Seeed Studio
NVIDIA® Jetson Series Catalog
V1.3
Your trusted one-stop platform for NVIDIA® Jetson products

seeedstudio.com/nvidia-jetson.html
Almost all industries are being transformed by the rapid growth of artificial intelligence (AI) and the proliferation of billions of Internet of Things (IoT) devices. Such developments pose various challenges, including the need for highly advanced computing power. With the advent of AI at the edge, we can now envision applications we would not have previously considered.

The NVIDIA® Jetson series bring incredible new capabilities to the edge to accelerate product development and deployment. As one of NVIDIA’s ecosystem partners, Seeed’s professional hardware development team provides a full range of hardware products based on NVIDIA Jetson modules, including carrier boards, mini-PCs, edge AI servers, and peripherals, enabling you to develop and deploy innovative products across various industries. In addition, our team is well-prepared to deliver custom service based on Jetson to satisfy your needs for various AIoT scenarios.

Seeed aims to provide you with a one-stop-shop experience of NVIDIA Jetson products and simplify the process of developing your AI projects.
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## Carrier Board for Jetson

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## reComputer Series for Jetson

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## reServer Series for Jetson

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## Full System Comparison

<table>
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<tr>
<th>Subject</th>
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<tbody>
<tr>
<td>Jetson Nano</td>
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<td>Jetson Xavier NX</td>
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## NVIDIA Jetson Compatible Accessories

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## Customization Service

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<td>Azimorph</td>
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<td>DexForce</td>
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<td>Theia Scientific, LLC</td>
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</table>
Advanced AI Embedded Systems

NVIDIA Jetson: The AI platform for autonomous machines.

*Pictures from NVIDIA*
# The Jetson family

For AI at the Edge and Autonomous Machines

## Next-Gen: Jetson Orin

<table>
<thead>
<tr>
<th>Model</th>
<th>TOPs</th>
<th>Power</th>
<th>Dimensions</th>
</tr>
</thead>
<tbody>
<tr>
<td>JETSON Orin Nano 4GB</td>
<td>20</td>
<td>5 - 10W</td>
<td>45mm x 70mm</td>
</tr>
<tr>
<td>JETSON Orin Nano 8GB</td>
<td>40</td>
<td>7 - 15W</td>
<td>45mm x 70mm</td>
</tr>
<tr>
<td>JETSON Orin NX 8GB</td>
<td>70</td>
<td>10 - 20W</td>
<td>45mm x 70mm</td>
</tr>
<tr>
<td>JETSON Orin NX 16GB</td>
<td>100</td>
<td>10 - 25W</td>
<td>45mm x 70mm</td>
</tr>
<tr>
<td>JETSON AGX Orin Series</td>
<td>275</td>
<td>15 - 60W</td>
<td>100mm x 87mm</td>
</tr>
</tbody>
</table>

## JETSON NANO

- 0.5 TFLOPS (FP16)
- 5 - 10W
- 45mm x 70mm

## JETSON TX2 NX

- 1.33 TFLOPS (FP16)
- 7.5 - 15W
- 45mm x 70mm

## JETSON TX2 series

- 1.33 TFLOPS (FP16)
- 7.5 - 15W
- 50mm x 87mm

## JETSON Xavier NX series

- 21 TOPs (INT8)
- 10 - 20W
- 8GB/16GB
- 45mm x 70mm

## JETSON AGX Xavier Series

- 32 TOPs (INT8)
- 10 - 30W
- 32GB/64GB
- 100mm x 87mm

*source: NVIDIA*
# Module Specification

<table>
<thead>
<tr>
<th></th>
<th>Jetson AGX Xavier</th>
<th>Jetson AGX Xavier 64GB</th>
<th>Jetson AGX Orin 32GB</th>
<th>Jetson AGX Orin 64GB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AI Performance</strong></td>
<td>32 TOPS (De)</td>
<td>200 TOPS (Sp)</td>
<td>100 TOPS (De)</td>
<td>275 TOPS (Sp)</td>
</tr>
<tr>
<td><strong>GPU</strong></td>
<td>512-core NVIDIA Volta GPU with 64 Tensor Cores</td>
<td>1792-core NVIDIA Ampere GPU with 56 Tensor Cores</td>
<td>2048-core NVIDIA Ampere GPU with 64 Tensor Cores</td>
<td></td>
</tr>
<tr>
<td><strong>DL Accelerator</strong></td>
<td>2x NVDLA</td>
<td>2x NVDLA v2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Vision Accelerator</strong></td>
<td>2x PVA v1</td>
<td>PVA v2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CPU</strong></td>
<td>8-core NVIDIA Carmel Arm®v8.2 64-bit CPU 8MB L2 + 4MB L3</td>
<td>8-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU 2MB L2 + 4MB L3</td>
<td>12-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU 3MB L2 + 6MB L3</td>
<td></td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>32GB 256-bit LPDDR4x @ 2133MHz 137 GB/s</td>
<td>64GB 256-bit LPDDR4x @ 2133MHz 137 GB/s</td>
<td>32 GB 256-bit LPDDR5 @ 3200MHz 204.8 GB/s</td>
<td>64 GB 256-bit LPDDR5 @ 3200MHz 204.8 GB/s</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>32GB eMMC 5.1</td>
<td></td>
<td>64 GB eMMC 5.1</td>
<td></td>
</tr>
<tr>
<td><strong>Video Encode</strong></td>
<td>4x 4K60</td>
<td>8x 4K30</td>
<td>16x 1080p60</td>
<td>32x 1080p30 (H.265) H.264, VP9</td>
</tr>
<tr>
<td><strong>Video Decode</strong></td>
<td>2x 8K30</td>
<td>6x 4K60</td>
<td>12x 4K30</td>
<td>26x 1080p60</td>
</tr>
<tr>
<td><strong>Camera</strong></td>
<td>16 lanes MIPI CSI-2 (36 Virtual Channels)</td>
<td>16 lanes MIPI CSI-2 (16 Virtual Channels*)</td>
<td>D-PHY 2.1 40Gbps / C-PHY 2.0 164Gbps</td>
<td></td>
</tr>
<tr>
<td><strong>PCI Express</strong></td>
<td>16 lanes PCIe Gen 4</td>
<td>22 lanes PCIe Gen 4</td>
<td>Up to 2 x8, 1 x4, 2 x1</td>
<td></td>
</tr>
<tr>
<td><strong>Ethernet</strong></td>
<td>1 Gbe RGMII</td>
<td>1 Gbe RGMII</td>
<td>1x 10Gbe XFI</td>
<td></td>
</tr>
<tr>
<td><strong>Mechanical</strong></td>
<td>100mm x 87mm 699 pin connector</td>
<td>100mm x 87mm 699 pin connector</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>10W to 30W</td>
<td>15W to 40W</td>
<td>15W to 60W</td>
<td></td>
</tr>
</tbody>
</table>

* Refers to both Jetson Xavier NX and Jetson Xavier NX 16GB
** Refers to both Jetson AGX Xavier and Jetson AGX Xavier 64GB

source: NVIDIA
# Module Specification

<table>
<thead>
<tr>
<th></th>
<th>Jetson Xavier NX</th>
<th>Jetson Xavier NX 16GB</th>
<th>Jetson Orin NX 8GB</th>
<th>Jetson Orin NX 16GB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AI Performance</strong></td>
<td>21 TOPS (De)</td>
<td>70 TOPS (Sp)</td>
<td>5 TOPS (Sp)</td>
<td>100 TOPS (Sp)</td>
</tr>
<tr>
<td><strong>GPU</strong></td>
<td>384-core NVIDIA Volta™ GPU</td>
<td>1024-core NVIDIA Ampere GPU</td>
<td>with 48 Tensor Cores</td>
<td>with 32 Tensor Cores</td>
</tr>
<tr>
<td><strong>DL Accelerator</strong></td>
<td>2x NVDLA</td>
<td>NVDLA v2</td>
<td>2x NVDLA v2</td>
<td></td>
</tr>
<tr>
<td><strong>Vision Accelerator</strong></td>
<td>2x PVA v1</td>
<td>PVA v2</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CPU</strong></td>
<td>6-core NVIDIA Carmel ARM®v8.2 64-bit CPU</td>
<td>6-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU</td>
<td>8-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU</td>
<td>2MB L2 + 4MB L3</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>8 GB 128-bit LPDDR4x @1600 MHz, 51.2GB/s</td>
<td>16 GB 128-bit LPDDR4x @1600 MHz, 51.2GB/s</td>
<td>8GB 128-bit LPDDR5 @3200 MHz 102.4 GB/s</td>
<td>16GB 128-bit LPDDR5 @3200 MHz 102.4 GB/s</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>16GB eMMC 5.1</td>
<td>—</td>
<td>(Supports external NVMe)</td>
<td></td>
</tr>
<tr>
<td><strong>Video Encode</strong></td>
<td>2x 4K60</td>
<td>2x 4K30</td>
<td>5x 1080p60</td>
<td>11x 1080p30 (H.265)</td>
</tr>
<tr>
<td><strong>Video Decode</strong></td>
<td>2x 8K30</td>
<td>6x 4K60</td>
<td>12x 4K30</td>
<td>22x 1080p60</td>
</tr>
<tr>
<td><strong>Camera</strong></td>
<td>Up to 6 cameras (36 via virtual channels)</td>
<td>Up to 4 cameras (8 via virtual channels* )</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>PCI Express</strong></td>
<td>5 lanes PCIe Gen 3</td>
<td>7 lanes PCIe Gen 4</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Ethernet</strong></td>
<td>1 Gbe via MDI</td>
<td>1 Gbe via MDI</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Mechanical</strong></td>
<td>69.6 mm x 45 mm</td>
<td>69.6 mm x 45 mm</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>10W to 20W</td>
<td>10W to 20W</td>
<td>10W to 25W</td>
<td></td>
</tr>
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* Refers to both Jetson Xavier NX and Jetson Xavier NX 16GB
** Refers to both Jetson AGX Xavier and Jetson AGX Xavier 64GB

