

## NVIDIA® Jetson AGX Orin™ Developer Kit: smallest and most powerful AI edge computer

SKU 110991725



NVIDIA® Jetson AGX Orin™ Developer Kit, provides a giant leap forward for Robotics and Edge AI. With up to 275 TOPS of AI performance and power configurable between 15W and 50W, you now have more than 6X the performance of NVIDIA® Jetson AGX Xavier™ in the same compact form-factor for developing advanced robots and other autonomous machine products.

## PRODUCT DETAILS

### Description

The newest member of Jetson Family, NVIDIA® Jetson AGX Orin™ Developer Kit, provides a giant leap forward for Robotics and Edge AI. With up to 275 TOPS of AI performance and power configurable between 15W and 50W, you now have more than 8X the performance of NVIDIA® Jetson AGX Xavier™ in the same compact form-factor for developing advanced robots and other autonomous machine products. With Jetson AGX Orin, developers can now deploy large and complex models to solve problems like natural language understanding, 3D perception, and multi-sensor fusion.

### Features

- **Most powerful AI computer for energy-efficient autonomous machines:** up to 275 TOPS, power configurable between 15W and 60W, supports multiple concurrent AI inference pipelines, plus high-speed interface support for multiple sensors.
- **Giant Leap forward compared to Jetson AGX Xavier:** 8 times AI performance in the same compact form-factor, built with new NVIDIA Ampere architecture with 2048 NVIDIA® CUDA® cores and 64 tensor cores, 12-core Arm Cortex-A78AE v8.2 64-bit CPU 3MB L2+6MB L3

- **Supports multiple concurrent AI inference pipelines** with onboard 64GB eMMC, 204 GB/s of memory bandwidth, and 32 GB of DRAM.
- **High-speed interface support for multiple sensors:** 22 lanes of PCIe Gen4, Gigabit Ethernet, 4 XFI interfaces for 10 Gigabit Ethernet, a Display Port, 16 lanes of MIPI CSI-2, USB3.2 interfaces, and 40-pin header.
- **Support Jetpack 5.0** installs Ubuntu 20.04 and supports entire NVIDIA JetPack™ and use-case-specific software platforms including Isaac for robotics, and Metropolis for smart cities.

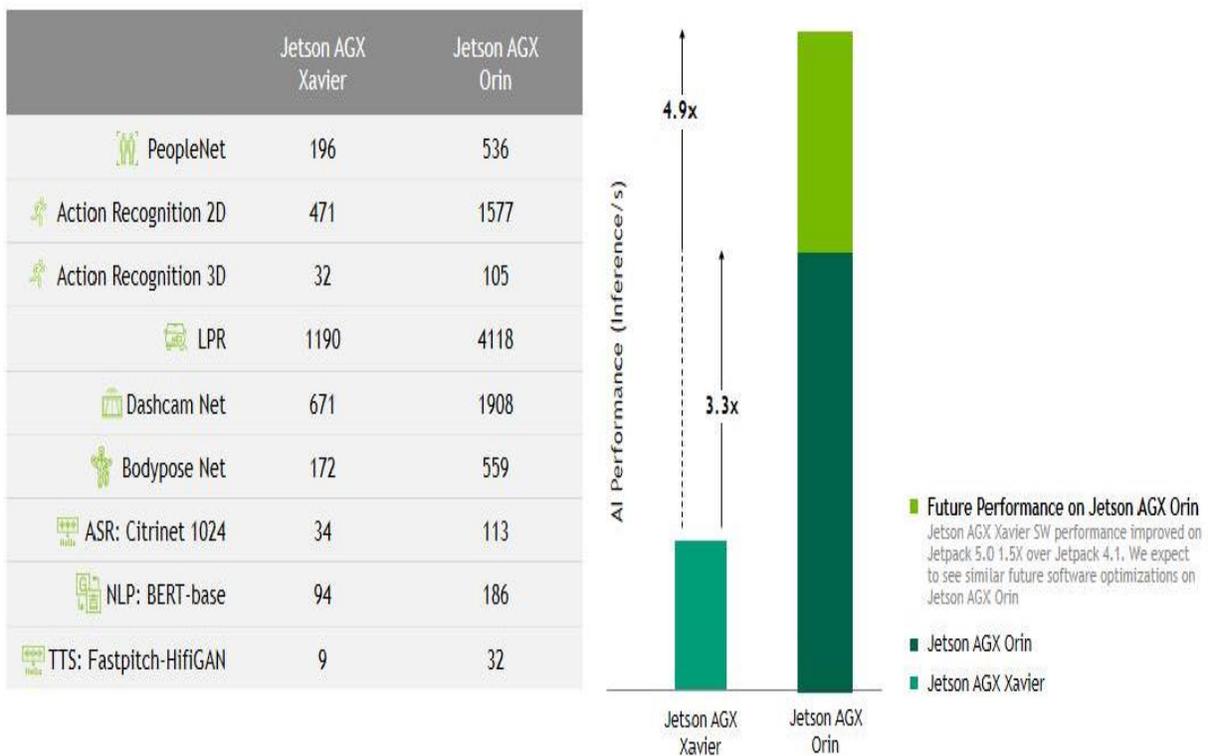
## Applications:

