NVIDIA® Jetson™-Powered Edge Devices

Your trusted hardware partner for advanced embedded AI systems.

seeedstudio.com/nvidia-jetson.html

Manufacture in Shenzhen & Vietnam
Pioneering Embedded AI Partner
Support every stage of edge AI application

Sensor
- LiDAR
- Camera

Full product line from PoC to production
- Dev Kit
- Accessories
- Carrier board
- Full system devices

Design Tools, Tutorials, Software defined application
- Train
- Low/No code platforms
- Deploy
  - Azure
  - AWS
  - NVIDIA JetPack
  - balena

Agile Manufacturing
0.1-∞
- Decades hardware expertise
- Full stack of integration capability
- Industry trust worthy manufacturing partner
- One-stop go to market fulfillment and global distribution.

Jetson Software
- DOCKER ENGINE
- PLATFORM LIBRARIES
- TENSORRT
- CUDA TOOLKIT
- CUDA DRIVER
- DEVICE NODES
- UBUNTU
The NVIDIA Jetson Family
For AI at the Edge and Autonomous Machines

**Next-Gen: Jetson Orin**

- **JETSON Orin Nano 4GB**
  - 20 TOPS (INT8)
  - 7 - 10W
  - 45mm x 69.6mm

- **JETSON Orin Nano 8GB**
  - 40 TOPS (INT8)
  - 7 - 15W
  - 45mm x 69.6mm

- **JETSON Orin NX 8GB**
  - 70 TOPS (INT8)
  - 10 - 20W
  - 45mm x 69.6mm

- **JETSON Orin NX 16GB**
  - 100 TOPS (INT8)
  - 10 - 25W
  - 45mm x 69.6mm

- **JETSON AGX Orin Series**
  - 275 TOPS (INT8)
  - 15 - 60W
  - 32GB/64GB
  - 100mm x 87mm

- **Jetson Nano**
  - 0.5 TFLOPS (FP16)
  - 5 - 10W
  - 45mm x 69.6mm

- **JETSON TX2 NX**
  - 1.33 TFLOPS (FP16)
  - 7.5 - 15W
  - 45mm x 69.6mm

- **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 69.6mm

- **JETSON AGX Xavier Series**
  - 32 TOPS (INT8)
  - 10-30w
  - 32GB/64GB
  - 100mm x 87mm

source: NVIDIA
# Module Specifications

<table>
<thead>
<tr>
<th></th>
<th>Jetson AGX Xavier 32G</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 (Dense)</td>
<td>200 TOPS (Sparse)</td>
<td>275 TOPS (Sparse)</td>
<td>138 TOPS (Dense)</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></td>
<td>2x NVDLA v2</td>
<td></td>
</tr>
<tr>
<td><strong>Vision Accelerator</strong></td>
<td>2x PVA v1</td>
<td></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></td>
<td>64GB eMMC S.1</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>2x8K30</td>
<td>6x4K60</td>
<td>12x4K30</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 62 Gbps</td>
<td></td>
</tr>
<tr>
<td><strong>PCI Express</strong></td>
<td>16 lanes PCIe Gen 4 1x8, 1x4, 1x2, 2x1</td>
<td>22 lanes PCIe Gen 4 Up to 2 x8, 1 x4, 2 x1</td>
<td></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>