source: NVIDIA
## Module Specification

<table>
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<tr>
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<th>Jetson Nano</th>
<th>Jetson TX2 NX</th>
<th>Jetson Orin Nano 4GB</th>
<th>Jetson Orin Nano 8GB</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>AI Performance</strong></td>
<td>0.5 TFLOPS (Dense)</td>
<td>1.33 TFLOPS (Dense)</td>
<td>20 TOPS (Sparse)</td>
<td>10 TOPS (Dense)</td>
</tr>
<tr>
<td><strong>GPU</strong></td>
<td>128-core NVIDIA Maxwell™ GPU</td>
<td>256-core NVIDIA Pascal™ GPU</td>
<td>512-core NVIDIA Ampere GPU with 16 Tensor Cores</td>
<td>1024-core NVIDIA Ampere GPU with 32 Tensor Cores</td>
</tr>
<tr>
<td><strong>CPU</strong></td>
<td>4-core Arm® Cortex®-A57 MCore processor, 1.5 GHz</td>
<td>2-core Denver 2 64-bit CPU and 4-core Arm® Cortex®-A57 MCore processor, 2.0 GHz</td>
<td>6-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU, 1.5 GHz 1.5MB L2 + 4MB L3</td>
<td>6-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU, 1.5 GHz 1.5MB L2 + 4MB L3</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>4 GB 64-bit LPDDR4x @1600 MHz, 25.6 GB/s</td>
<td>4 GB 128-bit LPDDR4x @1600 MHz, 51.2 GB/s</td>
<td>4GB 64-bit LPDDR5 @2133 MHz, 34 GB/s</td>
<td>8GB 128-bit LPDDR5 @2133 MHz, 68 GB/s</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>16GB eMMC 5.1</td>
<td>16GB eMMC 5.1</td>
<td>— (Supports external NVMe)</td>
<td>— (Supports external NVMe)</td>
</tr>
<tr>
<td><strong>Video Encode</strong></td>
<td>1x 4K30</td>
<td>2x 1080p60</td>
<td>4x 1080p30 (H.265)</td>
<td>1x 4K60</td>
</tr>
<tr>
<td><strong>Video Decode</strong></td>
<td>2x 4K60</td>
<td>4x 4K30</td>
<td>7x 1080p60</td>
<td>14x 1080p30 (H.265)</td>
</tr>
<tr>
<td><strong>Camera</strong></td>
<td>12 lanes MIPI CSI-2</td>
<td>D-PHY 1.1 (up to 18 Gbps)</td>
<td>Up to 5 cameras (12 via virtual channels)</td>
<td>Up to 4 cameras (8 via virtual channels*)</td>
</tr>
<tr>
<td><strong>PCI Express</strong></td>
<td>4 lanes PCIe Gen 2</td>
<td>1 x4</td>
<td>3 lanes PCIe Gen 2</td>
<td>1 x2, 1 x1</td>
</tr>
<tr>
<td><strong>USB</strong></td>
<td>1x USB 3.1</td>
<td>(5 Gbps)</td>
<td>1x USB 3.1</td>
<td>(5 Gbps)</td>
</tr>
<tr>
<td><strong>Ethernet</strong></td>
<td>1 Gbe via MDI</td>
<td></td>
<td>1 Gbe via MDI</td>
<td></td>
</tr>
<tr>
<td><strong>Mechanical</strong></td>
<td>69.6 mm x 45 mm</td>
<td>69.6 mm x 45 mm</td>
<td>69.6 mm x 45 mm</td>
<td>69.6 mm x 45 mm</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>5W to 10W</td>
<td>7W to 15W</td>
<td>5W to 10W</td>
<td>7W to 15W</td>
</tr>
</tbody>
</table>

* Refers to both Jetson Xavier NX and Jetson Xavier NX 16GB

** Refers to both Jetson AGX Xavier and Jetson AGX Xavier 64GB

source: NVIDIA
Application Scenarios

- AI Camera for Retail & Factory
- Autopilot Robots & Cars
- Drones
- Education & Training Tools
- Medical & Biological Vision
- AI for Smart Retail
Meet Seeed Carrier Boards for Jetson
Designed For Endless Edge AI Deployments

- Various Form Factors
- Rich I/Os
- Compatible with Orin Nano/Orin NX
- Compatible with Jetson Nano/TX2 NX/ Xavier NX
Carrier Boards

Product Name: reComputer J101 carrier

Dimensions: 100mm*80mm

Module Compatibility: Jetson Nano

SKU: 102991694

Certification:

Introduction: reComputer J101 is a cost-effective, high-performance, and interface-rich NVIDIA Jetson Nano compatible carrier board. It has nearly the same functional design and the same size as the carrier board of NVIDIA® Jetson Nano™ developer kit.

Features:

- HDMI 2.0
- 3 USB Type A
- Micro SD Card Slot
- 2 CSI Camera Connectors
- M.2 Key E
- RTC

Applications:

- Automation
- Image Classification
- Object Detection
- Speech Processing
- Drone

*Some of certification is on going
Carrier Boards

Product Name: reComputer J202 carrier board
Dimensions: 100mm*80mm
Module Compatibility:
- Jetson Nano
- Jetson Xavier NX
- Jetson TX2 NX
SKU: 102991695
Japan Version: reComputer J202 (without power adapter) SKU 102991714

Certification:
reComputer J202 is a high-performance, interface rich NVIDIA Jetson Nano/Xavier NX/TX2 NX compatible carrier board. It has the same functional design and size as the carrier board of NVIDIA® Jetson Xavier™ NX developer kit. There are minor differences between J202 and A206, and J202 is more cost-effective.

Introduction

Features
- 4 USB Ports
- 2 CSI Camera Connectors
- 9V-16V
- M.2 key E
- M.2 key M
- RTC
- HDMI + DP ports

Applications
- Defect Detection in Manufacturing
- Smart Shopping Cart
- Pose Estimation
- Drone
- Robotics

*Some of certification is on going
Carrier Boards

Product Name: reComputer J401 carrier board

Dimensions: 100mm*80mm

Module Compatibility:
- Jetson Orin Nano
- Jetson Orin NX

SKU: 102110769

Japan Version: reComputer J401 (without power adapter) SKU 102110769

Certification:

Introduction:
reComputer J401 is a high-performance, interface rich NVIDIA Jetson Nano/Xavier NX/TX2 NX compatible carrier board. It has the same functional design and size as the carrier board of NVIDIA® Jetson Xavier™ NX developer kit.

Features:
- 4 USB Ports
- 2 CSI Camera Connectors
- 9V-16V
- M.2 key E
- M.2 key M
- RTC
- HDMI + DP ports

Applications:
- Defect Detection in Manufacturing
- Smart Shopping Cart
- Pose Estimation
- Robotics

*Certification is on going
## Carrier Boards

<table>
<thead>
<tr>
<th>Product Name</th>
<th>A205E Carrier board</th>
</tr>
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<tbody>
<tr>
<td>Dimensions</td>
<td>115mm x 105mm</td>
</tr>
<tr>
<td>Module</td>
<td>- Jetson Nano</td>
</tr>
<tr>
<td></td>
<td>- Jetson Xavier NX</td>
</tr>
<tr>
<td></td>
<td>- Jetson TX2 NX</td>
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<tr>
<td>SKU</td>
<td>102110774</td>
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<td><img src="rohs.png" alt="RoHS" /> <img src="ce.png" alt="CE" /> <img src="fcc.png" alt="FCC" /></td>
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</table>

### Introduction
Designing for industrial communication use, A205E provides RS232, RS485, and CAN interfaces, high-speed PCIe M.2 Key M(SSD), and M.2 Key E(WiFi). It also provides a rich set of I/Os including a microSD card slot, HDMI, dual Gigabit Ethernet, 4x USB 3, USB2.0 Type C, SPI, I2C, GPIO, and a fan for different application needs. The board supports operate in the temperature range from -25°C to 80°C.

### Features
- 4x USB 3.0
- USB2.0 Type C
- CAN
- M.2 key E
- M.2 key M
- RS485
- RS232

### Applications
- Defect Detection in Manufacturing
- Agriculture and Farming
- Supply Chain
- Robotics

*Some of certification is on going*
# Carrier Boards

<table>
<thead>
<tr>
<th><strong>Product Name</strong></th>
<th>A206 carrier board</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Dimensions</strong></td>
<td>100mm*80mm</td>
</tr>
<tr>
<td><strong>Module Compatibility</strong></td>
<td>- Jetson Nano&lt;br&gt;- Jetson Xavier NX&lt;br&gt;- Jetson TX2 NX</td>
</tr>
<tr>
<td><strong>SKU</strong></td>
<td>114110049</td>
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<tr>
<td><strong>Certification</strong></td>
<td>√ROHS, √CE, √FCC</td>
</tr>
<tr>
<td><strong>Introduction</strong></td>
<td>The same size/design/function as the NVIDIA® Jetson Xavier™ NX carrier board. Due to components shortage, we recommend the latest J202 carrier board as the alternative.</td>
</tr>
</tbody>
</table>

**Features**

- 4 USB Ports
- HDMI + DP ports
- RTC
- M.2 E key
- M.2 M key
- 9V-19V

**Applications**

- Defect Detection in Manufacturing
- Smart Shopping Cart
- Pose Estimation
- Drone
- Robotics
Carrier Boards

**Product Name**  
A203 V2 carrier board

**Dimensions**  
87mm*52mm

**Module Compatibility**  
- Jetson Nano  
- Jetson Xavier NX  
- Jetson TX2 NX

**SKU**  
103110043

**Certification**  
AND CE

**Introduction**  
It is a high-performance, interface rich Jetson Nano/Xavier NX/TX2 NX compatible carrier board.  
Compared with Jetson Xavier NX carrier board, it is much smaller and thus is suitable for small size AI graphical applications, such as smart-city IoT edge devices, home robots, UAVs, unmanned boats and unmanned submarines.

**Features**  
- Small and compact  
- 9V-19V  
- RTC  
- M.2 E key

- SD card slot  
- USB 3.0 ZIF connector

**Applications**  
- UAVs  
- Drone  
- Unmanned Submarine  
- Smart Traffic  
- Home Robots
Carrier Boards

**Product Name**  
A205 carrier board

**Dimensions**  
170mm*100mm

**Module Compatibility**  
- Jetson Nano  
- Jetson Xavier NX  
- Jetson TX2 NX

**SKU**  
114110048

**Certification**  

**Introduction**  
Bigger size compared with Jetson Xavier NX carrier board. Its rich SATA and multiple CSI Camera connectors make it suitable for complicated AI graphical applications, such as automated optical inspection, in video action, robot control, 3D modeling, drone, and parallel computing for computer vision.

**Features**  
- 5 SATA  
- 6 CSI  
- SD card slot  
- 2 HDMI  
- 2 Ethernet Ports

**Applications**  
- Industrial Automation  
- Traffic Management  
- Drone  
- Robotics  
- Retail
# NVIDIA® Jetson Module Compatible Carrier Boards Comparison