Supported by NVIDIA JetPack™ and use-case-specific software platforms including Isaac for robotics, and Metropolis for smart cities, this developer kit provides everything you need to get started right away.

Orion Robot demo on Jetson AGX Orin

## Compare NVIDIA Jetson AGX Orin with AGX Xavier

In the [specification sheet](#), NVIDIA made an inference time comparison.



	<a href="#">AGX Xavier</a>	<b>AGX Orin</b>
GPU	512-core Volta GPU with 64 Tensor Cores	NVIDIA Ampere architecture with 2048 NVIDIA® CUDA® cores and 64 Tensor Cores
CPU	8-core ARM v8.2 64-bit CPU, 8MB L2 + 4MB L3	12-core Arm® Cortex®-A78AE v8.2 64-bit CPU 3MB L2 + 6MB L3
Memory	32GB 256-Bit LPDDR4x 13.7GB/s	32GB 256-bit LPDDR5 20.8 GB/s
Storage	32GB eMMC 5.1	64GB eMMC 5.1
DL Accelerator	2x NVDLA Engines	2x NVDLA v2.0
Vision Accelerator	7-way VLIW Vision Processor	PVA v2.0
Encoder	2x 1000MP/sec 4x 4K @ 60 (HEVC) 8x 4K @ 30 (HEVC) 16x 1080p @ 60 (HEVC) 32x 1080p @ 30 (HEVC)	2x 4K60 4x 4K30 8x 1080p60 16x 1080p30 (H.265)
Decoder	2x 1500MP/sec	1x 8K30

	2x 8K @ 30 (HEVC) 6x 4K @ 60 (HEVC) 12x 4K @ 30 (HEVC) 26x 1080p @ 60 (HEVC) 52x 1080p @ 30 (HEVC) 30x 1080p @ 30 (H.264)	3x 4K60 6x 4K30 12x 1080p60 24x 1080p30 (H.265)
Size	100.0 mm x 87.0 mm	100.0 mm × 87.0 mm

Getting Started with the NVIDIA Jetson AGX Orin Developer Kit  
 Watch on YouTube

[https://www.youtube.com/watch?v=eFgsOeHMAW4&feature=emb\\_imp\\_woyt](https://www.youtube.com/watch?v=eFgsOeHMAW4&feature=emb_imp_woyt)

## NVIDIA Jetson-powered Edge AI platform at Seed



At Seed, you will find everything you want to work with [NVIDIA Jetson Platform](#) – official NVIDIA Jetson Dev Kits, Seed-designed carrier boards, and edge devices, as well as accessories.

Seed will continue working on the Jetson product line and will be ready to combine our partners' unique technology with Seed's hardware expertise for an end-to-end solution.

## Join Seeed as Edge AI Partner, Deliver Real-World AI Together

The graphic features a dark background with a glowing green circuit board pattern. In the top left corner, the logos for 'seeed studio' and 'NVIDIA' are displayed. The main title 'Seeed Edge AI Partner Program' is written in a large, bold, white font with a green glow. Below the title, three bullet points are listed: 'Designed to AI software enterprises, solution integrators and community experts', 'Co-Inventing with Seeed', and 'Delivering Real-World AI Together'. At the bottom, two NVIDIA Jetson modules are shown: a smaller one on the left and a larger one on the right, both with the NVIDIA logo on their blue covers.

