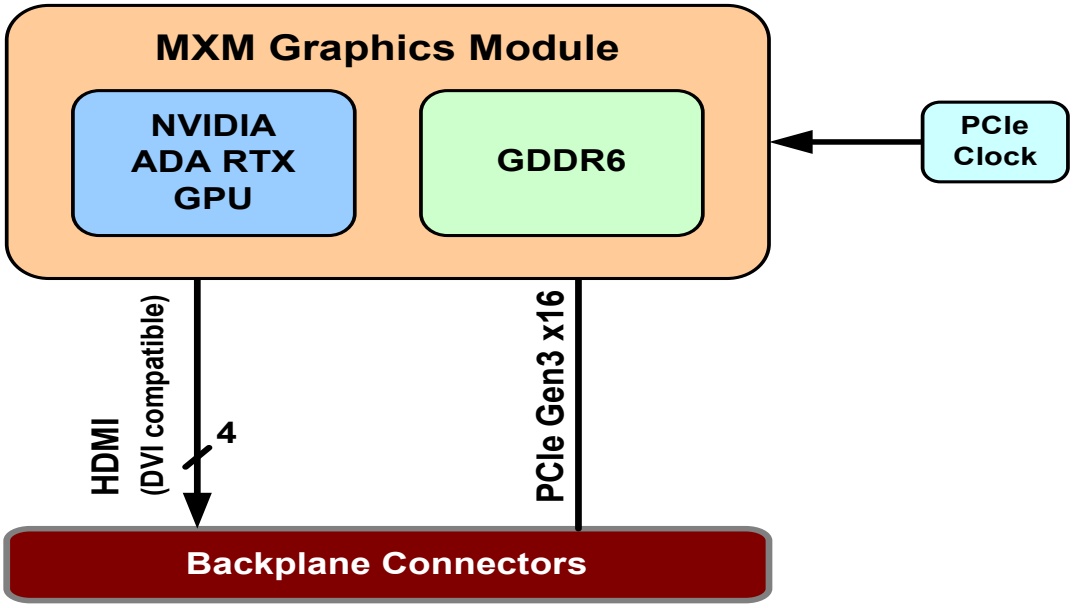
The parallel processing capabilities of today's multi-core GPUs make them ideal for both non-graphics and graphics applications with intensive computation requirements. Aitech's C530 General Purpose GPU (GPGPU) board provides these capabilities, as well as high-performance graphics rendering capabilities 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 C530 hosts an MXM GPU module (standardized GPU form factor), and new configurations of the C530 are released as higher-performance MXMs become available. The C530 currently supports the NVIDIA® ADA RTX 5000 and NVIDIA® ADA RTX 2000 GPUs.

The C530 operates as a peripheral board with a compatible x86 VPX host SBC, such as Aitech's U-C8500/1 (11th Gen. Intel® Core i7), C875 (9th Gen. Intel® Xeon®), and U-C8600/1 (Intel® 14th Gen. Core Ultra 7) 3U VPX SBCs. The C530 and the host SBC interconnect over the VPX backplane, via a high speed PCIe Gen4 link of up to 16 lanes.



C530 Block Diagram

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GPGPU 3U VPX AI Board

Board Architecture

MXM Site	Supports a single MXM 3.1 Type B (RTX ADA 5000) and Type A (RTX ADA 2000) module
MXM GPU	• NVIDIA® RTX ADA 5000 Option ▪ ADA Architecture ▪ 304 Tensor Cores ▪ 16 GB GDDR6 ▪ 35.8 TFLOPS (FP32) ▪ 9,728 CUDA Cores ▪ 576 GB/s memory bandwidth ▪ 76 Ray-Tracing RT cores ▪ 256-bit Memory Interface Width • NVIDIA® RTX ADA 2000 Option ▪ ADA Architecture ▪ 96 Tensor Cores ▪ 8 GB GDDR6 ▪ 14.5 TFLOPS (FP32) ▪ 3,072 CUDA Cores ▪ 256 GB/s memory bandwidth ▪ 24 Ray-Tracing RT cores ▪ 128-bit Memory Interface Width • CUDA, CUDA Compute, OpenCL, OpenGL, DirectX, Vulkan • Dynamic clock frequency - RTX ADA 5000 - Base Clock 930 MHz, Boost Clock 1680 MHz
PCIe Interface	• Compatible with PCIe x16, x8 and x4 Gen3/Gen4 interfaces for connection to host SBC over the VPX backplane • 100 MHz PCIe reference clock generated on-board • Signals mapped to P1 connector per VITA 46.4
OpenVPX (VITA 65) Slot Profiles	The PCIe interface supports the following OpenVPX peripheral slot profiles • SLT3-PER-1F (1 Fat pipe) • SLT3-PER-1U (1 Ultra-thin pipe)