<table>
<thead>
<tr>
<th>Carrier board</th>
<th>Module Compatibility</th>
<th>PCB Size / Overall Size</th>
<th>Display</th>
<th>CSI Camera</th>
<th>Networking</th>
<th>USB</th>
<th>Storage Expansion</th>
<th>Audio</th>
<th>SPI Bus</th>
<th>Fan Connector</th>
<th>CAN</th>
<th>Multifunctional port</th>
<th>RTC</th>
<th>Power supply</th>
<th>Operating Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>reComputer 3101 carrier board for Jetson™ Nano</td>
<td>NVIDIA® Jetson™ Nano</td>
<td>100mm*80mm</td>
<td>1*HDMI</td>
<td>2CSI</td>
<td>1*Gigabit Ethernet (10/100/1000)</td>
<td>1*USB 3.0 Type-A</td>
<td>1*M.2 Key M</td>
<td>/</td>
<td>2* SPI Bus(+3.3V Level)</td>
<td>1* Fan(5V PWM)</td>
<td>1* CAN</td>
<td>Battery not included</td>
<td>USB Type C (not include a power cord)</td>
<td>0°C ~ 60°C</td>
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</tr>
<tr>
<td>reComputer 3202 carrier board for Jetson™ Nano/ TX2 NX</td>
<td>NVIDIA® Jetson™ Nano/ Xavier NX/TX2 NX</td>
<td>100mm*80mm</td>
<td>1<em>HDMI+1</em>DP</td>
<td>2CSI</td>
<td>1*Gigabit Ethernet (10/100/1000)</td>
<td>2*USB 3.0 Type-A</td>
<td>1*M.2 Key M</td>
<td>1 Audio Jack</td>
<td>2* SPI Bus(+3.3V Level)</td>
<td>1* Fan(5V PWM)</td>
<td>1* CAN</td>
<td>Battery not included</td>
<td>USB Type C 5V/3A (not include a power cord)</td>
<td>0°C ~ 60°C</td>
<td></td>
</tr>
<tr>
<td>reComputer 3401 carrier board for Jetson™ Orin NX/Orin Nano</td>
<td>NVIDIA® Jetson™ Orin NX</td>
<td>100mm*80mm</td>
<td>1<em>HDMI+1</em>DP</td>
<td>2CSI</td>
<td>1*Gigabit Ethernet (10/100/1000)</td>
<td>4*USB 3.2 Type-A (Integrated USB 2.0)</td>
<td>1*M.2 Key M</td>
<td>1* Audio Jack</td>
<td>2* Microphone interface</td>
<td>1* Fan(5V PWM)</td>
<td>1* CAN</td>
<td>Battery not included</td>
<td>USB Type C 5V/3A (not include a power cord)</td>
<td>-10°C ~ 70°C</td>
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</tr>
<tr>
<td>A206 carrier board for Jetson™ Nano/NX/TX2 NX</td>
<td>NVIDIA® Jetson™ Nano/NX/TX2 NX</td>
<td>87mm*52mm</td>
<td>1*HDMI</td>
<td>1CSI</td>
<td>1*Gigabit Ethernet (10/100/1000)</td>
<td>4*USB 3.0 Type-A</td>
<td>1*M.2 Key M</td>
<td>1* Audio Jack</td>
<td>2* Microphone interface</td>
<td>2* Fan(12V/5V)</td>
<td>1* CAN</td>
<td>Battery not included</td>
<td>USB Type C 5V/3A (not include a power cord)</td>
<td>-25°C ~ 80°C</td>
<td></td>
</tr>
<tr>
<td>A203 V2 carrier board for Jetson™ Nano/NX/TX2 NX</td>
<td>NVIDIA® Jetson™ Nano/NX/TX2 NX</td>
<td>170mm*100mm</td>
<td>2*HDMI</td>
<td>2CSI</td>
<td>2*Gigabit Ethernet (10/100/1000)</td>
<td>4*USB 3.0 Type-A (Integrated USB 2.0)</td>
<td>1*M.2 Key M</td>
<td>/</td>
<td>2* SPI Bus(+3.3V Level)</td>
<td>1* Fan(5V PWM)</td>
<td>1* CAN</td>
<td>Battery not included</td>
<td>USB Type C (not support OTG)</td>
<td>-25°C ~ 80°C</td>
<td></td>
</tr>
<tr>
<td>A205 carrier board for Jetson™ Nano/Xavier NX/TX2 NX</td>
<td>NVIDIA® Jetson™ Nano/Xavier NX/TX2 NX</td>
<td>170mm*100mm</td>
<td>2*HDMI</td>
<td>2CSI</td>
<td>2*Gigabit Ethernet (10/100/1000)</td>
<td>4*USB 3.0 Type-A (Integrated USB 2.0)</td>
<td>1*M.2 Key M</td>
<td>/</td>
<td>2* SPI Bus(+3.3V Level)</td>
<td>1* Fan(5V PWM)</td>
<td>1* CAN</td>
<td>Battery not included</td>
<td>USB Type C 5V/3A (not include a power cord)</td>
<td>-25°C ~ 80°C</td>
<td></td>
</tr>
<tr>
<td>A205E Carrier Board for Jetson™ Nano/Xavier NX/TX2 NX</td>
<td>NVIDIA® Jetson™ Nano/Xavier NX/TX2 NX</td>
<td>115mm*105mm</td>
<td>2*HDMI</td>
<td>2CSI</td>
<td>2*Gigabit Ethernet (10/100/1000)</td>
<td>4*USB 3.0 Type-A (Integrated USB 2.0)</td>
<td>1*M.2 Key M</td>
<td>/</td>
<td>2* SPI Bus(+3.3V Level)</td>
<td>1* Fan(5V PWM)</td>
<td>1* CAN</td>
<td>Battery not included</td>
<td>USB Type C 5V/3A (not include a power cord)</td>
<td>-25°C ~ 80°C</td>
<td></td>
</tr>
</tbody>
</table>

**Notes:**
- NVIDIA® Jetson Module Compatible Carrier Boards Comparison Table
- Carrier boards compatible with NVIDIA® Jetson™ modules.
- Display: HDMI (without power input)
- CSI Camera: 2CSI
- Networking: Gigabit Ethernet (10/100/1000)
- USB: 1*USB 3.0 Type-A, 2*USB 2.0 Type-A, 1*USB Type C (Not supported power input)
- Storage Expansion: 1* TF Card (CLK Frequency 48Mhz)
- Audio: 1* Audio Jack, 2* Microphone interface, 2* Speaker interface
- SPI Bus: 2* SPI Bus(+3.3V Level)
- Fan Connector: 1* Fan(5V PWM)
- CAN: 1* CAN
- RTC: Battery not included
- Power supply: USB Type C 5V/3A (not include a power cord)
- Operating Temperature: 0°C ~ 60°C
reComputer Series for Jetson
Hand-size Edge AI Device Built with NVIDIA Advanced AI Embedded Systems

- Same Dimension Carrier Board as Official Dev Kit
- Jetson Nano/Xavier NX/Orin NX
- Pre-installed Jetpack
- Production module
Introduction

reComputer series for Jetson are compact edge computers built with NVIDIA advanced AI embedded systems. With rich extension modules, industrial peripherals, and thermal management, reComputer for Jetson is ready to help users accelerate and scale the next-gen AI product by deploying popular DNN models and ML frameworks to the edge and inferencing with high performance.

Dimensions

130mm*120mm*50mm

Features

- Edge AI box with production module
- Pre-installed Jetpack
- Rich set of I/Os
- Stackable and expandable
Products Overview

Available Version:

<table>
<thead>
<tr>
<th>reComputer J1010</th>
<th>reComputer J1020v2</th>
<th>reComputer J2021</th>
<th>reComputer J2022</th>
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<tbody>
<tr>
<td>- Jetson Nano</td>
<td>- Jetson Nano</td>
<td>- Jetson Xavier NX 8GB</td>
<td>- Jetson Xavier NX 16GB</td>
</tr>
<tr>
<td>- 1xUSB 3.0, 2x USB 2.0</td>
<td>- 4xUSB 3.0</td>
<td>- 4xUSB 3.1</td>
<td>- 4xUSB 3.1</td>
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<td>- M.2 key E</td>
<td>- M.2 key M</td>
<td>- M.2 key M, M.2 key E</td>
<td>- M.2 key M, M.2 key E</td>
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<tr>
<td>- Micro SD Card (CLK Frequency 48MHz, Available after July 15th)</td>
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<td>SKU: 110061362</td>
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<tr>
<td>- Jetson Nano</td>
<td>- Jetson Xavier NX</td>
<td>- Jetson Xavier NX 16GB</td>
</tr>
<tr>
<td>- 4xUSB 3.0</td>
<td>- 4xUSB 3.0</td>
<td>- 4xUSB 3.0</td>
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<tr>
<td>- M.2 key M</td>
<td>- M.2 key M, M.2 key E</td>
<td>- M.2 key M, M.2 key E</td>
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Coming Soon:

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<tr>
<th>reComputer J4011</th>
<th>reComputer J4012</th>
<th>reComputer J3010</th>
<th>reComputer J3011</th>
</tr>
</thead>
<tbody>
<tr>
<td>- Jetson Orin NX 8GB</td>
<td>- Jetson Orin Nano 4GB</td>
<td>- Jetson Orin Nano 8GB</td>
<td>- Jetson Orin Nano 8GB</td>
</tr>
<tr>
<td>- 4x USB 3.2 Type-A; 1x USB2.0 Type-C (Recovery)</td>
<td>- 4x USB 3.2 Type-A; 1x USB2.0 Type-C (Recovery)</td>
<td>- 4x USB 3.2 Type-A; 1x USB2.0 Type-C (Recovery)</td>
<td>- 4x USB 3.2 Type-A; 1x USB2.0 Type-C (Recovery)</td>
</tr>
<tr>
<td>- M.2 key M, M.2 key E</td>
<td>- M.2 key M, M.2 key E</td>
<td>- M.2 key M, M.2 key E</td>
<td>- M.2 key M, M.2 key E</td>
</tr>
<tr>
<td>- 128GB SSD</td>
<td>- 128GB SSD</td>
<td>- 128GB SSD</td>
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<tr>
<td>Certification:</td>
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</table>

Optional accessories:

- 128GB NVMe M.2 PCIe Gen3x4 2280 Internal SSD
- 256GB NVMe M.2 PCIe Gen3x4 2280 Internal SSD
- 512GB NVMe M.2 PCIe Gen3x4 2280 Internal SSD

*Certification is on going
NVIDIA Module
Embedded Mini PC
for Various Edge Applications

Xavier NX/AGX Xavier Module
Pre-installed Jetpack

AIoT
IIoT
AGX Orin - Industrial

**Product Name**
Mini AI Computer T906

**Module Embedded**
Jetson AGX Orin 32GB

**Dimensions**
196.7mmx196mmx74mm

**SKU**
114110168

**Introduction**
Mini AI Computer T906 is powered by Jetson AGX Orin 32GB Module, delivers up to 200TOPS AI performance, and is equipped with two Ethernet ports for up to 10 Gbps networking. Supports Wi-Fi, Bluetooth, 4G/5G, and GPS enables hybrid fast network and navigation. The full system is ideal for building energy-efficient autonomous machines with the most advanced AI power, and industrial interfaces, and operating under excellent passive heat dissipation, two fans, along with IP55 lightweight aluminum alloy structure.

**Features**
- Passive Cooling
- M.2 Key E
- M.2 Key M
- Pre-installed JetPack 5.0.2
- 3xCAN
- 3xRS-232
- 4xUSB3.0
- 10GbE
- 1GbE

**Applications**
- Industry 4.0
- Manufacturing
- Traffic Management
- Smart Logistic
Jetson Xavier NX - Industrial

**Product Name**
Mini AI Computer T506S

**Module Embedded**
Jetson Xavier NX 8GB

**Dimensions**
155mm × 165mm × 52.5mm

**SKU**
114110167

**Introduction**
Mini AI Computer T506S is an edge AI platform, including 5x PoE Gigabit RJ45 ports, equipped with enhanced ability of video processing by Jetson Xavier NX 8GB, carrying 128GB SSD along with NVMe storage expandability, which represents an ideal solution for intelligent video analytics, traffic management, etc..