Seeed's Edge AI platform provides devices, carrier boards, peripherals, software tools, and ML solutions. Seeed is NVIDIA's official reseller and ecosystem hardware partner. By consolidating our best-in-class hardware and cutting-edge technology from our software partners and the community, we aim at helping both developers and enterprises deploy ML in the real world across industries. Contact us at [edgeai@seeed.cc](mailto:edgeai@seeed.cc)

We are looking forward to working with AI experts, software enterprises, and system integrators:

- Integrating your unique technology, resell or co-brand licensed solution with us.
- Building next-gen AI products powered by the NVIDIA Jetson module, one-stop bringing your product to the market with Seeed's manufacturing, fulfillment, and distribution.
- Working with Seeed Amazing Ecosystem Partners together, unlocking more AI possibilities.

# Specification

## Jetson AGX Orin module

<b>AI Performance</b>	275 TOPS (INT8)
<b>GPU</b>	NVIDIA Ampere architecture with 2048 NVIDIA® CUDA® cores and 64 Tensor Cores
<b>Max GPU Freq</b>	1 GHz
<b>CPU</b>	12-core Arm® Cortex®-A78AE v8.2 64-bit CPU 3MB L2 + 6MB L3
<b>CPU Max Freq</b>	2 GHz
<b>DL Accelerator</b>	2x NVDLA v2.0
<b>Vision Accelerator</b>	PVA v2.0
<b>Memory</b>	

	<p>32GB 256-bit LPDDR5</p> <p>204.8 GB/s</p>
<b>Storage</b>	64GB eMMC 5.1
<b>CSI Camera</b>	<p>Up to 6 cameras (16 via virtual channels*)</p> <p>16 lanes MIPI CSI-2</p> <p>D-PHY 1.2 (up to 40Gbps)   C-PHY 1.1 (up to 164Gbps)</p>
<b>Video Encode</b>	2x 4K60   4x 4K30   8x 1080p60   16x 1080p30 (H.265)
<b>Video Decode</b>	1x 8K30   3x 4K60   6x 4K30   12x 1080p60   24x 1080p30 (H.265)
<b>UPHY</b>	<p>2 x8 (or 1x8 + 2x4), 1 x4, 2 x1 (PCIe Gen4, Root Port &amp; Endpoint)</p> <p>3x USB 3.2</p> <p>Single lane UFS</p>
<b>Networking</b>	<p>1x GbE</p> <p>4x 10GbE</p>

<b>Display</b>	1x 8K60 multi-mode DP 1.4a (+MST)/eDP 1.4a/HDMI 2.1
<b>Other I/O</b>	4x USB 2.0 4x UART, 3x SPI, 4x I2S, 8x I2C, 2x CAN, DMIC & DSPK, GPIOs
<b>Power</b>	15W   30W   60W
<b>Mechanical</b>	100mm x 87mm 699-pin Molex Mirror Mezz Connector Integrated Thermal Transfer Plate

Jetson AGX Orin Reference Carrier Board

<b>Camera</b>	16 lane MIPI CSI-2 connector
<b>PCIe</b>	x16 PCIe slot supporting x8 PCIe Gen4
<b>RJ45</b>	Up to 10 GbE

<b>M.2 Key M</b>	x4 PCIe Gen 4
<b>USB Type-C</b>	2x USB 3.2 Gen2 with USB-PD support
<b>USB Type-A</b>	4x USB 3.2 Gen2
<b>USB Micro-B</b>	USB 2.0
<b>DisplayPort</b>	DisplayPort 1.4a (+MST)
<b>microSD slot</b>	UHS-1 cards up to SDR104 mode
<b>Other</b>	<p>40-pin header (I2C, GPIO, SPI, CAN, I2S, UART, DMIC)</p> <p>12-pin automation header</p> <p>10-pin audio panel header</p> <p>10-pin JTAG header</p> <p>4-pin fan header</p> <p>2-pin RTC battery backup connector</p> <p>DC power jack</p> <p>Power,</p> <p>Force Recovery, and Reset buttons</p>

<b>Dimensions</b>	110mm x 110mm x 71.65mm (Height includes feet, carrier board, module, and thermal solution)
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## Part List

Jetson AGX Orin Developer Kit x1

## Community Review

Watch on YouTube

[https://www.youtube.com/watch?v=LUxyNyCl4ro&feature=emb\\_imp\\_woyt](https://www.youtube.com/watch?v=LUxyNyCl4ro&feature=emb_imp_woyt)

## ECCN/HTS

HSCODE 8543709990

USHSCODE 8517180050

UPC

# LEARN AND DOCUMENTS

## *Documentations*

- [NVIDIA Jetson AGX Orin Specification](#)
- [NVIDIA Jetson AXG Orin 3D file](#)

# Learn



## [Documentation] Adaptation and Bringup for Jetson AGX Orin

NVIDIA has posted the Jetson AGX Orin Platform Adaptation and Bringup Guide! The document describes how to port the NVIDIA® Jetson™ Linux Driver Package (L4T) from an NVIDIA Jetson developer kit to another hardware platform.

