

A230 | Vortex

Rugged GPGPU Fanless AI Supercomputer



The A230 Vortex is the most powerful rugged GPGPU AI supercomputer, designed for distributed systems and equipped with the advanced NVIDIA Jetson AGX Orin Industrial System-on-Module.

Its Ampere GPU features up to 2048 CUDA cores and 64 Tensor cores, delivering up to 248 TOPS and ensuring remarkable energy efficiency for AI-based local processing right alongside your sensors. In addition, the system includes two dedicated NVIDIA Deep-Learning Accelerator (NVDLA) engines, tailored for deep learning applications.

With its compact size, the A230 Vortex sets the standard as the most advanced solution for AI, deep learning, and video and signal processing in the next generation of autonomous vehicles, surveillance and targeting systems, electronic warfare (EW) systems and more.

POWERED BY



RuggedAI™ is Aitech

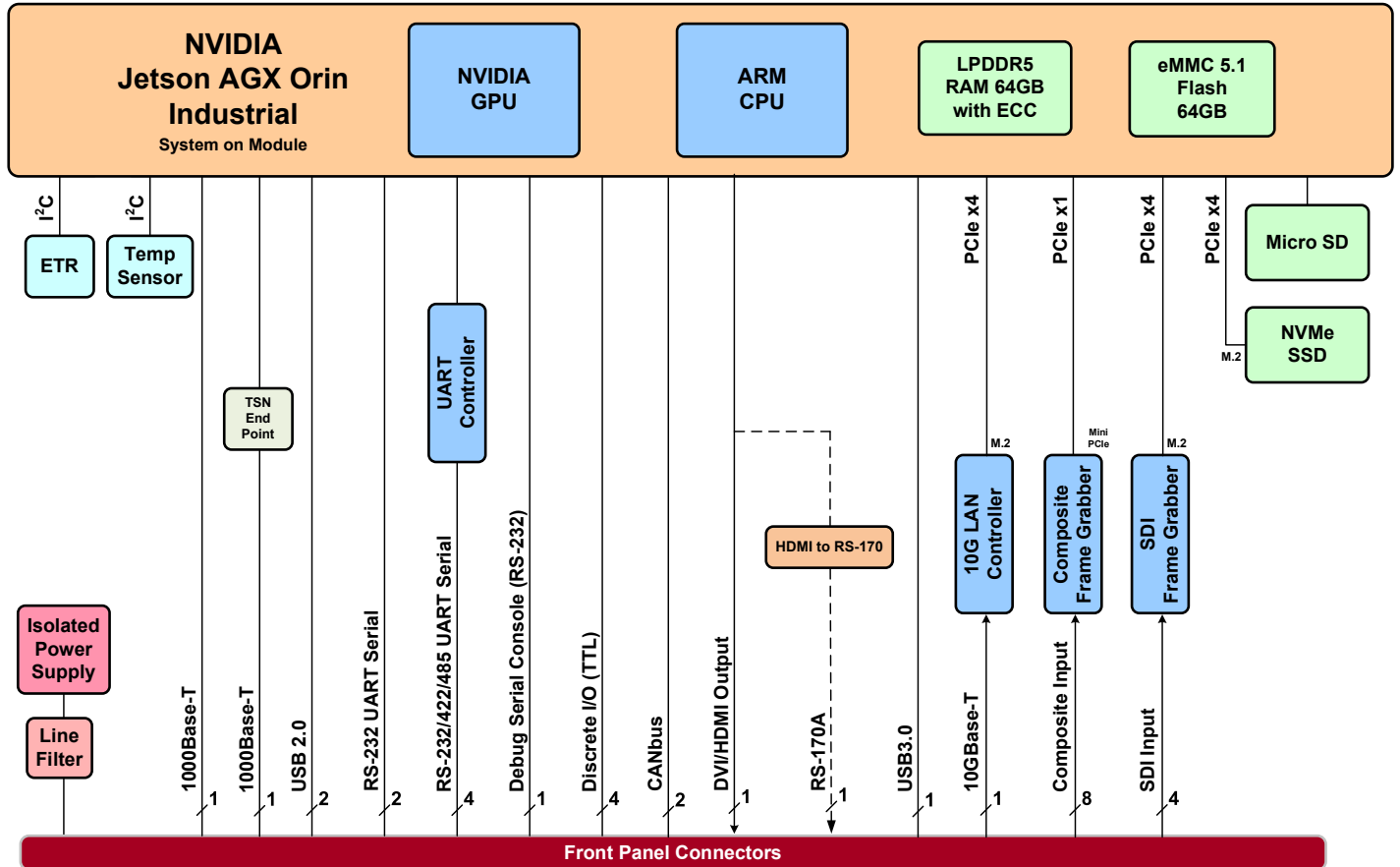
- **SWaP Optimized Rugged AI Supercomputer**
- **Small Form Factor**
- **NVIDIA® Jetson™ AGX Orin Industrial System-on-Module 64GB RAM with ECC**
 - ▶ Ampere™ Architecture GPU 2048 CUDA® Cores
 - ▶ 12-Core ARM v8.2 64-bit CPU
 - ▶ AI performance 248 TOPS
 - ▶ H.264/H.265 Hardware Encoder
- **Cold Plate cooling**
- **NVMe SSD**
- **Micro SD Card**
- **64 GB LPDDR5 with ECC**
- **Video Capture**
 - ▶ SDI (SD/HD)
4 channels available simultaneously
 - ▶ Composite (RS-170A [NTSC]/PAL)
8 channels available simultaneously
- **I/O**
 - ▶ Gigabit Ethernet
 - ▶ DVI/HDMI Out
 - ▶ GbE TSN End Point
 - ▶ UART Serial
 - ▶ Discretes
 - ▶ RS-170A Out
 - ▶ USB 3.0 & 2.0
 - ▶ 10G Ethernet
 - ▶ CANbus
- **CUDA®, OpenGL, OpenGL ES, Vulkan**
- **Low Power Consumption**
- **Environmentally Sealed (IP66)**