**Features**
- Passive Cooling
- 5x PoE Gigabit RJ45
- RS232/485
- Pre-installed JetPack 4.6
- 128GB SSD
- 4xUSB3.0

**Applications**
- Industry 4.0
- Manufacturing
- Traffic Management
- Smart Logistic
Jetson Xavier NX - Industrial

<table>
<thead>
<tr>
<th>Feature</th>
<th>Description</th>
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<tbody>
<tr>
<td><strong>Product Name</strong></td>
<td>A205E Mini PC</td>
</tr>
<tr>
<td><strong>Module Embedded</strong></td>
<td>Jetson Xavier NX 8GB</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>209mm x 130mm x 66 mm</td>
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<tr>
<td><strong>SKU</strong></td>
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</tbody>
</table>

**Introduction**

Design for industrial use, A205E Mini PC combines exceptional AI performance, and sufficient storage with a rich set of IOs—HDMI, USBs, RS485, RS232, CAN, I2Cs, and SPIs for AI-embedded industrial and functional safety applications in a power-efficient, small form factor. The passive thermal design that can meet industrial standards such as anti-vibration and anti-static supports operating range from -25°C to 80°C.

**Features**

- Passive Cooling
- Aluminum case
- RS232
- RS485
- Pre-installed JetPack 5.0.2
- 128GB NVME SSD
- WiFi/BLE
- 2xHDMI
- 4xUSB3.0
- 2xGbE

**Applications**

- UAVs
- Drone
- Unmanned Submarine
- Smart Traffic
- Home Robots
**Jetson Xavier NX - Industrial**

<table>
<thead>
<tr>
<th>Product Name</th>
<th>A203 Mini PC</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module Embedded</td>
<td>Jetson Xavier NX 8GB</td>
</tr>
<tr>
<td>Dimensions</td>
<td>100mm x 50mm x 59mm</td>
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<tr>
<td>SKU</td>
<td>114110147</td>
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</table>

**Introduction**
A203 Mini PC is a powerful and extremely small intelligent edge computer to bring modern AI to the edge, the smaller form factor than the Jetson NX Developer Kit delivers the same AI power for up to 21 TOPs. For smart cities, security, industrial automation, smart factories, and other edge AI solution providers, A203 Industrial Mini PC combines exceptional AI performance, and sufficient storage with a rich set of IOs.

**Features**
- Ultra-small
- Aluminum case
- RS232
- 2xUSB3.0
- Pre-installed JetPack 5.0.2
- WiFi/BLE
- 2xHDMI

**Applications**
- UAVs
- Drone
- Unmanned Submarine
- Smart Traffic
- Home Robots
**Jetson Xavier NX**

<table>
<thead>
<tr>
<th><strong>Product Name</strong></th>
<th>Jetson SUB Mini PC-Blue</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Module Embedded</strong></td>
<td>Jetson Xavier NX</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>130mm x 120mm x 50mm</td>
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<td><strong>SKU</strong></td>
<td>102110637</td>
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<tr>
<td><strong>Introduction</strong></td>
<td>Consists of an NVIDIA® Jetson Xavier™ NX Module, a carrier board, a cooling fan, and a removable acrylic cover. Ideal for high-performance compute and AI in embedded and edge systems.</td>
</tr>
</tbody>
</table>

**Features**
- Xavier NX Module
- 128GB (M.2 key M) SSD
- Mounting hole design
- HDMI port + DP port
- Wi-Fi module and antenna
- 4 USB 3.1
- Removable acrylic cover
- NVIDIA JetPack software 4.6

**Applications**
- Industry 4.0
- Retail
- Robotics
- Healthcare
- Pose Estimation

**Mini PC**

**Driver fatigue facial analysis**
# Jetson Xavier NX

<table>
<thead>
<tr>
<th><strong>Product Name</strong></th>
<th>Jetson SUB Mini PC-Black</th>
</tr>
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<tbody>
<tr>
<td><strong>Module</strong></td>
<td>Jetson Xavier NX</td>
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<tr>
<td><strong>Dimensions</strong></td>
<td>205mm x 130mm x 65mm</td>
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<td><strong>SKU</strong></td>
<td>102110641</td>
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</table>

**Introduction**

Consists of an NVIDIA® Jetson Xavier™ NX Module, a carrier board, and a fully sealing case with pre-installed OLED.

Ideal for high-performance compute and AI in embedded and edge systems, especially in harsh environments.

**Features**

- Xavier NX Module
- 2 HDMI ports
- 256 GB (2.5-inch SATA) SSD
- 4 USB 3.1 Type-A ports
- Wi-Fi module and antenna
- OLED screen
- Passive Cooling
- NVIDIA JetPack software 4.6

**Applications**

- Industry 4.0
- Manufacturing
- Traffic Management
- Smart Logistic

Fully enclosed design: Harsh environment Application

Data Center Application
## Jetson Xavier NX

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Jetson SUB Mini PC-Silver</th>
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<tbody>
<tr>
<td>Module Embedded</td>
<td>Jetson Xavier NX</td>
</tr>
<tr>
<td>Dimensions</td>
<td>130mm x 90mm x 60mm</td>
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<tr>
<td>SKU</td>
<td>102110642</td>
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</table>

### Introduction
Consists of an NVIDIA® Jetson Xavier™ NX Module, a carrier board, a quiet cooling fan, and a whole oval aluminum enclosure. Tiny and portable, ideal for high-performance compute and AI in embedded and edge systems in office/home or outdoor.

### Features
- Xavier NX Module
- Wi-Fi module and antenna
- 4 USB 3.1 Type-A ports
- HDMI port + DP port
- NVIDIA JetPack software 4.6
- 128GB (M.2 key M) SSD

### Applications
- Mobile Office Application
- Smart Classroom/Office
- Traffic Management
- Smart Home/Office
- Light Outdoor Application
Jetson Xavier NX

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Jetson AGX Xavier H01 Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module</td>
<td>Embedded</td>
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<td></td>
<td>Jetson AGX Xavier 32GB</td>
</tr>
<tr>
<td>Dimensions</td>
<td>130mm x 105mm x 77mm</td>
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<tr>
<td>SKU</td>
<td>110991666</td>
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Introduction
Consists of an NVIDIA® Jetson AGX Xavier 32GB production version module, a carrier board, a cooling fan, and an aluminum case.

Ideal for development and deployment of end-to-end AI robotics applications.

Features
- AGX Xavier 32GB Module
- 1 x HDMI 2.0 (TYPE A)
- TF Card Slot
- Pre-installed WiFi
- 2 x USB 3.0 Type A
- 1 x M.2 Key M (NVMe SSD)
- NVIDIA Jetpack software 4.6

Applications
- Logistics
- Optical Inspection
- Manufacturing
- Robotics
- Retail
reServer for Jetson

Inference center for the edge

- Local Intelligent Video Analytics
- Jetson Xavier NX 16GB
- Pre-installed Jetpack
- 2.5 inches 256GB SSD
- 1 GbE
- 2.5 GbE
- 2.5 GbE
reServer Jetson

- **Compact design**: Edge AI server with an overall dimension of 132mm*124mm*233mm

- **Powerful AI module**: NVIDIA® Jetson Xavier™ NX 16GB

- **Fast network access**: 2.5GbE port, 1GbE port x1

- **Hybrid connectivity**: Support 5G, 4G, LoRaWAN (modules not included)

- **Rich peripherals**: HDMI 2.0 x1, DP1.4 x1, USB3.1 GEN2 (up to 10Gbit) x2

- **Expandable storage**: Dual SATA III data connectors for 3.5”/2.5” SATA hard disk drives

- **Work as stable intelligent NVR system**: pre-installed 2.5 inches 256GB SSD *1 and Jetpack, support entire Jetson software.

**Certification**

- reServer J2032
  - Xavier NX 16GB Module
  - Support 2 x 2.5”/3.5” SATA (HDD/SSD), up to SATA3
  - SKU: 110061403

  - reServer for Orin NX(In development)

*All certification is on going
### Jetson Nano full system comparison

<table>
<thead>
<tr>
<th>Production Module</th>
<th>Jetson Nano</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Name</strong></td>
<td>reComputer J1010</td>
</tr>
<tr>
<td><strong>SKU</strong></td>
<td>110061362</td>
</tr>
<tr>
<td><strong>AI Performance</strong></td>
<td>472 GFLOPS</td>
</tr>
<tr>
<td><strong>GPU</strong></td>
<td>NVIDIA Maxwel™ architecture with 128 NVIDIA CUDA® cores</td>
</tr>
<tr>
<td><strong>CPU</strong></td>
<td>Quad-core Arm® Cortex®-A57 MPCore processor</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>4 GB 64-bit LPDDR4, 1600MHz 25.6 GB/s</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>16 GB eMMC 5.1</td>
</tr>
<tr>
<td><strong>Video Decode</strong></td>
<td>1*4K60</td>
</tr>
<tr>
<td><strong>Networking</strong></td>
<td>1*RJ45 Gigabit Ethernet Connector (10/100/1000)</td>
</tr>
<tr>
<td><strong>USB</strong></td>
<td>1*USB 3.0 Type A</td>
</tr>
<tr>
<td><strong>CSI Camera</strong></td>
<td>2*CSI camera connectors (15 pos, 1mm pitch, MIPI CSI-2)</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>1*HDMI 2.0 Type A</td>
</tr>
<tr>
<td><strong>Fan</strong></td>
<td>1*Fan Connector(5V PWM)</td>
</tr>
<tr>
<td><strong>M.2 Key E</strong></td>
<td>1*M.2 Key E connector to support WiFi/BT</td>
</tr>
<tr>
<td><strong>Multifunctional header</strong></td>
<td>1*40-Pin header (GPIO, I2C, I2S, SPI, UART)</td>
</tr>
<tr>
<td><strong>Power Adapter</strong></td>
<td>USB Type-C 5V/3A</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>5W</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>130mmx120mmx50mm (with case)</td>
</tr>
</tbody>
</table>
Jetson Xavier NX full system comparison

<table>
<thead>
<tr>
<th>Production Module</th>
<th>Jetson Xavier NX</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Name</strong></td>
<td>reComputer J2021</td>
</tr>
<tr>
<td><strong>SKU</strong></td>
<td>110061381</td>
</tr>
<tr>
<td><strong>Built-in carrier board</strong></td>
<td>3202</td>
</tr>
</tbody>
</table>

**AI Performance**
- 21 TOPS

**GPU**
- 384-core NVIDIA Volta™ GPU with 48 Tensor Cores
- 6-core NVIDIA Carmel ARM®v8.2 64-bit CPU, 6MB L2 + 4MB L3

**Memory**
- 8 GB 128-bit LPDDR4x 59.7GB/s
- 16 GB 128-bit LPDDR4x 59.7GB/s
- 8 GB 128-bit LPDDR4x 51.2GB/s
- 16 GB 128-bit LPDDR4x 59.7GB/s
- 8 GB 128-bit LPDDR4x 51.2GB/s
- 16 GB 128-bit LPDDR4x 59.7GB/s

**Storage**
- 16 GB eMMC 5.1
- 1*M.2 Key M connector
- microSD slot
- 1*M.2 Key M connector
- 16 GB eMMC 5.1
- 256GB SATA III SSD
- 2 SATA III data connectors
- 2 SATA III power connectors
- 16 GB eMMC 5.1
- 128GB M.2 NVMe SSD