NVIDIA® Jetson Module Compatible Carrier Boards Comparison

Carrier board	 reComputer 3101 carrier board for NVIDIA® Jetson™ Nano/NX/TX2 NX	 reComputer 3202 carrier board for NVIDIA® Jetson™ Nano/NX/TX2 NX	 reComputer 3401 carrier board for NVIDIA® Jetson™ Orin NX	 A206 carrier board for NVIDIA® Jetson™ Nano/NX/TX2 NX	 A201 V2 carrier board for NVIDIA® Jetson™ Nano/NX/TX2 NX	 A205 carrier board for NVIDIA® Jetson™ Nano/NX/TX2 NX
Module Compatibility	NVIDIA® Jetson™ Nano	NVIDIA® Jetson™ Nano/ Xavier NX/TX2 NX	NVIDIA® Jetson™ Orin NX	NVIDIA® Jetson™ Nano/ Xavier NX/TX2 NX	NVIDIA® Jetson™ Nano/ Xavier NX/TX2 NX	NVIDIA® Jetson™ Nano/ Xavier NX/TX2 NX
PCB Size / Overall Size	100mm*80mm	100mm*80mm	100mm*80mm	100mm*80mm	87mm*52mm	170mm*100mm
Display	1*HDMI	1*HDMI+1*DP	1*DP	1*HDMI+1*DP	1*HDMI	2*HDMI
CSI Camera	2*CSI	2*CSI	2*CSI	2*CSI	1*CSI	6*CSI
Ethernet	1x Gigabit Ethernet (10/100/1000M)	1x Gigabit Ethernet (10/100/1000M)	1x Gigabit Ethernet (10/100/1000M)	1x Gigabit Ethernet (10/100/1000M)	1x Gigabit Ethernet (10/100/1000M)	2x Gigabit Ethernet (10/100/1000M)
USB	1* USB 3.0 Type-A 2* USB 2.0 Type-A 1* USB Type C(Not support power input)	4* USB 3.1 Type-A (Integrated USB 2.0) 1* USB Type C(Not support power input)	4* USB 3.2 Type-A (Integrated USB 2.0) 1* USB Type C(Not support power input)	4* USB 3.0 Type-A (Integrated USB 2.0) 1* USB Micro B(Not support power input)	2* USB 3.0 Type-A (Integrated USB 2.0) 1* USB Micro B(Not support power input)	4* USB 3.0 Type-A (Integrated USB 2.0) 1* USB 2.0 Type C(Support OTG)
Storage Expansion	\	1*M.2 Key M	1*M.2 Key M	1*M.2 Key M	1*M.2 Key M	5*SATA
M.2 Key E	1*M.2 Key E	1*M.2 Key E	1*M.2 Key E	1*M.2 Key E	1*M.2 Key E	1*M.2 Key E
TF_Card	1* TF_Card (CLK Frequency 48Mhz)	\	\	\	1* TF_Card	1* TF_Card
USB WIFI Mode	\	\	\	\	\	1* Standard USB WIFI Mode(4 pin interface)
Audio	\	\	\	\	\	1* Audio Jack 2* Microphone Interface 2* Speaker interface
SPI Bus	2* SPI Bus(+3.3V Level)	2* SPI Bus(+3.3V Level)	2* SPI Bus(+3.3V Level)	2* SPI Bus(+3.3V Level)	2* SPI Bus(+3.3V Level)	2* SPI Bus(+3.3V Level)
Fan Connector	1* Fan(5V PWM)	1* Fan(5V PWM)	1* Fan(5V PWM)	1* Fan(5V PWM)	1* Fan(5V PWM)	2* Fan(12V/5V) 1* Fan(5V PWM)
CAN	\	1* CAN	1* CAN	1* CAN	1* CAN	1* CAN
Multifunctional port	1* 40-Pin	1* 40-Pin	1* 40-Pin	1* 40-Pin	1* 40-Pin	1* 40-Pin
RTC	Battery not included	Battery not included	Battery not included	Battery not included	Battery not included	Battery not included
Power supply	USB Type C 5V/3A (not include a power cord)	12V/5A power cord only	19V/4.74A power cord only	19V/4.74A power cord only	19V/4.74A power cord only	19V/4.74A power cord only

## [Documentation] NVIDIA Jetson powered devices and carrier boards comparison

Explore the interfaces, AI performances, and all differences among Seeed's edge AI devices and carrier boards for Jetson, as well as NVIDIA Official Dev Kts.