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A230 Block Diagram

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System Architecture

System on Module	NVIDIA Jetson AGX Orin Industrial - 64GB RAM with ECC
GPU	- NVIDIA Ampere GPU Architecture 2048 CUDA cores - AI performance 248 TOPS - CUDA - OpenGL - OpenGL ES - Vulkan
CPU	- ARMv8.2 (64-bit) heterogeneous multi-processing (HMP) CPU 12-core NVIDIA ARM® Cortex A78AE v8.2 64-bit CPU 3MB L2 + 6MB L3 - Operates at up to 1.2 GHz (depends on power mode)
System Resources	- Multi-standard video/JPEG decoder/encoder, hardware encoding for H.264/H.265 - Dynamic voltage and frequency scaling - Temperature sensors - Elapsed time recorder - Status indicator LED

Memory Resources

RAM	64 GB LPDDR5 with ECC, operates at up to 204.8GB/s (depending on power mode), 256-bit interface
eMMC	64 GB eMMC 5.1 (boot source)
NVMe SSD	Optional NVMe SSD (For standard options, see the <i>Ordering Information</i> section. Additional options may be available per customer request. Contact an Aitech representative for more info)
Micro SD Card	Optional micro SD card (for standard options, see the <i>Ordering Information</i> section. Additional options may be available per customer request. Contact an Aitech representative for more info)

I/O

I/O Variant	00	01	02	03	04
Composite Input RS-170A (NTSC)/PAL, supports simultaneous capture of all channels at full frame rates	—	8			
SDI Input 480/60i, 576/50i, 720/60p, 1080/60i, 1080/30p, supports simultaneous capture of all channels at full frame rates	—	—	4	—	4
RS-170A Output	—	—	—	1	—
10G Ethernet (10GBASE-T)	—	—	—	—	1
USB 3.0	—	—	—	—	1
CANbus	2				
Gigabit Ethernet (10/100/1000Base-T)	1				

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I/O

TSN End-Point GbE Intel I226 (10/100/1000Base-T)	1		
DVI (single-link) / HDMI Output Supports resolutions up to 1920x1080 [60p]	1	–	1
USB 2.0	2		
Serial Ports (RS-232 UART)	2		
Serial Ports (RS-232/422/485 UART) Software configurable as RS-232/422/485	4		
Debug Serial Console (RS-232 UART)	1		
Discrete I/O (Single-Ended, TTL)	4		

Software

Operating System	Linux OS pre-installed – L4T (Linux for Tegra), a lightly modified Ubuntu-based distribution
Drivers	Video capture drivers and sample applications pre-installed, in variants equipped with optional frame grabber(s)