**Video Encode**
- 2*4K60 | 4*4K30 | 10*1080p60 | 22*1080p30 (H.265)
- 24K60 | 43K30 | 1031080p60 | 21080sp30 (H.264)

**Video Decode**
- 2*8K30 | 6*4K60 | 12*4K30 | 22*1080p60 | 44*1080p30 (H.265)
- 2*4K60 | 6*4K30 | 10*1080p60 | 22*1080p30 (H.264)

**Networking**
- 1*RJ45 Gigabit Ethernet Connector (10/100/1000)
- 1*RJ45 2.5GBe
- 1*M.2 Key B connector to support 5G/4G
- 1*Mini PCIe connector to support LoRa/Series wireless ; 1*Sim card slot
- 1*RJ45 Gigabit Ethernet Connector (10/100/1000)

**USB**
- 4*USB 3.1 Type A Connector
- 1*USB Type-C for device mode
- 4*USB 3.1 Type A Connector
- 1*USB Type-C for device mode
- 2*USB 3.1 Gen 2 Type A connector
- 1*USBB Type-C for device mode
- 1*Mini PCIe connector to support device mode
- 1*Jetson Xavier NX Fan (5V PWM)
- 1*Main Fan (12V)
- 1*Fan (5V PWM)

**CSI Camera**
- 2*CSI camera connectors (15 pos, 1mm pitch, MIPI CSI-2)
- 2*CSI camera connectors (15 pos, 1mm pitch, MIPI CSI-2)

**Display**
- 1*HDMI 2.0 Type A
- 1*DP
- 1*HDMI 2.0 Type A
- 1*DP
- 1*HDMI 2.0 Type A
- 1*DP

**Fan**
- 1 Fan (5V PWM)
- 1 Fan (5V PWM)
- 1*Jetson Xavier NX Fan (5V PWM)
- 1*Main Fan (12V)
- 1*Fan (5V PWM)

**M.2 Key E**
- 1*M.2 Key E connector to support WiFi/BT
- 1*M.2 Key E connector to support WiFi/BT (module included)
- 1*M.2 Key E connector to support WiFi/BT (module included)

**Multifunctional header**
- 1*40-Pin header (GPIO, I2C, I2S, SPI, UART)
- 1*40-Pin header (GPIO, I2C, I2S, SPI, UART)

**Power Adapter**
- DC Barrel Jack 12V/5A (5.5/2.1mm)
- DC Barrel Jack 19V 4.74A (MAX 90W)
- DC Barrel Jack 12V @5A
- DC Barrel Jack 19V 4.74A (MAX 90W)

**Dimensions**
- 130mmx120mmx50mm (with case)
- 103mmx90.5mmx31mm
- 132mmx124mmx233mm (with case)
- 130mm x120mm x 50mm (with case)
- 130mm x90mm x60mm (with case)
## Jetson Xavier NX full system comparison

<table>
<thead>
<tr>
<th>Production Module</th>
<th>Jetson Xavier NX</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Name</strong></td>
<td>A203</td>
</tr>
<tr>
<td><strong>SKU</strong></td>
<td>114110147</td>
</tr>
<tr>
<td><strong>AI Performance</strong></td>
<td></td>
</tr>
<tr>
<td><strong>GPU</strong></td>
<td></td>
</tr>
<tr>
<td><strong>CPU</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Networking</strong></td>
<td>1*mini PCIe</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td></td>
</tr>
<tr>
<td><strong>USB</strong></td>
<td>2*USB3.0 Type A</td>
</tr>
<tr>
<td><strong>Camera</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td></td>
</tr>
<tr>
<td><strong>M.2 Key E</strong></td>
<td></td>
</tr>
<tr>
<td><strong>mini PCIe</strong></td>
<td></td>
</tr>
<tr>
<td><strong>IO</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Multifunctional header</strong></td>
<td></td>
</tr>
<tr>
<td><strong>FAN</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Power Input</strong></td>
<td>9V - 19V DC</td>
</tr>
<tr>
<td><strong>Power Adapter</strong></td>
<td>DC 19V 4.74A (MAX 90W)</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>100mm x 50mm x 59mm (with case)</td>
</tr>
<tr>
<td><strong>Operating temperature</strong></td>
<td>-20°C ~ 80°C, 0.2~0.3m/s air flow</td>
</tr>
<tr>
<td><strong>Operating System</strong></td>
<td>Pre-installed JetPack 5.0.2</td>
</tr>
</tbody>
</table>
# Jetson AGX Xavier full system comparison

<table>
<thead>
<tr>
<th>Production Module</th>
<th>Jetson AGX Xavier H01 Kit</th>
<th>NVIDIA® Jetson AGX Xavier Dev Kit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product Name</td>
<td>Jetson AGX Xavier H01 Kit</td>
<td>NVIDIA® Jetson AGX Xavier Dev Kit</td>
</tr>
<tr>
<td>SKU</td>
<td>110991666</td>
<td>102110477</td>
</tr>
<tr>
<td>AI Performance</td>
<td>32 TOPS</td>
<td></td>
</tr>
<tr>
<td>GPU</td>
<td>NVIDIA Volta™ architecture with 512 NVIDIA® CUDA® cores and 64 Tensor cores</td>
<td></td>
</tr>
<tr>
<td>CPU</td>
<td>8-core NVIDIA Carmel Arm®v8.2 64-bit CPU 8MB L2 + 4MB L3</td>
<td></td>
</tr>
<tr>
<td>Memory</td>
<td>32 GB 256-bit LPDDR4x 136.5GB/s</td>
<td>32 GB eMMC 5.1; microSD card slot eSATA port; 1*M.2 Key M connector</td>
</tr>
<tr>
<td>Storage</td>
<td>32 GB eMMC 5.1; microSD card slot; 1*M.2 Key M connector</td>
<td>32 GB eMMC 5.1; microSD card slot eSATA port; 1*M.2 Key M connector</td>
</tr>
<tr>
<td>Video Encode</td>
<td>4*4K60</td>
<td>8*4K30</td>
</tr>
<tr>
<td>Video Decode</td>
<td>2*8K30</td>
<td>6*4K60</td>
</tr>
<tr>
<td>Networking</td>
<td>1*RJ45 Gigabit Ethernet Connector (10/100/1000)</td>
<td>1<em>USB 3.1 Type-A; 1</em>USB Type-C for device mode/ debug; 1<em>USB Type-C; 1</em>USB 2.0 Micro-B for debug</td>
</tr>
<tr>
<td>USB</td>
<td>2<em>USB 3.0 Type-A; 1</em>USB 2.0 Type-C for device mode</td>
<td>1<em>USB 3.1 Type-A; 1</em>USB Type-C for device mode/ debug; 1<em>USB Type-C; 1</em>USB 2.0 Micro-B for debug</td>
</tr>
<tr>
<td>Camera</td>
<td>Camera connector(Compatible with MIPI CSI and GMSL)</td>
<td></td>
</tr>
<tr>
<td>Display</td>
<td>1 x HDMI 2.0 Type A</td>
<td></td>
</tr>
<tr>
<td>Fan</td>
<td>1*12V Fan</td>
<td></td>
</tr>
<tr>
<td>M.2 Key E</td>
<td>1*M.2 Key E connector</td>
<td></td>
</tr>
<tr>
<td>PCIe</td>
<td>PCIe X16 (x8 PCIe Gen4/x8 SLVS-EC)</td>
<td></td>
</tr>
<tr>
<td>Multifunctional header</td>
<td>1*40-Pin header</td>
<td></td>
</tr>
<tr>
<td>Power Adapter</td>
<td>DC Jack 19V 4.74A (MAX 90W)</td>
<td></td>
</tr>
<tr>
<td>Power</td>
<td>10W</td>
<td>15W</td>
</tr>
<tr>
<td>Dimensions</td>
<td>130mmx105mmx77mm (with case)</td>
<td>105mmx105mmx65mm</td>
</tr>
</tbody>
</table>
# Jetson Orin full system comparison

<table>
<thead>
<tr>
<th>Production Module</th>
<th>Jetson Orin Nano</th>
<th>Jetson Orin NX</th>
<th>Jetson AGX Orin</th>
<th>Jetson AGX Orin</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Name</strong></td>
<td>reComputer J3010</td>
<td>reComputer J3011</td>
<td>reComputer J3011</td>
<td>reComputer J3012</td>
</tr>
<tr>
<td><strong>SKU</strong></td>
<td>110110146</td>
<td>110110147</td>
<td>110110144</td>
<td>110110145</td>
</tr>
<tr>
<td><strong>Module</strong></td>
<td>Jetson Orin Nano 4GB</td>
<td>Jetson Orin Nano 8GB</td>
<td>Jetson Orin NX 8GB</td>
<td>Jetson Orin NX 16GB</td>
</tr>
<tr>
<td><strong>AI Performance</strong></td>
<td>20 TOPS</td>
<td>40 TOPS</td>
<td>70 TOPS</td>
<td>100 TOPS</td>
</tr>
<tr>
<td><strong>CPU</strong></td>
<td>S12-core NVIDIA Ampere architecture GPU with 16 Tensor Cores</td>
<td>1024-core NVIDIA Ampere architecture GPU with 32 Tensor Cores</td>
<td>NVIDIA Ampere architecture with 1024 NVIDIA® CUDA® cores and 32 tensor cores</td>
<td>T792-core NVIDIA Ampere architecture GPU with 56 Tensor Cores</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>4GB 64-bit LPDDR5 3x GB/5</td>
<td>8GB 128-bit LPDDR5 68 GB/5</td>
<td>8GB 128-bit LPDDR5 102.4 GB/5</td>
<td>16GB 128-bit LPDDR5 102.4 GB/5</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>Supports external NVMe</td>
<td>1*M.2 Key M (128GB NVMe SSD included)</td>
<td>64GB eMMC 5.1 1*M.2 Key M connector</td>
<td>64GB eMMC 5.1; microSD card slot 2*M.2 Key M connector</td>
</tr>
<tr>
<td><strong>Video Encode</strong></td>
<td>1080p30 supported by 1-2 CPU cores</td>
<td>4K60</td>
<td>3*4K30</td>
<td>6*1080p60</td>
</tr>
<tr>
<td><strong>Video Decode</strong></td>
<td>1x 4K60</td>
<td>2x 4K30</td>
<td>5x 1080p60</td>
<td>1x 1080p30 (H.265)</td>
</tr>
<tr>
<td><strong>Networking</strong></td>
<td>*RJ45 Gigabit Ethernet Connector (10/100/1000)</td>
<td>*RJ45 Gigabit Ethernet Connector (10/100/1000)</td>
<td>*RJ45 10GbE</td>
<td>*RJ45 10GbE</td>
</tr>
<tr>
<td><strong>USB</strong></td>
<td>*4USB 3.2 Type-A</td>
<td>*1USB Type C for device mode</td>
<td>*4USB 3.2 Type-A</td>
<td>*1USB Type C for device mode</td>
</tr>
<tr>
<td><strong>Camera</strong></td>
<td>2*CSI Cameras (15 pos, 1mm pitch, MIPI CSI-2)</td>
<td>2*CSI Cameras (15 pos, 1mm pitch, MIPI CSI-2)</td>
<td>Camera Connector (compatible with GMSL)</td>
<td>Camera Connector (compatible with GMSL)</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>*HDMI</td>
<td>*HDMI</td>
<td>*HDMI 2.0 Type-A</td>
<td>*HDMI 2.0 Type-A</td>
</tr>
<tr>
<td><strong>Fan</strong></td>
<td>*Fan(SV PWM)</td>
<td>*Fan(SV PWM)</td>
<td>*Fan(SV PWM)</td>
<td>*Fan(SV PWM)</td>
</tr>
<tr>
<td><strong>M.2 Key E</strong></td>
<td>*M.2 Key E</td>
<td>*M.2 Key E</td>
<td>*M.2 Key E</td>
<td>*M.2 Key E</td>
</tr>
<tr>
<td><strong>Mini PCIe</strong></td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>5W - 10W</td>
<td>7W - 15W</td>
<td>10W - 20W</td>
<td>10W - 25W</td>
</tr>
<tr>
<td><strong>Power Adapter</strong></td>
<td>DC Jack 12V SA</td>
<td>DC Jack 19V 4.74A (MAX 90W)</td>
<td>DC Jack 19V 4.74A</td>
<td>DC Jack 19V 4.74A</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>130mmx120mmx50mm (with case)</td>
<td>196.7mmx196mmx74mm</td>
<td>132mmx124mmx233mm</td>
<td></td>
</tr>
</tbody>
</table>