### [\[Wiki\] Getting Started with Jetson AGX Orin Developer Kit](#)

NVIDIA® Jetson AGX Orin™ Developer Kit enables development of full-featured AI applications for products based on Jetson Orin modules. It includes a high-performance, power-efficient Jetson AGX Orin module, and can emulate the other Jetson Orin modules. In this official wiki, you will learn how to get started with Jetson AGX Orin Dev Kit.



### [\[Wiki\] Getting Started with Allxon on NVIDIA® Jetson Devices](#)

You can securely manage NVIDIA® JetPack 4.6 onward versions with Cyber Security at the Edge protecting all networks and hardware. Here are some operations about installing, getting code, adding devices etc.



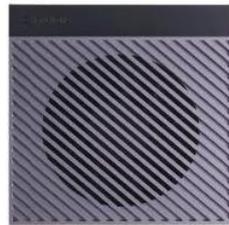
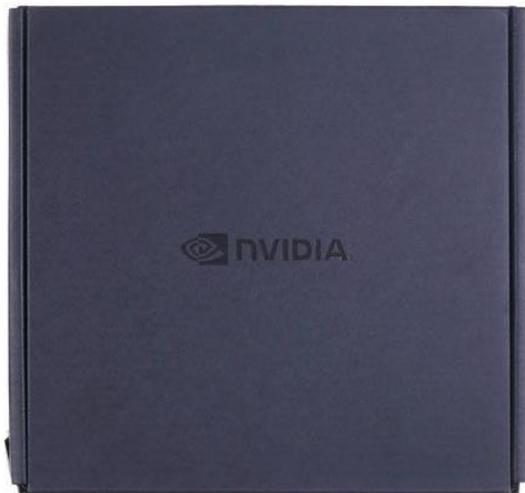
Dev Kit, Cover Removed



Dev Kit, Cover Removed, Opposite side

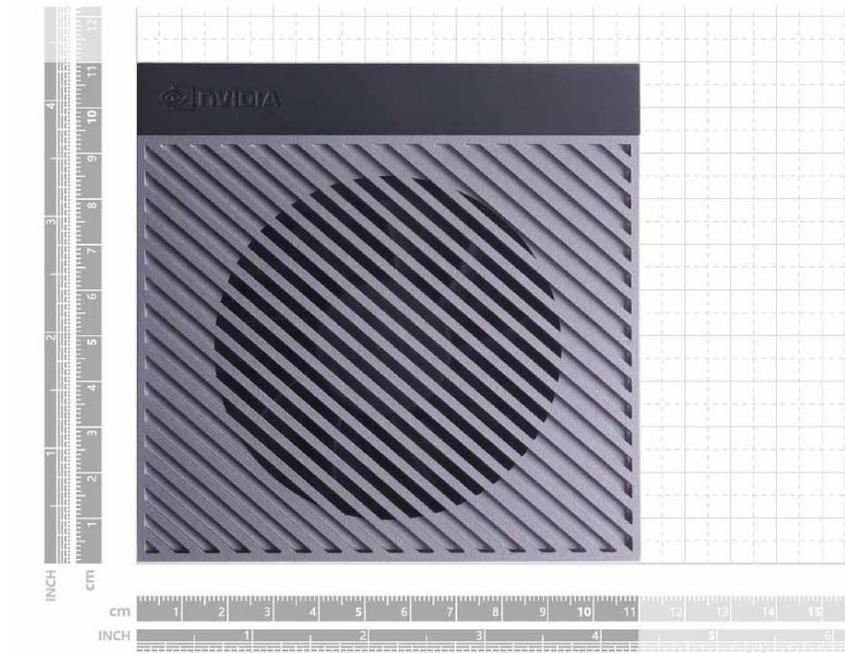
**[Others] [NVIDIA Jetson AGX Orin Developer Kit review by JetsonHacks](#)**

The NVIDIA Jetson AGX Orin Developer Kit is now available! Come JetsonHacks to check more information!





seed studio



<https://www.seedstudio.com/NVIDIA-Jetson-AGX-Orin-Developer-Kit-p-5314.html>-8-17-22