*source: NVIDIA*
## Module Specifications

<table>
<thead>
<tr>
<th></th>
<th>Jetson Xavier NX 8GB</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 (Dense)</td>
<td>70 TOPS (Sparse)</td>
<td>35 TOPS (Dense)</td>
<td>100 TOPS (Sparse)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>35 TOPS (Dense)</td>
<td></td>
<td>50 TOPS (Dense)</td>
</tr>
<tr>
<td><strong>GPU</strong></td>
<td>384-core NVIDIA Volta™ GPU with 48 Tensor Cores</td>
<td>1024-core NVIDIA Ampere GPU with 32 Tensor Cores</td>
<td></td>
<td></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></td>
<td>PVA v2</td>
<td></td>
</tr>
<tr>
<td><strong>CPU</strong></td>
<td>6-core NVIDIA Carmel ARM® v8.2 64-bit CPU 6MB L2 + 4MB L3</td>
<td>6-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU 1.5MB L2 + 4MB L3</td>
<td>8-core NVIDIA Arm® Cortex A78AE v8.2 64-bit CPU 2MB L2 + 4MB L3</td>
<td></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 @5200MHz 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>4x 4K30</td>
<td>10x 1080p60</td>
<td>22x 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>Up to 6 cameras (36 via virtual channels)</td>
<td>Up to 4 cameras (8 via virtual channels)</td>
</tr>
<tr>
<td></td>
<td>12 lanes MIPI CSI-2</td>
<td>D-PHY 1.2 (up to 30 Gbps)</td>
<td>12 lanes MIPI CSI-2</td>
<td>D-PHY 1.2 (up to 30 Gbps)</td>
</tr>
<tr>
<td><strong>PCI Express</strong></td>
<td>5 lanes PCIe Gen 3</td>
<td>7 lanes PCIe Gen 4</td>
<td>5 lanes PCIe Gen 3</td>
<td>7 lanes PCIe Gen 4</td>
</tr>
<tr>
<td></td>
<td>1x4, 1x1</td>
<td>1x4, 3x1</td>
<td>1x4, 1x1</td>
<td>1x4, 3x1</td>
</tr>
<tr>
<td><strong>Ethernet</strong></td>
<td>1 GbE via MDI</td>
<td>1 GbE via MDI</td>
<td>1 GbE via MDI</td>
<td>1 GbE via MDI</td>
</tr>
<tr>
<td><strong>Mechanical</strong></td>
<td>69.6mm x 45mm 260-pin SO-DIMM connector</td>
<td>69.6mm x 45mm 260-pin SO-DIMM connector</td>
<td>69.6mm x 45mm 260-pin SO-DIMM connector</td>
<td>69.6mm x 45mm 260-pin SO-DIMM connector</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>10W to 20W</td>
<td>10W to 20W</td>
<td>10W to 25W</td>
<td>10W to 25W</td>
</tr>
</tbody>
</table>

*source: NVIDIA*
<table>
<thead>
<tr>
<th></th>
<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</td>
<td>1.33 TFLOPS</td>
<td>20 TOPS (Sparse)</td>
<td>40 TOPS (Sparse)</td>
</tr>
<tr>
<td></td>
<td>(Dense)</td>
<td>(Dense)</td>
<td>10 TOPS (Sparse)</td>
<td></td>
</tr>
<tr>
<td><strong>GPU</strong></td>
<td>128-core NVDIA 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></td>
<td>40 TOPS (Sparse)</td>
<td>20 TOPS (Sparse)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>40 TOPS (Sparse)</td>
<td>20 TOPS (Sparse)</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CPU</strong></td>
<td>4-core Arm® Cortex®-A57 MPCore Processor, 1.5 GHz</td>
<td>2-core Denver 64-core CPU and 4-core Arm® Cortex®-A57 MPCore 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></td>
<td>256 TOPS (Sparse)</td>
<td>20 TOPS (Sparse)</td>
<td>1024 TOPS (Sparse)</td>
<td>2048 TOPS (Sparse)</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, 51.2GB/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>H.264, H.265, VP9</td>
</tr>
<tr>
<td></td>
<td>4x 1080p30 (H.265) H.264, H.265, VP9</td>
<td>1x 4K60</td>
<td>3x 4K30</td>
<td>4x 1080p60</td>
</tr>
<tr>
<td><strong>Video Decode</strong></td>
<td>1x 4K60</td>
<td>2x 4K30</td>
<td>4x 1080p60</td>
<td>4x 1080p30 (H.265) H.264, H.265, VP9</td>
</tr>
<tr>
<td><strong>Camera</strong></td>
<td>12 lanes MIPI CSI-2</td>
<td>D-PHY 1.2(up to 18 Gbps)</td>
<td>12 via virtual channels*</td>
<td>12 via virtual channels*</td>
</tr>
<tr>
<td><strong>PCI Express</strong></td>
<td>4 lanes PCle Gen 2</td>
<td>1x4</td>
<td>3 lanes PCle Gen 2</td>
<td>1x2, 1x1</td>
</tr>
<tr>
<td><strong>USB</strong></td>
<td>1x USB 3.1 (5 Gbps)</td>
<td>1x USB 3.1 (5 Gbps)</td>
<td>3x USB 3.2 gen2 (10 Gbps)</td>
<td>3x USB 3.2 gen2 (10 Gbps)</td>
</tr>
<tr>
<td><strong>Ethernet</strong></td>
<td>1 GbE via MDI</td>
<td>1 GbE via MDI</td>
<td>1 GbE via MDI</td>
<td>1 GbE via MDI</td>
</tr>
<tr>
<td><strong>Mechanical</strong></td>
<td>69.6mmx45mm 260-pin SO-DIMM connector</td>
<td>69.6mmx45mm 260-pin SO-DIMM connector</td>
<td>69.6mmx45mm 260-pin SO-DIMM connector **</td>
<td>69.6mmx45mm 260-pin SO-DIMM connector **</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>