The document provides a detailed comparison of different Jetson Orin models, including their product name, SKU, module details, AI performance, CPU specifications, memory, storage, video encode and decode capabilities, networking, USB, camera, display, fan, M.2 Key E, mini PCIe, power adapter, and dimensions. Each model is compared against others in terms of these specifications, allowing for a comprehensive understanding of their capabilities and differences.
NVIDIA Jetson Compatible Accessories
Heatsink, Case, Camera, and RPLiDAR
If you’re designing any kind of computing application with the NVIDIA Jetson modules, you seriously can’t do without a heatsink if you want to avoid overheating problems.

Seeed’s aluminum heatsinks for NVIDIA Jetson Modules are an essential piece of equipment for keeping modules cool, improving both computing performance and reliability under heavy workloads to realize their true potential. Some of them consist of a fan to ensure cooling effect.

**Product Name**

NVIDIA Jetson module compatible aluminum heatsink

**Introduction**

If you’re designing any kind of computing application with the NVIDIA Jetson modules, you seriously can’t do without a heatsink if you want to avoid overheating problems.

Seeed’s aluminum heatsinks for NVIDIA Jetson Modules are an essential piece of equipment for keeping modules cool, improving both computing performance and reliability under heavy workloads to realize their true potential. Some of them consist of a fan to ensure cooling effect.
Accessory - Case

Case for NVIDIA Jetson modules

Case/enclosure can provide ultimate protection to your Jetson modules. For those listed on the LEFT, they all have an internal cooling fan to ensure better heat dissipation when your Jetson modules are working on multiple demanding tasks. For those listed on the RIGHT, they are compatible with all popular SBCs (including ODYSSEY - X86J4105, Raspberry Pi, BeagleBone and Jetson Nano/Xavier NX), and they are with a removable acrylic cover on the top and with a stackable structure to extend endless possibilities.

### Case with Fan
- **Jetson Nano Metal Case/Enclosure - with Cooling Fan and Camera Holder**
  - SKU 110991384

- **Jetson Nano Metal Armour - Case with PWM Adjustment Fan**
  - SKU 110061132

- **Aluminum Case for NVIDIA Jetson Nano**
  - SKU 114992052

### Case without Fan
- **re_computer case**
  - SKU 114992152

- **re_computer case silver version**
  - SKU 110991405

- **re_computer case(Silver Metal Edition)**
  - SKU 110991484
### Accessory – Camera

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Introduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>NVIDIA Jetson module compatible camera</td>
<td>By using one of these cameras, combined with a Jetson Nano/ Xavier NX Development Kits, you can simply realize machine vision projects. Also, you can experience better quality video capture from these cameras and build more demanding projects. Some of them also has two IR LEDs to enable night vision capabilities.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product Name</th>
<th>SKU</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMX219-200 8MP Camera with 200° FOV</td>
<td>SKU 114992265</td>
</tr>
<tr>
<td>IMX219-77 IR Night Vision Camera with 77° FOV</td>
<td>SKU 114992261</td>
</tr>
<tr>
<td>IMX219-83 8MP 3D Stereo Camera Module</td>
<td>SKU 114992270</td>
</tr>
<tr>
<td>IMX219-160IR 8MP Camera with 160° FOV</td>
<td>SKU 114992264</td>
</tr>
<tr>
<td>IMX219-83 8MP 3D Stereo Camera Module</td>
<td>SKU 114992270</td>
</tr>
<tr>
<td>IMX219-160 8MP Camera with 160° FOV</td>
<td>SKU 114992263</td>
</tr>
</tbody>
</table>

Camera with SKU 114992442 is only supported by Jetson Nano. All other cameras are supported by both Jetson Nano/ Xavier NX.
e-con Systems is an elite partner of NVIDIA and has been working with multiple NVIDIA solution providers to offer our customers complete vision solutions. In this pursuit, we have joined hands with Seeed Studio - an IoT hardware enabler that aims to be the most integrated platform for global creative technologists to turn ideas into products.

Some of the key features of e-con’s cameras that can be evaluated with Seeed’s carrier boards include high resolution (up to 13MP), global shutter & rolling shutter, low noise, excellent low light performance, and superior NIR sensitivity. By using the combination of e-con cameras and Seeed’s carrier boards, product developers can reduce prototyping time and time to market by up to 40%.

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Introduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>e-CAM24_CUNX - Color Global shutter Camera for NVIDIA® Jetson Xavier™ NX / NVIDIA® Jetson Nano™</td>
<td>e-con Systems cameras compatible with Seeed Jetson carrier boards</td>
</tr>
<tr>
<td>e-CAM50_CUNX - 5.0 MP NVIDIA® Jetson Xavier™ NX / NVIDIA® Jetson Nano™ Camera</td>
<td></td>
</tr>
<tr>
<td>e-CAM81_CUNX - 4K HDR Camera for NVIDIA® Jetson Xavier™ NX / TX2 NX / Nano</td>
<td></td>
</tr>
<tr>
<td>e-CAM80_CUNX - Sony 4K Camera for NVIDIA® Jetson Xavier™ NX / Nano</td>
<td></td>
</tr>
<tr>
<td>e-CAM131_CUNX - 4K Camera for NVIDIA® Jetson Xavier™ NX / NVIDIA® Jetson Nano™</td>
<td></td>
</tr>
</tbody>
</table>

Learn more at e-con Systems: www.e-consystems.com/seedstudio-cameras.asp
Accessory – RPLiDAR

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>RPLiDAR – Laser Ranging Radar</td>
<td>A low-cost two-dimensional laser ranging radar (LiDAR) can perform a 360-degree omni-directional laser ranging scan within a certain radius of a two-dimensional plane, and thus can generate a flat point cloud map of the space in which it is located. These cloud map information can be used in practical applications such as mapping, robot positioning and navigation, and object/environment modeling.</td>
</tr>
</tbody>
</table>

RPLiDAR A1M8-R6 360 Degree Laser Scanner Kit - 12M Range
- SKU 114992561

RPLiDAR A2M8 360 Degree Laser Scanner Kit - 12M Range
- SKU 110991066

RPLiDAR A3M1 360 Degree Laser Scanner Kit - 25M Range
- SKU 110991068

RPLiDAR S1 Portable ToF Laser Scanner Kit - 40M Range
- SKU 114090021

RPLiDAR A2M12 360 Degree Laser Scanner Kit - 12M Range
- SKU 114110128

Slamtec Mapper M1M1 ToF Laser Scanner Kit - 20M Range
- SKU 114991984

RPLiDAR A2M6 360 Degree Laser Scanner Kit - 18M Range
- SKU 110991067

RPLiDAR S2 Low Cost 360 Degree Laser Range Scanner - 30M Range
- SKU 114992738

Slamtec Mapper M2M1 Pro - LiDAR Mapping Sensor (Industrial Grade) - 40M Range
- SKU 101990641
Accessory – LiDAR & Camera

These sensors adopt ToF method to measure distance. Some of them when combined with a modulated light source, are capable of measuring distance and reflectivity with VGA resolution.

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<tr>
<th>Name</th>
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<td>TFmini S LiDAR module - Short- Range ToF LIDAR Range Finder</td>
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<td>DepthEye Wide - H100° x V75° VGA ToF Camera with Sony IMX556PLR DepthSense</td>
<td>SKU 114992563</td>
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<td>OakSense H60Q-QVGA resolution ToF camera</td>
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<td>DepthEye S2 -H67°x V51° VGA Camera with Sony IMX556PLR DepthSense</td>
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<td>DepthEye Turbo - VGA ToF with Sony IMX556PLR DepthSense</td>
<td>SKU 114991967</td>
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<tr>
<td>OakSense H67V-VGA resolution TOF camera supported C++ and Python</td>
<td>SKU 114992753</td>
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CUSTOMIZATION SERVICE

For Jetson product line specifically, Seeed offers customization service based on our existing carrier boards including - J101, J202, and J401 services ranging from interfaces modification to certification.

In addition, we are open to hear your new Jetson-based product development idea.

If you cannot find the off-the-shelf hardware solution for your needs, Seeed’s in-house R & D engineer team with over a decade of experience in SBCs and industrial computing can design for your specific application demands.

You can contact our service team at produce@seeed.cc or visit our ODM/OEM service page to know more if interested. Our account manager will contact you soon and help to outline your tailored requirements.
Hardware Customization

We provide customization services based on NVIDIA Jetson. You can customize based on our listed standard products or submit your new product development inquiry to us.

NVIDIA® Jetson Custom Design Request

Product Customization based on Following Existing Carrier Boards

MOQ: 300+pcs, NRE Fee Reference: $25k+

- **J101**
  - J101 is a cost-effective, high-performance, interface rich NVIDIA Jetson Nano compatible carrier board. It has nearly the same functional design and exact the same size as the carrier board of NVIDIA® Jetson Nano™ 2GB DEVELOPER KIT.

- **J202**
  - J202 is a high-performance, interface rich NVIDIA Jetson Nano / Xavier NX/ TX2 NX compatible carrier board. It has the same functional design and size as the carrier board of NVIDIA® Jetson Xavier™ NX DEVELOPER KIT.

- **J401**
  - J401 carrier board works with Jetson Orin NX and Orin Nano. It brings a rich set of I/Os to extend functionality: 2x CSI, 1x M.2 Key M, 1x M.2 Key E, 4x USB 3.2, 1x USB 2, HDMI, CAN, RTC and 40-pin GPIO.

Customization Process & Timeline

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<tr>
<td>4 - 6 Weeks</td>
<td>1 - 1.5 Weeks</td>
<td>0.5 - 1 Weeks</td>
<td>3 - 4 Weeks</td>
<td>4 - 6 Weeks</td>
<td>4 - 6 Weeks</td>
<td>3 - 5 years Warranty</td>
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<tr>
<td>Product Design</td>
<td>Quotation</td>
<td>Initial Project Schedule</td>
<td>Design Verification Test</td>
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<td>- PCB Design</td>
<td>- Product Requirements Document</td>
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<td>- Mechanical Packaging</td>
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End of Life
Transform Your Business
Delivering Real-World AI Together

Integrate your unique AI technique into our current hardwares: resell or co-brand licensed devices at our channels.

