Product Overview NVIDIA Jetson AGX Orin Module	
Description	The NVIDIA Jetson AGX Orin module delivers unmatched AI performance, reaching up to 275 TOPS, while offering configurable power options between 15 watts and 60 watts. Sharing the same compact form factor as the Jetson AGX Xavier, this module significantly enhances robotics development and other autonomous machine applications, providing up to 8 times the performance of its predecessor. With its robust processing capabilities and extensive I/O options, the Jetson AGX Orin is the ideal choice for developers seeking to push the boundaries of AI and machine learning in demanding environments.
Key Features	• **Unmatched AI Performance**: Delivers up to 275 TOPS, offering exceptional computational power for advanced AI and machine learning applications. • **Advanced GPU Architecture**: Equipped with a 2048-core NVIDIA Ampere architecture GPU with 64 Tensor Cores, ensuring high performance and efficiency. • **Power Efficiency**: Configurable power options ranging from 15 watts to 60 watts, allowing for flexible deployment in various environments. • **High-Performance CPU**: Features a 12-core Arm Cortex-A78AE v8.2 64-bit CPU with a max frequency of 2.2 GHz, providing robust processing capabilities. • **Extensive I/O and Connectivity**: Supports multiple high-speed interfaces including PCIe Gen4, USB 3.2 Gen2, and up to 6 CSI cameras, facilitating versatile connectivity and peripheral integration.
Technical Specifications	**Processor:** • **Jetson AGX Orin 32GB** • **Jetson AGX Orin 64GB** **AI Performance:** • 200 TOPS (32GB) • 275 TOPS (64GB) **GPU:** • 1792-core NVIDIA Ampere architecture GPU with 56 Tensor Cores (32GB) • 2048-core NVIDIA Ampere architecture GPU with 64 Tensor Cores (64GB) **GPU Max Frequency:** • 1.2 GHz (32GB) • 1.3 GHz (64GB) **CPU:** • 8-core Arm Cortex-A78AE v8.2 64-bit CPU, 2MB L2 + 4MB L3 (32GB) • 12-core Arm Cortex-A78AE v8.2 64-bit CPU, 3MB L2 + 6MB L3 (64GB) **CPU Max Frequency:** • 2.0 GHz (32GB) • 2.2 GHz (64GB) **DL Accelerator:** • 2x NVDLA V2

DLA Max Frequency:
- 1.4 GHz (32GB)
- 1.6 GHz (64GB)

Vision Accelerator:
- 1x PVA V2

Memory:
- 32GB 256-bit LPDDR5, 204.8 GB/s (32GB)
- 64GB 256-bit LPDDR5, 204.8 GB/s (64GB)

Storage:
- 64GB eMMC 5.1

Video Encode:
- 1x 4K60 (H.265), 3x 4K30 (H.265), 6x 1080p60 (H.265), 12x 1080p30 (H.265) (32GB)
- 2x 4K60 (H.265), 4x 4K30 (H.265), 8x 1080p60 (H.265), 16x 1080p30 (H.265) (64GB)

Video Decode:
- 1x 8K30 (H.265), 2x 4K60 (H.265), 4x 4K30 (H.265), 9x 1080p60 (H.265), 18x 1080p30 (H.265) (32GB)
- 1x 8K30 (H.265), 3x 4K60 (H.265), 7x 4K30 (H.265), 11x 1080p60 (H.265), 22x 1080p30 (H.265) (64GB)

CSI Camera:
- Up to 6 cameras (16 via virtual channels)
- 16 lanes MIPI CSI-2 D-PHY 2.1 (up to 40 Gbps)
- C-PHY 2.0 (up to 164 Gbps)

PCIe:
- Up to 2x8 + 1x4 + 2x1 (PCIe Gen4, Root Port & Endpoint)

USB:
- 3x USB 3.2 Gen2 (10 Gbps)
- 4x USB 2.0

Networking:
- 1x GbE
- 1x 10GbE

Display:
- 1x 8K60 multi-mode DP 1.4a (+MST) / eDP 1.4a / HDMI 2.1

Other I/O:
- 4x UART
- 3x SPI
- 4x I2S
- 8x I2C
- 2x CAN
- PWM
- DMIC & DSPK
- GPIOs

Power:
- 15W-40W (32GB)
- 15W-60W (64GB)

Mechanical:
- 100mm x 87mm
- 699-pin Molex Mirror Mezz Connector

	• Integrated Thermal Transfer Plate
Application Scenarios	**Robotics**: Enables the development of advanced robots with high levels of autonomy, capable of complex tasks such as navigation, object recognition, and real-time decision-making. **Autonomous Vehicles**: Powers AI capabilities in autonomous cars, drones, and delivery robots, enhancing their ability to perceive environments, make decisions, and operate safely in dynamic conditions. **Smart Cities**: Supports applications in intelligent infrastructure such as traffic management, surveillance, and public safety, providing real-time data analysis and decision-making to improve urban living. **Healthcare**: Facilitates the development of AI-powered medical devices and systems, such as diagnostic tools, imaging systems, and patient monitoring, improving the accuracy and efficiency of healthcare services. **Industrial Automation**: Drives the automation of manufacturing processes, predictive maintenance, and quality control, enabling smarter and more efficient industrial operations. **Retail and Logistics**: Enhances AI applications in smart retail environments and logistics, including inventory management, automated checkout systems, and warehouse automation. **Agriculture**: Supports precision farming technologies, enabling the development of autonomous farming equipment, crop monitoring systems, and livestock management tools to increase agricultural productivity and sustainability. **Edge AI Devices**: Powers a variety of edge AI devices that require high-performance computing with low latency, such as smart cameras, IoT devices, and edge servers.