Mechanical

Cooling	Cold Plate
Dimensions (L x W x H)	230 mm x 205 mm x 85 mm (9.06 in x 8.07 in x 3.35 in)
Weight	< 4.5 kg (< 9.92 lb)

Power

Input Power	• Wide input voltage range: 22 – 33 V_{DC} steady state operation • Input reverse polarity protection • EMI/RFI input filter • On-board supplies isolated from external supply • MIL-STD-704E Fully functional during normal operation. No damage during abnormal operation or power interruptions. • MIL-STD-1275D Fully functional during steady-state operation. No damage during start transients or surge conditions. • No hold-up (Contact your Aitech sales representative for this option)
Power Consumption	• For AGX Orin Industrial SoM • 15W - 60W • Users can create custom presets, specifying clocks and online cores • The total power consumption depends on system configuration and expansion options

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Environmental

Operating Temp.	-40 to +55 °C @ cold plate
Non-Operating Temp.	-40 to +80 °C
Transportation Vibration	MIL-STD-810H, Method 514.8, Procedure 1, Category 7 – General Exposure
Operating Vibration	VITA 47 Class V2
Operating Shock	MIL-STD-810H, Method 516.8, Procedure I, 20 g/11 ms
Acceleration	MIL-STD-810H, Method 513.8, Procedure II, 7 g all axes
Altitude	MIL-STD-810H, Method 500.6, Procedure II, -1,500 to +60,000 ft. (1) (@+25°C Max.)
Relative Humidity	MIL-STD-810H, Method 507.6, Procedure II
Ingress Protection	IPX6(2)
Blowing Dust	MIL-STD-810H, Method 510.7, Procedure I
Salt Fog	MIL-STD-810H, Method 509.7
EMI/RFI	Designed for MIL-STD-461G

- Notes:
- (1) Depending on temperature and system power dissipation
 - (2) With appropriate connections to system I/O and power connectors. Mating connectors and cables should be sealed as well

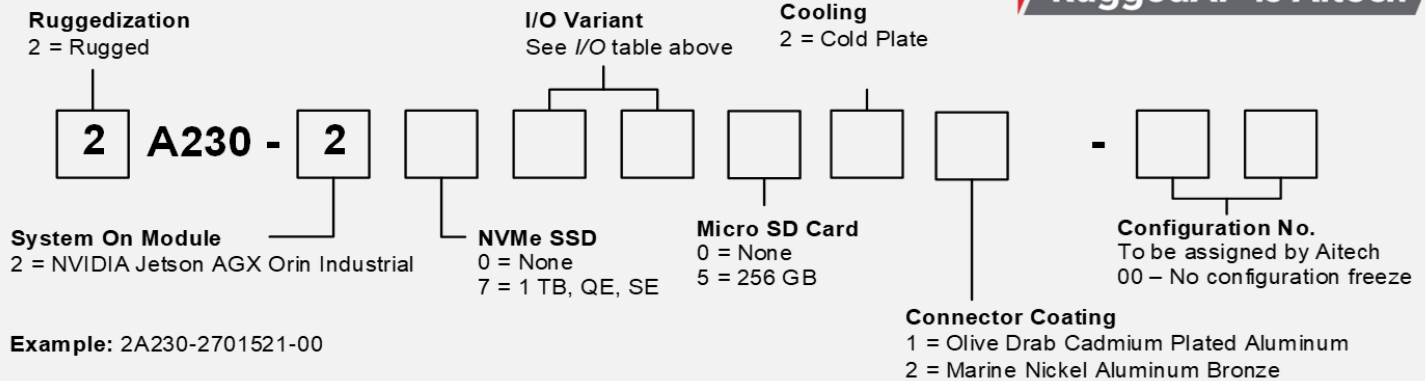
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Ordering Information

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Optional Accessories

TCA230-00-SK	Starter Kit for I/O Variants 00, 01, and 02: External Power Supply, J1 Power Cable, J2 I/O Cable with Standard I/O Connectors
TCA230-00-SK-HS	Starter Kit for I/O Variant 04: External Power Supply, J1 Power Cable, J2 and J3 I/O Cable with Standard I/O Connectors
MCS230-1-00	Mating Connectors Set
MCS230-1-00_BR	Bronze Mating Connectors Set
MCS230-4-00	Mating Connectors for I/O Variant 04: J1 (Power), J2 and J3 (I/O)



Contact Aitech

Contact your Aitech sales representative for additional product information, and for inquiries regarding customized configurations of the A230, as well as additional software support.



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