Build your next-gen AI product powered by the NVIDIA Jetson module and bring your product concept to the market with Seeed's Agile Manufacturing 0-∞
Work with Amazing Ecosystem

Seeed is NVIDIA’s embedded system reseller and preferred partner, by consolidating our best-in-class hardware, over 14 years expertise, NVIDIA’s advanced system, cutting-edge technology from our software partners and the community, we aim at emerging all kinds of AI scenarios in our open-source platform to faster industry digital transformation.

We are calling more ISV, solution Integrator partners delivering real-world edge AI solution together.

- Integrating your unique technology, deliver to global embedded AI developers and enterprises.
- Building next 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.

We are working with:

![Ecosystem Partners Logos](image)

Buy Seeed Jetson products from NVIDIA partner and distributors

![Partner Logos](image)
Edge AI Partner Program

Seeed Edge AI Partner Program is free to apply anytime. We are aiming at becoming the most reliable hardware platform and empowering everyone to achieve their digital transformation goals. Seeed’s Edge AI platform provides devices, carrier boards, peripherals, software tools and ML solutions. If you are working on AI products based on NVIDIA Jetson Platform, including Jetson Nano/Xavier NX/Orin NX/AGX Xavier/AGX Orin, we are looking for global AI partners to join us as:

- Enterprise AI software partner
- AI solution integrator
- Community co-inventor
Edge Impulse

Edge Impulse is the leading development platform for machine learning on edge devices, free for developers and trusted by enterprises. Edge Impulse made ML development easier, accelerate ML solution development using low-code to advanced integrations with the support from an expert.

Find our partner » edgeimpulse.com

Build ML pipeline for deploying audio, image classification, and object detection applications at the edge

Users of Edge Impulse can leverage the power of the Jetson Nano for their embedded machine learning applications that demand higher performance, alongside the industry's leading embedded ML platform that offers:
- The easiest-to-use embedded machine learning pipeline for deploying audio, image classification, and object detection applications at the edge with zero dependencies on the cloud
- Streamlined acquisition of critical environmental sensor data, previously discarded or only sent to the cloud, for empowering sensor fusion at the edge.

Deploy hard hat detection for enforcing workplace safety

Use Edge Impulse for end to end machine learning workflow: upload dataset, acquire custom data, visualize the data, train the machine learning model and validate the inference results. With Edge Impulse, you can easily deploy an automated real-time detection for hardhat-wearing compliance, along with the alert at the workspace. PPE compliance also includes gloves, masks, goggles, etc.
You can also build custom model training for the full PPE detection pipeline.

Application:
Embedded Machine Learning
Computer Vision

Industry:
Industry 4.0, Manufacturing, Retail

Supported Hardware
All Seeed’s NVIDIA compatible carrier boards and devices, Official NVIDIA dev kit
Getting Started with Deci on NVIDIA® Jetson Devices

Our collaboration with Seeed will empower countless users with optimized deep learning models ready for instant deployment,” said Yonatan Geifman, CEO and co-founder of Deci. “No matter the hardware, nor if deploying on the edge or cloud, developers should have full accessibility to the latest developments in deep learning; this partnership brings us one step closer to that goal.”

Deci’s platform includes several modules, one being a cloud-based runtime optimization engine which enables users to automate the manual model compilation and quantization processes (OpenVino and TensorRT) on a wide variety of hardware types with just a few clicks. The result is an optimized model for the user’s inference hardware. Users can also use the platform to optimize models for edge devices, a process that typically can only be carried out after users have purchased the devices themselves.

Application:
Deep Learning, Model Optimization

Supported Hardware
All Seeed’s NVIDIA compatible carrier boards and devices, Official NVIDIA dev kit
Efficient remote AI system based on NVIDIA Jetson platform

Edge AI Transforming Agricultural Landscapes
Farmers installed AI-driven cameras all around the farmstead to record, detect, and monitor livestock health and their lifecycle in real-time. These cameras are connected to and powered by edge devices, enabling the farmer to make informed data-driven decisions, be alerted to, and stay ahead of crisis situations, ultimately leading to the improvement of cattle management and economic growth.

Allxon Out-Of-Band (OOB) technology provides rapid disaster preventive measures. Seeed’s Jetson Powered edge devices that enable data-driven smart farming are highly safeguarded in an electrical enclosure, forming the nucleus where “ALL” data is perpetually collected and processed 24/7, 365 days a year.

It is imperative that the systems work seamlessly and uninterruptedly for a high functioning farmstead.

Allxon

Allxon is the market’s first to provide powerful remote edge AI device management and disaster recovery solutions with Out-Of-Band (OOB) technology. As a partner of NVIDIA Jetson Ecosystem, Allxon delivers highly compatible solutions onto any branded Jetson platform.

Find our partner » allxon.com

Application:
OTA
Device Management

Device Support:
All Seeed’s NVIDIA compatible carrier boards and devices, Official NVIDIA dev kit
Facing The Gap between AI’s PoC to Production: Fewer Datasets, Faster Training

Machine learning is quite widely adopted in software industry applications like social media, YouTube, and E-commerce. It is not tough to acquire a billion level data through the internet experience. However, looking into real-world applications, there are many other industries that only have access to small data, for example, medical imaging, manufacturing, and environmental research.

Use transfer learning along with Ultralytics YOLOv5 and Roboflow to train a dataset with very few samples. We first initialize a model with weights from a pre-trained model and then start training the machine learning model that we need using a dataset as small as 200 images.
Robotics is a field of integrations, not merely development. You need to choose the correct computing power; you need to choose the right sensors, not develop them. It comes down to software integrations. With Nimbus, Cogniteam’s cloud-based solution for robot developers and operations, all the above becomes simpler.

We are glad to partner with Cogniteam, aiming at delivering the easiest ever robot development process, from prototyping to production, including configuration, testing, deployment, and operations management.

Nimbus supports Seeed made Jetson powered platform carrier boards and min PCs, attach sensors such as RPLidar and cameras to build your robotic application from scratch.

You can also seamlessly connect your existing ROS projects to Nimbus. Based on the open-source Robot Operating System (ROS), Nimbus is truly a ‘plug and play’ solution.
Seeed and alwaysAI Partner to Accelerate Deploying Computer Vision at The Edge

Seeed and alwaysAI began their cooperation with NVIDIA® Jetson™ powered devices. The partnership makes computer vision come alive on the edge - where work and life happen:

Retail
Using data from existing cameras (such as IP or surveillance cameras) retailers are leveraging alwaysAI to count customers in their store in real-time, see time-based and seasonal trends from customer occupancy, customer movement, and dwell time.

Construction
alwaysAI is deploying applications in construction to help assess real-time progress of construction projects as well as track safety through personal protective equipment monitoring such as hardhats, safety glasses, and reflective vests.

Transportation
alwaysAI solutions within Transportation are helping the world transition to cleaner vehicles and helping fleet managers understand more about their passengers. Through passenger counting, queue counting, and in-cabin analytics, alwaysAI customers have used computer vision to increase revenue and decrease costs with computer vision AI.

alwaysAI
alwaysAI is a leading computer vision development platform for creating and deploying machine learning applications on edge devices like the NVIDIA® Jetson™. alwaysAI removes barriers, making creating computer vision apps easier, faster and more effective across all industries

Find our partner » alwaysai.co

Industry:
Retail, Construction, Transportation

Application:
Computer Vision

Device Support:
All Seeed’s NVIDIA compatible carrier boards and devices, Official NVIDIA dev kit
Detecting safety helmets in realtime

Personal Protective Equipment (PPE) has made its way into mandatory requirements of construction sites due to its importance to workers’ safety. Tryolabs leverages Seeed’s reComputer edge devices built with Jetson Xavier NX 8GB module develop a computer vision analytics solution that tackles a challenging task in today’s industry 4.0 field - detecting safety helmets in real-time.

YOLOv5 vastly outperformed Faster R-CNN, obtaining better metrics in a much shorter time. In terms of inference time, both models performed similarly, taking around 0.08 seconds for each image on the edge device (12.5 FPS). By leveraging DeepStream SDK, the inference time was boosted to a staggering 0.012 seconds for each image (82.8 FPS) on the same NVIDIA Jetson Xavier NX.

Tryolabs

Expert team of engineers and advisors focused on making an impact with AI-powered solutions.

Machine Learning consulting services: Predictive Analytics, Computer Vision, and Natural Language Processing.

Find our partner >> tryolabs.com

Software:
YOLOV5, DeepStream SDK, NVIDIA Metropolis

Industry:
Industry 4.0

Application:
Machine Learning

Device Support:
reComputer J2011/J2022 Powered by NVIDIA Jetson Xavier NX
Train a working computer vision model with fewer images

We work with Roboflow to annotate images, directly import images or videos. Roboflow help distribute the dataset into “training, validation, and testing”, as well as add further processing to these images after labeling them. Furthermore, it can easily export the labeled dataset into YOLOV5 PyTorch format which is what we exactly need for fewer dataset needed!

You can download a number of publically available datasets such as the COCO dataset, Pascal VOC dataset and much more. Roboflow Universe is a recommended platform which provides a wide-range of datasets and it has 90,000+ datasets with 66+ million images available for building computer vision models.

Industry:
Retail; Traffic Management; Manufacturing

Application:
Computer Vision

Hardware used:
All Seeed’s NVIDIA compatible carrier boards and devices, Official NVIDIA dev kit
NLP simplifies industrial communications and improves manufacturing productivity

**Challenge:**
In the industrial manufacturing workplace, workers are constantly having to leave their stations to communicate information. Having to manually locate individuals throughout the facility or use a tedious data input solution prevents workers from completing their jobs. Is there any way we can optimize the workflow of asynchronous communications to benefit both the worker and the workplace?

**Solution:**
Malamute uses natural language processing (NLP) and spatial computing to help improve workplace productivity and process traceability. Powered by NVIDIA Jetson Orin and AGX Xavier and working with NVIDIA Riva, Malamute’s AI-layered audio communication network empowers industrial workers with the right data at the right time. The NLP-powered communication system helps improve overall equipment efficiency by keeping workers focused on their jobs and at their stations. Employees can record voice messages regarding operational situations and processes which get sent to the intended audience. This allows for effortless and efficient communications compared to a Walkie-Talkie, phone call, or email.

**Result:**
Minimizes worker travel for communications,
Maximizes worker productivity, Improve workplace efficiency.
Teknoir was founded in 2019 to reshape the industry’s future democratizing artificial intelligence with its MLOps platform not only for data scientists but also for those that aren’t data scientists or programmers via an intuitive, no-code dev environment in a hybrid cloud approach that enables inferencing of AI data on lightweight embedded devices at the far edge to drastically improve performance, security, and scalability.

Teknoir, offering MLOps platform and AI solution company, has been working with Seeed’s reComputer J2011 and reTerminal, with their no-code Dev Studio for industry 4.0 applications such as workers’ safety, manufacturing of workforce optimization, and preventative maintenance and smart city of recycling materials detection. Coupled with cameras, LTE and running Teknoir’s Orchestration Engine, these edge devices have secure connectivity to the Teknoir Cloud. Teknoir’s client-partner is able to use the Dev Studio for pushing their trained machine learning model, as well as managing the fleet of hardware and software.

