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

The RTX3000 includes 2304 CUDA Cores for parallel processing, 288 Tensor Cores for AI inference and 36 RT Ray-Tracing Cores for real time rendering.

POWERED BY NVIDIA

Rugged GPGPU is Aitech

PRELIMINARY

- Rugged 3U VPX Form Factor
- NVIDIA® Quadro® GPU Options
  - NVIDIA® Quadro® RTX3000
    - Turing™ Architecture
    - 2304 CUDA® Cores
    - 36 RT Cores
    - 288 Tensor Cores
    - 6.4 TFLOPS (FP32)
    - 6 GB GDDR6
    - 80 W Max Power
  - NVIDIA® Quadro® T1000
    - Turing™ Architecture
    - 768 CUDA® Cores
    - 50 W Max Power
    - 2.6 TFLOPS (FP32)
    - 4 GB GDDR5
- CUDA®, OpenCL, OpenGL, DirectX 12
- 4 Video Output Channels
- PCIe x16 Gen3 Host Interface
- OpenVPX Compliant
- Windows®, Linux® Support
- 2LM Option per VITA 48.2
- Conduction and Air-Cooled Versions
- Vibration and Shock Resistant

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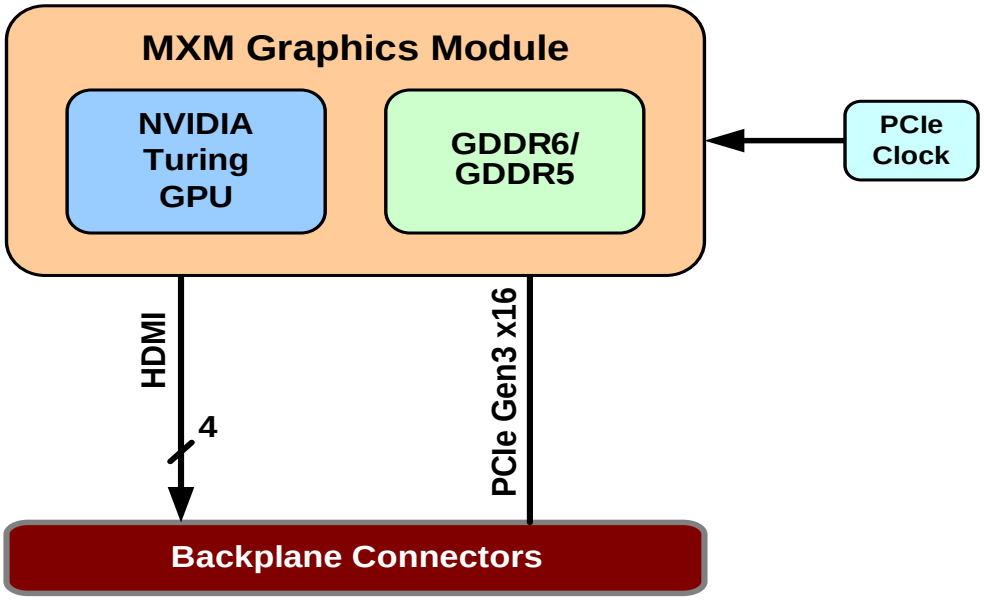
The parallel processing capabilities of today's multi-core GPUs make them ideal for both non-graphics and graphics applications with intensive computation requirements. Aitech's C530 General Purpose GPU (GPGPU) board provides these capabilities, as well as high-performance graphics rendering capabilities 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® Quadro® RTX3000 and NVIDIA® Quadro® T1000 GPUs.

