Datasheet

NVIDIA Jetson AGX Orin Industrial

The future of industrial-grade edge AI.

Next-Level AI Performance for Next-Gen Industrial Applications

The NVIDIA® Jetson AGX Orin™ Industrial module delivers up to 248 TOPs of AI performance for embedded industrial applications with power configurable between 15W and 75W. It's form-factor and pin-compatible with Jetson AGX Orin, and gives you more than 8X the performance of Jetson AGX Xavier Industrial.

This system-on-module supports multiple concurrent AI application pipelines with an NVIDIA Ampere architecture GPU, next-generation deep learning and vision accelerators, high-speed IO, and fast memory bandwidth. It comes with extended temperature range, operating lifetime, and shock and vibration specifications, as well as support for Error Correction Code (ECC) memory. This makes it ideal for industrial-grade AI products. Plus, the module includes hardware root of trust, secure boot, hardware accelerated cryptography, support for encrypted storage and memory, and other security features to protect your deployments.

The entire Jetson family runs the NVIDIA AI software stack, with available use-case-specific application frameworks, including NVIDIA Isaac™ for robotics, DeepStream for vision AI, and Riva for conversational AI. You can also save significant time with NVIDIA Omniverse™ Replicator for synthetic data generation (SDG), and with NVIDIA TAO toolkit for fine-tuning pretrained AI models from the NGC™ catalog.

Ecosystem partners offer additional AI and system software, developer tools, and custom software development. They can also help with cameras and other sensors, as well as carrier boards and design services for your product.

Jetson Orin modules are unmatched in performance and efficiency for robots and other autonomous machines, and they give you the flexibility to create the next generation of AI solutions with the latest NVIDIA technology. Together with the world-standard NVIDIA AI software stack and an ecosystem of services and products, your road to market has never been faster.

Key Features

Jetson AGX Orin Industrial Module (P3701)

- 2048-core NVIDIA Ampere architecture GPU with 64 tensor cores
- 2x NVDLA v2.0
- 12-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU
- 64GB 256-bit LPDDR5 (+ECC)
- PVA v2.0

Power

- Voltage input: 5V, 7V-20V
- Module Power: 15W-75W

Technical Specifications	
	Jetson AGX Orin Industrial Module
AI Performance	248 TOPS (INT8)
GPU	2048-core NVIDIA Ampere architecture GPU with 64 tensor cores
GPU Max Freq	1.2GHz
CPU	12-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU 3MB L2 + 6MB L3
CPU Max Freq	2GHz
DL Accelerator	2x NVDLA v2.0
Vision Accelerator	PVA v2.0
Memory	64GB 256-bit LPDDR5 @ 3200MHz 204.8GB/s (+ECC)
Storage	64GB eMMC 5.1
PCIe	2 x8 + 1 x4 + 2 x1 22 lanes PCIe Gen 4
CSI Camera	16 lanes MIPI CSI-2 (16 virtual channels) D-PHY 2.1 40Gbps/ C-PHY 2.0 164Gbps
Video Encode	1x 4K60 | 3x 4K30 | 7x 1080p60 | 15x 1080p30 (H.265) H.264, AV1
Video Decode	1x 8K30 | 3x 4K60 | 7x 4K30 | 11x 1080p60 | 23x 1080p30 (H.265) H.264, VP9, AV1
Display	1 multi-mode (8K60, 2x 4K60) DP1.4a (+ MST)/HDMI2.1/eDP 1.4
Networking	1 Gbe | 1x 10GBE
USB	3x USB 3.2 Gen 2 | 4x USB 2.0
Other IOs	4x UART 3x SPI | 4x I2S | 8x I2C | 2X CAN | PWM | DMIC | DSPK | GPIOs
Power	15W-75W
Mechanical	100mm x 87mm 699-pin connector

Refer to the Software Features section of the latest NVIDIA Jetson Linux Developer Guide for a list of supported features.

	Industrial Features
Mechanical Shock	50G Operational
Vibration	5G Operational
Temperature	-40°C to 85°C at the TTP Surface
Temperature Endurance	-40°C to 85°C
Temperature Humidity Biased	85°C/85% RH
Underfill	SoC corner bonding & component underfill
ECC	DRAM ECC supported

Refer to the NVIDIA Jetson AGX Orin Series Datasheet for the latest reliability testing supported.

Ready to Get Started?

To learn more about the NVIDIA Jetson Orin, visit:
nvidia.com/Jetson-Orin

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