*source: NVIDIA*
Application Scenarios

- AI Camera for Retail & Factory
- Autopilot Robots & Cars
- Drones
- Education & Training Tools
- Medical & Biological Vision
- AI for Smart Retail
Carrier Boards for NVIDIA Jetson

Designed For Different Edge AI Deployments

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

<table>
<thead>
<tr>
<th>Product Name</th>
<th>reComputer J101 carrier board</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>100mm x 80mm</td>
</tr>
<tr>
<td>Module Compatibility</td>
<td>Jetson Nano</td>
</tr>
<tr>
<td>SKU</td>
<td>102991694</td>
</tr>
<tr>
<td>Certification</td>
<td>![Certification Icons]</td>
</tr>
</tbody>
</table>

### 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
**Carrier Board**

<table>
<thead>
<tr>
<th>Product Name</th>
<th>reComputer J202 carrier board</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>100mm x 80mm</td>
</tr>
<tr>
<td>Module</td>
<td>Jetson Nano</td>
</tr>
<tr>
<td>Compatibility</td>
<td>Jetson Xavier NX</td>
</tr>
<tr>
<td>SKUs</td>
<td>102991695</td>
</tr>
<tr>
<td>Japan Version</td>
<td>reComputer J202 (without power adapter) SKU 102991714</td>
</tr>
</tbody>
</table>

**Introduction**

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 and NVIDIA® Jetson Nano Developer Kit-B01.

**Features**

- 4 USB 3.1 Type A ports
- 2 CSI Camera Connectors
- M.2 key E
- M.2 key M
- RTC
- HDMI + DP ports

**Applications**

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

**Same Dimensions As Jetson Nano Dev Kit Carrier Board**

![Carrier Board Diagram]
## Carrier Board

### Product Name
reComputer J401 carrier board

### Dimensions
100mm x 80mm

### Module Compatibility
- Jetson Orin Nano
- Jetson Orin NX

### SKU
102110770

### Japan Version
reComputer J401 (without power adapter)
SKU 102110770

### Certification
RoHS, CE, FCC

### Introduction
reComputer J401 is a high-performance, interface-rich NVIDIA Jetson Orin Nano/Orin NX compatible carrier board. It has the same functional design and size as the carrier board of NVIDIA® Jetson Orin™ Nano Developer Kit.