Video Outputs

4 x HDMI (DVI compatible) supporting resolutions of up to 1600x1200 @ 60 Hz

Software

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

Mechanical

	Form Factor & Dimensions (1)	Weight
Conduction-Cooled	3U VPX REDI per ANSI/VITA 48.2	< 900 g (1.8 lbs)
Conduction-Cooled 2LM	3U VPX REDI 2LM (Two Level Maintenance) per ANSI/VITA 48.2	< 950 g (1.9 lbs)

Notes: (1) Pitch per ordering information

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Power

C530 MXM	Power Consumption
NVIDIA ADA RTX 2000	60 W
NVIDIA ADA RTX 5000	80 W

Environmental

Specs per VITA 47	Conduction-Cooled		
	Commercial	**Rugged**	**Military**
Operating Temp.	AC1 (0 to +55 ºC) (2)	CC3 (-40 to +70 ºC) (2)	CC4 (-40 to +85 ºC) (1,2)
Non-Operating Temp.	C1 (-40 to +85 ºC)	C3 (-50 to +100 ºC)	C4 (-55 to +125 ºC)
Vibration	V1	V3	V3
Operating Shock	OS1	OS2	OS2
Altitude	15,000 ft.	35,000 ft.	70,000 ft.
Relative Humidity (3)	0 - 95% with Acrylic (Standard),		
Conformal Coating	0 - 100% with Urethane (Optional)		

Notes:	(1) -55 ºC available, contact an Aitech representative for more information (2) Operating card edge temperature (3) Non-condensing

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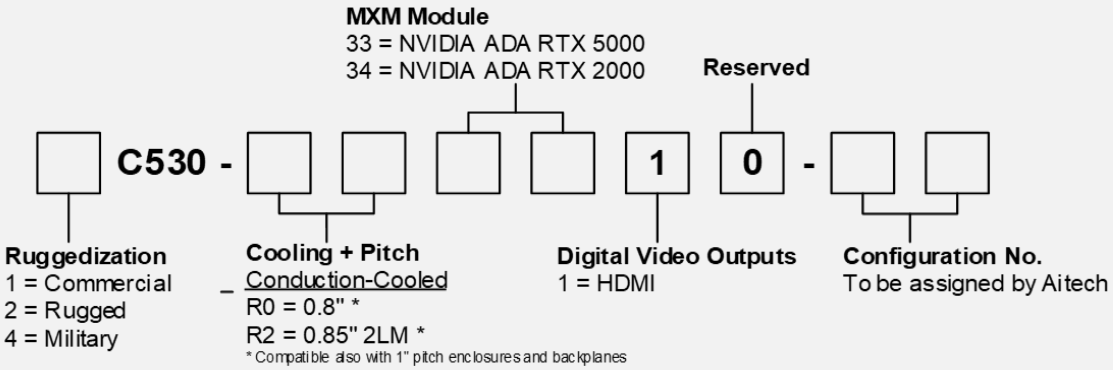
Ordering Information

RuggedAI™ *is* Aitech



Example: 4C530-R03310-00

Optional Accessories

TM530	Rear Transition Module (RTM) providing convenient access to C530 I/O interfaces via standard connectors. Supports conduction-cooled C530 when installed in a compatible system. For additional information, see the TM530 datasheet.

Contact Aitech

Contact your Aitech sales representative for additional product information, and for inquiries regarding customized configura tions of the C530 and additional software support.

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