MLOPs enables easy sustainable recycling at the edge

“Seeed continues to serve as an instrumental resource for Teknoir with their offering of innovative edge AI hardware solutions. Seeed’s devices provide Teknoir with unique opportunities to develop AI solutions for its customers that address a variety of important use cases at the edge.” -- Jonathan Klein, Founder & CEO at Teknoir

Teknoir

Application:
MLOPs Platform
Computer Vision

Supported Hardware:
reTerminal powered by Raspberry Pi CM4
reComputer J2011, J2012, J2021
Robot Security Guard Patrols Hong Kong Parking Lot

Patrol Robot is a new milestone in the development of security systems - an emerging stage of technological development that has brought the industry to a new standard of best practices for safeguarding people and property. Autonomous mobile robots designed for patrolling could reduce, over time, completely eliminate the need for human workers to keep large Armitage’s Patrol Robot solution brings 24/7 peace of mind to Hong Kong’s underground parking lot with fully automatic robotic security guards without operator supervision.

- License Plate Recognition System (LPRS)
- Operate 24/7 without human intercention
- Facial recognition, people counting
- Fire and smoke alarm

Benefits:
Reliable 24/7 security monitoring, day or night, in any weather. Capable of identifying various types of objects/situations. Real-time video and transmission. Significant savings in manpower and filling the loophole after staff’s patrol each time. Reduced driving, walking, idling, and unnecessary effort in finding a space.

Armitage
Established since 1972, Armitage is one of the leading IT services providers in HK and PRC. Over 150 IT professionals, they have 50 years experience and proven track records in delivering quality solutions to various sectors public/private sectors.

Find our partner » armitage.com.hk

Industry:
Smart City

Application:
Patrol Robot

Hardware used:
- A206 Carrier Board
- reComputer J2011 for NVIDIA Jetson Xavier NX

Hardware used:
- Deepstream
- PaddleOCR
**Challenge:**
Security patrols included repetitive work in most of time, but the job can also bring chance of danger in the blink of an eye, such as a fire that can escalate and potentially injure people, especially security personnel. This is an area well suited for robots that are suited to perform repetitive tasks autonomously and still allow humans to interact remotely with the environment.

**Solution:**
Dogugonggan develops both indoor/outdoor full stack autonomous robots: Iroi and Patrover are powered by different NVIDIA Jetson solution and integrate with computer vision AI, thermal AI, sound AI, gas detection, and video streaming. Dogugonggan provides a stable operation of security services by deploying self-driving robots equipped with patrol-specific AI and synchronous monitoring solutions (1:N control). Besides security, Iroi and Patrover will also help with air quality monitoring by integrating with CO2, NO2, SO2, VOC, PM2.5, PM10, Temperature, and Humidity multiple environmental sensors.
Towards Under-ice Sensing using a Portable ROV

From 2020, Smart Ocean Systems Laboratory from the University of Rhode Island is working on the project of Navigating Unmanned Underwater Vehicles (UUVs) at the Ice-water Boundary. The project team reported their progress in using a portable ROV for under-ice sensing, and demonstrate the feasibility of using small ROVs (0.7m long and 0.5m wide) to sample the under-ice environment near the coast. The recent field trials were conducted in Utqiagvik, Alaska in March 2022.

Field tests were conducted in March 2022 in Utqiagvik, Alaska on a flat landfast ice about several hundred meters off the coast. The ice thickness was about 1.5 meters. As shown in Fig. 3, ROV was lowered through a rectangle ice hole using straps with hooks at the end. The recovery was done by manually driving the ROV to the hole, then the straps will hook onto the ROV for lifting.

Smart Ocean Systems Laboratory

The SOS lab is found in October 2018 by the Principle Investigator, Mingxi Zhou. The lab is located at beautiful Narragansett Bay Campus, University of Rhode Island. The lab has various types of marine robotic platforms and a full suite of sensors for conducting research.

Industry:
Ocean Research

Application:
Robotics, ROV

Hardware used:
- BlueROV2
- Add-on sensors
- Jetson Sub Blue mini PC based on NVIDIA Jetson Xavier NX
Meet PITAKURU, an Autonomous towing robot capable of towing loads in the warehouse

Challenge:
Moving businesses online becomes new mainstream trends, making delivery services the new normal. In line with the growth of the online business, the demand for courier services that help deliver the ordered packages has risen significantly. Accordingly, the burden it has on the workers also increased.

Solution:
In face of this new challenge, KEISUUGIKEN and Seeed came together to provide an autonomous towing robot called “PITAKURU”. “PITAKURU” has the ability to track humans while towing heavy objects and can be operated indoors and outdoors. It uses laser tracking, enabling to follow individuals without being affected by external light, and there is no need to install accessories such as tracking beacons. These features enable “PITAKURU” to be used anywhere with easy access, even if the users are unfamiliar with the use of towing technologies.

Result:
By introducing “PITAKURU”, the amount of cargo that can be handled by one worker will increase up to two to three times more, and the time needed to move packages around the warehouse, enhancing visibility of traffic.

Industry: Industry 4.0

Application: Warehouse Towing Robot

Edge Device Used: Jetson Sub Mini PC powered by Xavier NX
Precise livestock management helps farmers optimize livestock productivity

“With Seeed’s reComputer J1010, we can reduce the management cost per animal by 98% compared to the competing solution that relies on GPU-cloud because the Edge AI solution with Jetson could provide the lowest inference cost per a camera channel.” said Kwang Myung Jeon, CEO at Intflow Inc.

**Challenge**
The livestock industry is huge, however, several issues impede its productivity, such as the soaring feed prices due to extreme weather conditions, disease risk, environmental and pollution regulations.

**Solution**
Intflow provides EdgeFarm, an AI solution that perceives livestock injuries and diseases to help farmers manage and optimize livestock productivity. EdgeFarm obtains the biometric data of each 40 piglets for each ceiling-mounted camera.

It measures real-time data of the pigs for example, its eating and exercising habits.
Zenus

Zenus is an Austin, Texas, startup that offers a fully-integrated solution for safe data capture of consumer behavior. Zenus has packaged powerful AI models into a smart device powered by NVIDIA SoMs, to drive the ethical use of facial analysis for the in-store retail market. Their proprietary technology produces reports about consumer behavior and engagement without the risk of data theft or personal identification.

Find our partner » zenus.ai

**Challenge**
Brands need to understand their customers on a deeper level. Passive solutions such as facial analysis sit on the cutting edge of AI and provide rich information. But they comprise many bits and pieces, making them hard to deploy in stores. In addition, brands operate under continuous changes in merchandise display, floor plan layout, audience demographics, and regional trends.

**Solution**
Zenus and Seeed came together to provide an all-in-one solution powered by NVIDIA Jetson to simplify the process and fulfill your needs. Picture a smart device that connects to any camera and processes the video feed locally. All you need to do is power up the unit and it instantly works. The device sends the meta-data to the cloud to generate actionable reports. You have access to real-time metrics such as impressions, demographics, positive sentiment levels, and more. All the information is ethically sourced and displayed on a live dashboard.

**Results**
Improve conversion rates and increase sales by up to 382%
Assess consumer satisfaction and demographics with over 95% accuracy
Meet Techie:
on-demand autonomous delivery robot

Challenge:
Many businesses have started to rectify their last-mile delivery operations. Their current operational process is to hire third-party courier companies, and it is very inefficient as it requires an astonishing amount of effort and time. Furthermore, as e-commerce continues to thrive, it will cause an upsurge in parcel deliveries and other issues, especially in densely populated cities.

Solution:
Techie is a smart navigation delivery robot built by Azimorph, seeking to eliminate the need for door-to-door deliveries. The robot would navigate its way toward the consumer’s house according to the time selected by the consumer beforehand. Afterwhich, Techie will return to the centralized bay to charge or load up more parcels. Techie comes with a safety feature that stops it when danger or unforeseen circumstances are detected, for example, a human in its path, construction zones, or roadblocks.

Result:
- Reduced manpower cost, no need for last mile delivery drivers
- Reduced cars on the road, decreasing traffic congestion
- Reduced vehicle pollution
- Faster than traditional couriers, would not be stuck in the traffic or subjected to any delivery drivers' schedule
- Do not require rest like delivery drivers, able to work 24/7
Open source 3D Camera Breaks The Cost Barrier to Industrial 3D Machine Vision with Seeed Fusion PCBA

Challenge:
With an increasing number of industrial robots in factories all over the world, 3D vision has received more attention due to the lack of depth information of 2D vision.

Solution:
3D industrial cameras can be eyes of robots, which provide the three-dimensional spatial coordinates of an object. Powered by NVIDIA Jetson Nano, Xema is able to run 3D point cloud recognition algorithms and robotic arm control programs. Xema is also equipped with a DLP projector and a CMOS sensor, which enable the camera to perform fast imaging speed and strong anti-ambient light capability. It can generate high-resolution and precision point clouds of various objects such as reflective metal, black carbon fiber, thin cardboard, etc.

Seeed Fusion provides Dexforce team with delicate manufacturing advice from 0.1 to 1. Power-efficient with a compact form factor, Jetson Modules brings accelerated AI performance to the edge.
Challenge:
Global manufacturing industries have rapidly evolved facing automation need, no matter small and medium-sized enterprises (SME) or large corporates. However, when SMEs are facing labor shortages or increased operating costs, the high cost and complexity of automation solutions make it difficult to adopt these technologies and transform quickly.

Solution:
Peer Robotics believes that the future lies in collaboration between humans and robots rather than fixed automation. They are building material handling solutions that can learn from humans in real-time, allowing people on the shop floor to interact with these robots just like they would interact with a trolley. Humans can simply grab the robot, move it from point A to B, and in this process, teach the robot how to perform the tasks autonomously the next time onwards. This reduces the need for specialized engineers or training, further reducing fixed costs.

Peer Robotics utilizes Jetson Xavier and Intel NUC for the onboard computation of mapping, path planning, obstacle avoidance, and natural navigation. Along with Intel real sense cameras as a key visual navigation component.

Peer Robotics also develops its own custom PCB boards like charging modules, IMU boards, central control units, etc.
The challenge: Microscopes are generally deployed in “network-constrained” environments and do not have dedicated GPUs for computation. Thus, it is essential to bring Cloud-like computational resources to the microscope instead of bringing microscopes to the Cloud.

The solution: Theiascope™ platform created by Theia Scientific provides real-time image and data analysis automation technology for scientists and engineers who conduct research utilizing optical, electron, and X-ray-based microscopy with instrumentation in network- and time-constrained environments. This technology can cut labor costs by 80%, reduce training time and operational expertise, and accelerate the delivery of unbiased results from years, months, days, to seconds in the energy, health, manufacturing, and transportation sectors.

Applications
Computer Vision

Edge Devices Used
NVIDIA Jetson AGX Orin
NVIDIA Jetson AGX Xavier
Jetson Xavier NX
Jetson Mate

Software
Theiascope™ platform
PyTorch, Anyscale
Grafana
Volkov Labs: open-source custom plugin for Grafana.
Balena: manage IoT fleets