### Features
- 4 USB 3.2 Type A ports
- 2 CSI Camera Connectors
- 9V-19V
- M.2 key E
- M.2 key M
- RTC
- HDMI

### Applications
- Defect Detection in Manufacturing
- Smart Shopping Cart
- Pose Estimation
- Robotics
Carrier Board

<table>
<thead>
<tr>
<th>Product Name</th>
<th>A205E carrier board</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>115mm x 105mm</td>
</tr>
<tr>
<td>Module Compatibility</td>
<td>Jetson Nano, Jetson Xavier NX, Jetson TX2 NX</td>
</tr>
<tr>
<td>SKU</td>
<td>102110774</td>
</tr>
<tr>
<td>Certification*</td>
<td>RoHS, CE, FCC</td>
</tr>
</tbody>
</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 (Wi-Fi). 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 operation in the temperature range from -25°C to 80°C.

Features
- 4 USB 3.0 Type A
- USB2.0 Type C
- CAN
- Dual Gigabit Ethernet
- M.2 key E
- M.2 key M
- RS485
- RS232

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

*Some certification is ongoing.*
# Carrier Board

<table>
<thead>
<tr>
<th>Product Name</th>
<th>A203 V2 carrier board</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>87mm x 52mm</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>
</tr>
<tr>
<td>SKU</td>
<td>103110043</td>
</tr>
</tbody>
</table>

## Certification
- RoHS
- CE
- FCC

## 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 Board

Product Name: A205 carrier board

Dimensions: 170mm x 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:
- Dual Gigabit Ethernet
- 6 CSI
- 5 SATA
- SD card slot
- 2 Ethernet Ports
- 4 USB 3.0 Type A

Applications:
- Industrial Automation
- Traffic Management
- Drone
- Robotics
- Retail
A603 Jetson Carrier Board is a powerful extension board that supports Jetson Orin™ NX/Orin™ Nano modules. It features 1 GbE port, M.2 Key M for SSD, M.2 Key E for Wi-Fi/Bluetooth, CSI, and HDMI for high-quality video capture and display, containing 2x USB 3.0 ports, fan, RTC, flexible 9-20V power supply. By the compact design, it can be flexible and easy to integrate into a variety of edge computing applications, saving space for UAVs, robots and drone development.
Carrier Board

<table>
<thead>
<tr>
<th>Product Name</th>
<th>A607 carrier board</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions</td>
<td>115mm x 105mm</td>
</tr>
<tr>
<td>Module Compatibility</td>
<td>- Jetson Orin NX</td>
</tr>
<tr>
<td></td>
<td>- Jetson Orin Nano</td>
</tr>
<tr>
<td>SKU</td>
<td>102110841</td>
</tr>
<tr>
<td>Certification</td>
<td>RHOS CE</td>
</tr>
</tbody>
</table>

Introduction

A607 Jetson Carrier Board is a powerful extension board that supports Jetson Orin™ NX/Orin™Nano modules, featuring high-speed networking and wireless connection with two GbE network ports and a pre-installed SMD Wi-Fi/BlueTooth module. It also comes with CAN, I2C Link, four USB 3.0 Type-A ports, one USB 2.0 / USB 3.0 Type-C, and one USB 3.0 0.5mm pitch 20-pin ZIF for versatile connectivity options. This extension board can enable users to capture and display video content with the 120-pin expansion camera connector and the HDMI port, supporting a wide input range of 12-36V DC, making it flexible to integrate into a variety of computing tasks. It maintains operation in the temperature range from -25°C to 75°C.

