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INDUSTRIAL PRODUCT DATASHEET

reServer Industrial J501 Carrier Board for Jetson AGX Orin & Add-on

The reServer Industrial J501 Carrier Board for Jetson AGX Orin enables up to 275 TOPS AI performance with robust vision, industrial I/O, and wide temperature support for cutting-edge edge AI applications.

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Overview



The reServer Industrial J501 Carrier Board for Jetson AGX Orin & Add-on delivers the most powerful embedded AI platform with up to 275 TOPS, configurable from 15W to 60W, leveraging the Jetson AGX Orin module. It features advanced vision AI with 8K60 and 3x4K60 decoding, 16-lane MIPI CSI-2 with optional GMSL camera support, extensive connectivity including Gigabit and 10G Ethernet, CAN, and RS232/422/485, and operates reliably in -25°C to +60°C and 12-36V DC, targeting AI robot development, vision AI, and generative AI at the edge.

Key Features

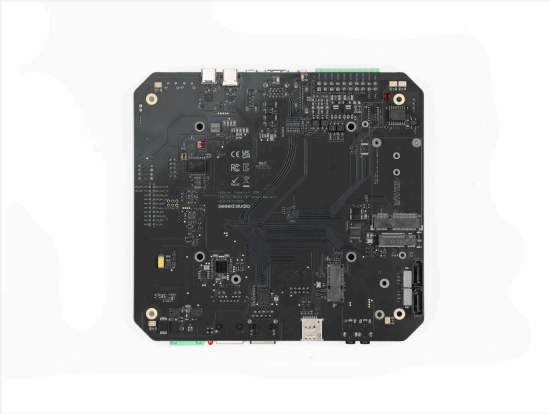
- **Build the most powerful embedded AI platform**: Compatible with the Jetson AGX Orin module, offering up to 275 TOPS—8 times more than Jetson AGX Xavier. Power is configurable between 15W and 60W.
- **Advanced Vision AI Capabilities**: Supports 8K60 and 3x4K60 video decoding. Features 16 lanes of MIPI CSI-2, with an optional GMSL extension board supporting up to 8 GMSL cameras.
- **Extensive Connectivity:**including Gigabit Ethernet, 10G Ethernet, USB 3.1, M.2 Key E, Key B, and Key M. CAN and RS232/422/485 are supported for connecting to industrial devices and sensors.
- **Wide Operating Range**: Operates reliably across a temperature range of -25°C to +60°C and an input voltage range of 12-36V DC.
- **Support Jetpack 6:** BSP ready for developing your custom system image, leverage Jetson Platform Service for end to end workflow.

Product Gallery

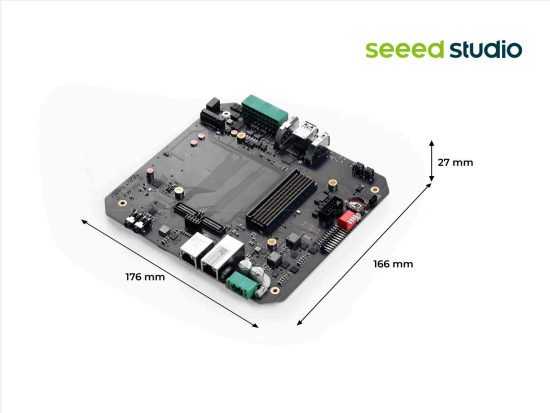










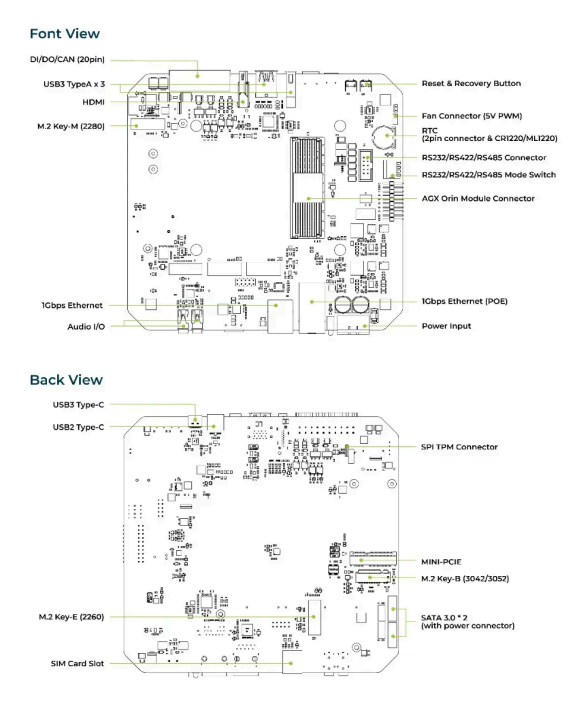


Specification

Compatible with Jetson AGX Orin Module		
AI Performance	Jetson AGX Orin 64GB, 275 TOPS	Jetson AGX Orin 32GB, 200 TOPS