The C530 operates as a peripheral board with a compatible x86 VPX host SBC, such as Aitech's C874 (5th Gen. Intel® Core™ i7), C875 (8th Gen. Intel® Xeon® E), and C877 (Intel® Xeon® D) 3U VPX SBCs. The C530 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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Board Architecture

MXM Site	Supports a single MXM 3.1 Type A/Type B module
MXM GPU	• NVIDIA® Quadro® RTX3000 Option ▪ Turing Architecture ▪ 288 Tensor Cores ▪ 6 GB GDDR6 ▪ 6.4 TFLOPS (FP32) ▪ 2304 CUDA Cores ▪ 336 GB/s memory bandwidth ▪ 36 Ray-Tracing RT cores ▪ 192-bit Memory Interface Width • NVIDIA® Quadro® T1000 Option ▪ Turing Architecture ▪ 2.6 TFLOPS (FP32) ▪ 4 GB GDDR5 ▪ 192 GB/s memory bandwidth ▪ 768 CUDA Cores ▪ 128-bit Memory Interface Width • CUDA, CUDA Compute, OpenCL, OpenGL, DirectX 12, Vulkan • Dynamic clock frequency
PCIe Interface	• PCIe x16 Gen3 port 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 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
Air-Cooled	3U VPX REDI per ANSI/VITA 48.1	< 850 g (1.9 lbs)
Conduction-Cooled	3U VPX REDI per ANSI/VITA 48.2	< 800 g (1.8 lbs)
Conduction-Cooled 2LM	3U VPX REDI 2LM (Two Level Maintenance) per ANSI/VITA 48.2	< 850 g (1.9 lbs)

Notes: (1) Pitch per ordering information

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Power

C530 MXM	Power Consumption
NVIDIA Quadro T1000	50 W
NVIDIA Quadro RTX3000	80 W

Environmental

Specs per VITA 47	Air-Cooled			Conduction-Cooled	
	Commercial	Rugged	Military	Rugged	Military
Operating Temp.	AC1 (0 to +55 ºC) (2)	AC3 (-40 to +70 ºC) (2)	AC4 (-40 to +85 ºC) (1,2)	CC3 (-40 to +70 ºC) (3)	CC4 (-40 to +85 ºC) (1,3)
Non-Operating Temp.	C1 (-40 to +85 ºC)	C3 (-50 to +100 ºC)	C4 (-55 to +125 ºC)	C3 (-50 to +100 ºC)	C4 (-55 to +125 ºC)
Vibration	V1	V2	V2	V3	V3
Operating Shock	OS1	OS1	OS1	OS2	OS2
Altitude	15,000 ft.	35,000 ft.	70,000 ft.	35,000 ft.	70,000 ft.
Relative Humidity (4)	0 - 90%	0 - 95% with Acrylic (Standard),			
Conformal Coating	N/A	0 - 100% with Urethane (Optional)			

Notes:
(1) -55 ºC 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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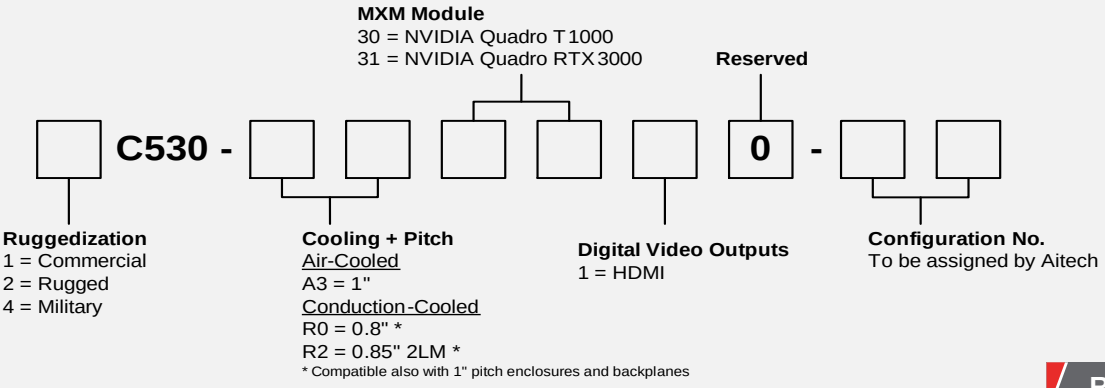
Ordering Information



Example: 4C530-R03010-00

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Optional Accessories

TM530	Rear Transition Module (RTM) providing convenient access to C530 I/O interfaces via standard connectors. Supports both air and conduction-cooled C530 when installed in a compatible system. See the TM530 datasheet for more information.

Contact Aitech

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

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