Features

- 2 GbE network ports
- pre-installed SMD Wi-Fi/BlueTooth
- M.2 Key M for SSD
- CAN/RS232/RS485

Applications

- UAVs
- Drone
- Unmanned Submarine
- Industrial Automation
- Home Robots
## NVIDIA® Jetson Module Compatible Carrier Boards Comparison

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>PCB Size / Overall Size</td>
<td>100mm x 80mm</td>
<td>100mm x 80mm</td>
<td>100mm x 80mm</td>
<td>87mm x 52mm</td>
<td>170mm x 100mm</td>
<td>115mm x 105mm</td>
<td>87mm x 52mm</td>
<td>115mm x 105mm</td>
</tr>
<tr>
<td>Display</td>
<td>1 x HDMI</td>
<td>1 x HDMI+1 x DP</td>
<td>1 x HDMI</td>
<td>2 x HDMI</td>
<td>2 x HDMI</td>
<td>1 x HDMI</td>
<td>1 x HDMI</td>
<td>1 x HDMI</td>
</tr>
<tr>
<td>CSI Camera</td>
<td>2 x CSI</td>
<td>2 x CSI</td>
<td>2 x CSI</td>
<td>1 x CSI</td>
<td>2 x CSI</td>
<td>2 x CSI</td>
<td>1 x CSI</td>
<td>1 x CSI</td>
</tr>
<tr>
<td>Networking</td>
<td>1 x Gigabit Ethernet (10/100/1000M) 1 x M.2 Key E (WiFi) (module not included)</td>
<td>1 x Gigabit Ethernet (10/100/1000M) 1 x M.2 Key E (WiFi) (module not included)</td>
<td>1 x Gigabit Ethernet (10/100/1000M) 1 x M.2 Key E (WiFi) (module not included)</td>
<td>1 x Gigabit Ethernet (10/100/1000M) 1 x M.2 Key E (WiFi) (module not included)</td>
<td>2 x Gigabit Ethernet Connector (10/100/1000) 1 x M.2 KEY E (WiFi) (module not included) 1 x WiFi/ BLE module (4 pin interface)</td>
<td>2 x Gigabit Ethernet (10/100/1000)</td>
<td>1 x GigabitEthernet (10/100/1000)</td>
<td>2 x Gigabit Ethernet (10/100/1000)</td>
</tr>
<tr>
<td>USB</td>
<td>1 x USB 3.0 Type-A (Integrated USB 2.0) 1 x USB Type C(Not support power input)</td>
<td>4 x USB 3.2 Type-A (Not support power input)</td>
<td>4 x USB 3.2 Type-A (Not support power input)</td>
<td>1 x USB 3.0 Type-A (Integrated USB 2.0) 1 x USB 3.0 Type-A (Integrated USB 2.0) 1 x USB Micro-B (Not support power input)</td>
<td>4 x USB 3.0 Type-A (Integrated USB 2.0) 1 x USB 2.0 Type C (Support OTG)</td>
<td>1 x USB 2.0 ZIF 20P 0.5mm pitch pitch 4x USB 3.0 Type A 1 x USB 2.0 Type C</td>
<td>2 x USB 3.0 Type A (Integrated USB 2.0) 1 x USB 2.0 0.5mm pitch pitch 4x USB 3.0 Type A 1 x USB 2.0 Type C</td>
<td>4 x USB 3.0 Type A (Integrated USB 2.0) 1 x USB 2.0 / 3.0 Type C 1 x USB 3.0 ZIF 20P 0.5mm pitch</td>
</tr>
<tr>
<td>Storage Expansion</td>
<td>1 x TF_card (CLK Frequency 48Mhz)</td>
<td>1 x M.2 Key M</td>
<td>1 x M.2 Key M</td>
<td>1 x M.2 Key M</td>
<td>5 x SATA 1 x TF_card</td>
<td>1 x M.2 Key M</td>
<td>1 x M.2 Key M</td>
<td>1 x M.2 Key M 2242 Interface</td>
</tr>
<tr>
<td>Audio</td>