GPU	NVIDIA Ampere architecture with 2048 NVIDIA® CUDA®cores and 64 Tensor cores	1792-core NVIDIA Ampere architecture GPU with 56 Tensor Cores
CPU	12-core Arm Cortex-A78AE v8.2 64-bit CPU 3MB L2 + 6MB L3	8-core Arm® Cortex®-A78AE v8.2 64-bit CPU 2MB L2 + 4MB L3
DL Accelerator	2x NVDLA v2.0	
Vision Accelerator	PVA v2.0	
Memory	64GB 256-bit LPDDR5 204.8GB/s	32GB 256-bit LPDDR5 204.8GB/s
Storage	64GB eMMC 5.1	
Video Encode	2x 4K60 | 4x 4K30 | 8x 1080p60 | 16x 1080p30 (H.265)	1x 4K60 (H.265) | 3x 4K30 (H.265) | 6x 1080p60 (H.265) |12x 1080p30 (H.265)
Video Decode	1x 8K30 | 3x 4K60 | 6x 4K30 | 12x 1080p60 | 24x 1080p30 (H.265)	1x 8K30 (H.265) | 2x 4K60 (H.265) | 4x 4K30 (H.265) | 9x 1080p60 (H.265) | 18x 1080p30 (H.265)
Power	15W-60W	
Carrier Board		
Storage		1x M.2 Key M (PCIE 4.0)
Networking	Ethernet	1 x LAN0 RJ45 GbE(10/100/1000Mbps) 1 x LAN1 RJ45 10GbE(10000Mbps)
	M.2 Key E	1x M.2 Key E for WiFi/Bluetooth module
	M.2 Key B	1x M.2 Key B (3042/3052) support 4G/5G (Module not included)
	Mini PCIE	1x Mini PCIe for LoRaWAN®/4G/Series Wireless (Module not included)
I/O	USB	3x USB3.1; 1x USB3.1 Type C(Host mode), 1x USB2.0 Type C(Device mode),
	DI/DO	4x DI,4x DO,3x GND_DI,2x GND_DO,1x GND_ISO,1x CAN 1x RS232/RS422/RS485
	Display	1x HDMI 2.1 Type A 7680x4320
	SATA	2x SATA III 6.0Gbps) at 30 Hz
	SIM	1x Nano SIM card slot
	Button	Reset Button, Recovery Button
	Fan	1x Fan connectors (5V PWM)
	TPM	1x TPM 2.0 connector (Module not included)
	RTC	1x RTC socket (CR1220 included) 1x RTC 2-pin
Expansion	Camera (For GMSL Extension Board)	2x Expansion connector (8 lanes for each connector)
	PCIE	1x PCIE
Power	Power Supply	DC 12V-36V Terminal block 2 pin
	Power Adapter	24V/5A Power Adapter(Without power cord)
Mechanical	Dimensions (W x D)	176 x 163mm (Module not included)
	Operating Temerature	-20~60℃
	Weight	225g (Module not included)

Hardware Overview



Applications

- **AI Robot Development:** With AGX Orin module, this most powerful embedded AI system lets you create advanced robotics and edge AI applications for manufacturing, logistics, and healthcare. It's the most powerful embedded system, pushing the limits of AI robotics. The Isaac robotics platform offers NVIDIA-accelerated systems, libraries, and generative AI models to enhance AI perception, manipulation, and simulation in robotics.
- **Vision AI:** Jetson AGX Orin supports real-time video analytics with up to 23 1080P streams simultaneously. NVIDIA Metropolis, an application framework that combines visual data and AI, equips developers with the tools and ecosystem to enhance operational efficiency and safety across diverse industries.
- **Generative AI at the Edge:** Jetson AGX Orin offers unmatched AI compute power, large unified memory, and comprehensive software stacks, making it the ideal platform for energy-efficient generative AI applications. It supports fast inference for any generative AI model based on the transformer architecture and leads in edge performance according to MLPerf benchmarks. Quickly deploy generative AI models on text generation, multimodal models, image generation via jetson-examples.

Part List

reServer Industrial J501 Carrier Board for Jetson AGX Orin	x1
Power Adapter AC Power Brick 120W (Power cable not included)	x1
Terminal Connector 20pin	x1
2-Pin Terminal Block Power Connector	x1

Resource Links

- https://www.seeedstudio.com/reServer-Industrial-J501-Carrier-Board-Add-on.html
- reServer J501 Datasheet
- reServer J501 carrier board schematic file
- reServer J501 3D File
- Flash BSP for Jetson

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