<td>/</td>
<td>/</td>
<td>/</td>
<td>1 x Audio Jack, 2 x Microphone interface 2 x Audio interface 2 x Speaker interface</td>
<td>1 x Audio Jack, 2 x Microphone interface 2 x Audio interface 2 x Speaker interface</td>
<td>1 x Audio Jack 2 x Speaker</td>
<td>1 x speaker Connector 1 x audio Jack</td>
<td>/</td>
</tr>
<tr>
<td>SPI Bus</td>
<td>2 x SPI Bus(+3.3V Level) 2 x SPI Bus(+3.3V Level)</td>
<td>2 x SPI Bus(+3.3V Level) 2 x SPI Bus(+3.3V Level)</td>
<td>2 x SPI Bus(+3.3V Level) 2 x SPI Bus(+3.3V Level)</td>
<td>2 x SPI Bus(+3.3V Level) 2 x SPI Bus(+3.3V Level)</td>
<td>1 x SPI Bus(+3.3V Level) 2 x SPI Bus(+3.3V Level)</td>
<td>1 x SPI Bus(+3.3V Level)</td>
<td>2 x SPI Bus 2 x SPI Bus</td>
<td>2 x SPI Bus</td>
</tr>
<tr>
<td>Fan Connector</td>
<td>1 x Fan(5V PWM) 1 x Fan(5V PWM)</td>
<td>1 x Fan(5V PWM) 1 x Fan(5V PWM)</td>
<td>1 x Fan(5V PWM) 1 x Fan(5V PWM)</td>
<td>1 x Fan(5V PWM) 1 x Fan(5V PWM)</td>
<td>1 x Fan(5V PWM) 1 x Fan(5V PWM)</td>
<td>1 x Fan(5V PWM) 1 x Fan(5V PWM)</td>
<td>1 x Fan(5V PWM) 1 x Fan(5V PWM)</td>
<td>1 x Fan(5V PWM) 1 x Fan(5V PWM)</td>
</tr>
<tr>
<td>CAN</td>
<td>/</td>
<td>1 x CAN</td>
<td>1 x CAN</td>
<td>1 x CAN</td>
<td>1 x CAN</td>
<td>1 x CAN</td>
<td>1 x CAN</td>
<td>1 x CAN</td>
</tr>
<tr>
<td>Multifunctional port</td>
<td>1 x 40-Pin 1 x 40-Pin</td>
<td>1 x 40-Pin 1 x 40-Pin</td>
<td>1 x 40-Pin 1 x 40-Pin</td>
<td>1 x 40-Pin 1 x 40-Pin</td>
<td>1 x 40-Pin 1 x 40-Pin</td>
<td>1 x 40-Pin 1 x 40-Pin</td>
<td>1 x 40-Pin 1 x 40-Pin</td>
<td>1 x 40-Pin 1 x 40-Pin</td>
</tr>
<tr>
<td>RTC</td>
<td>Battery not included</td>
<td>Battery not included</td>
<td>Battery not included</td>
<td>Battery not included</td>
<td>Battery not included</td>
<td>Battery not included</td>
<td>Battery not included</td>
<td>1 x RTC socket(support rechargeable battery)</td>
</tr>
<tr>
<td>Power supply</td>
<td>USB Type C 5V/3A (not include a power cord) 12V/3A power cord only 12V/3A power cord only 19V/4.74A power cord only</td>
<td>19V/4.74A power cord only</td>
<td>19V/4.74A power cord only</td>
<td>19V/4.74A power cord only</td>
<td>9V-36V DC</td>
<td>9-20V DC, 7A</td>
<td>12(7A) - 36(3A) DC</td>
<td>12(7A) - 36(3A) DC</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0°C~60°C</td>
<td>0°C~60°C</td>
<td>-10°C~60°C</td>
<td>-25°C~65°C</td>
<td>-25°C~80°C</td>
<td>-25°C~80°C</td>
<td>-25°C~65°C</td>
<td>-25°C~75°C</td>
</tr>
</tbody>
</table>
reComputer Series for NVIDIA 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/Orin Nano
Pre-installed Jetpack Production module
Module Embedded

- Jetson Nano
- Jetson Xavier NX 8GB/16GB
- Jetson Orin NX 8GB/16GB
- Jetson Orin Nano 4GB/8GB

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:

reComputer J1010
- Jetson Nano
- 1xUSB 3.0, 2x USB 2.0
- M.2 key E
- Micro SD Card (CLK Frequency 48MHz
SKU: 110061362
Certification:

reComputer J1020v2
- Jetson Nano
- 4xUSB 3.0
- M.2 key M
SKU: 110061461
Certification:

reComputer J2021
- Jetson Xavier NX 8GB
- 4xUSB 3.1
- M.2 key M, M.2 key E
SKU: 110061381
Certification:

reComputer J2022
- Jetson Xavier NX 16GB
- 4xUSB 3.1
- M.2 key M, M.2 key E
SKU: 110061402
Certification:

reComputer J4011
- Jetson Orin Nano 8GB
- 4x USB 3.2 Type-A; 1x USB2.0 Type-C (Recovery)
- M.2 key M, M.2 key E
- 128GB SSD
SKU: 11011044
Certification:

reComputer J4012
- Jetson Orin Nano 8GB
- 4x USB 3.2 Type-A; 1x USB2.0 Type-C (Recovery)
- M.2 key M, M.2 key E
- 128GB SSD
SKU: 11011045
Certification:

reComputer J3010
- Jetson Orin Nano 8GB
- 4x USB 3.2 Type-A; 1x USB2.0 Type-C (Recovery)
- M.2 key M, M.2 key E
- 128GB SSD
SKU: 11011046
Certification:

reComputer J3011
- Jetson Orin Nano 16GB
- 4x USB 3.2 Type-A; 1x USB2.0 Type-C (Recovery)
- M.2 key M, M.2 key E
- 128GB SSD
- WiFi/Bluetooth
SKU: 11011047
Certification:

Discontinued

reComputer J1020
- Jetson Nano
- 4xUSB 3.0
- M.2 key M
SKU: 110061361
Certification:

reComputer J2011
- Jetson Xavier NX 8GB
- 4xUSB 3.0
- M.2 key M, M.2 key E
SKU: 110061363
Certification:

reComputer J2012
- Jetson Xavier NX 16GB
- 4xUSB 3.0
- M.2 key M, M.2 key E
SKU: 110061401
Certification:

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 ongoing
reComputer J30 series

### Product Name
reComputer J3010 / J3011

### Module
Jetson Orin Nano 4GB / 8GB

### Dimensions
130mm x 120mm x 58.5mm

### SKU
110110146 / 110110147

### Certification

### Introduction
reComputer J30 series consist of hand-size edge AI boxes built with Jetson Orin™ Nano 4GB and 8GB modules which deliver up to 20 TOPS and 40 TOPS AI performance and has a rich set of IOs including USB 3.2 ports(4x), HDMI 2.1, M.2 key E for WiFi, M.2 Key M for SSD, RTC, CAN, Raspberry Pi GPIO 40-pin and more. It is also equipped with an aluminum case, cooling fan with a heatsink and a pre-installed JetPack System. As part of the NVIDIA Jetson ecosystem, reComputer J30 series is ready for your next AI application development and deployment.

### Features
- Cooling Fan
- M.2 Key E
- M.2 Key M
- Pre-installed JetPack 5.1
- 128GB NVMe SSD
- 1x RJ45 for GbE
- 4x USB3.2
- Wi-Fi/Bluetooth

### Applications
- Industry 4.0
- Traffic Management
- Robotics
- Retail
- Healthcare

### Price from
$499
reComputer J40 series

**Product Name**
reComputer J4011/ J4012

**Module Embedded**
Jetson Orin NX 8GB/ 16GB

**Dimensions**
130mm x120mm x 58.5mm

**SKU**
110110144 / 110110145

**Certification**

**Introduction**
reComputer J40 series consist of hand-size edge AI boxes built with Jetson Orin™ NX 8GB and 16GB modules which deliver up to 70 TOPS and 100 TOPS AI performance and has a rich set of IOs including USB 3.2 ports(4x), HDMI 2.1, M.2 key E for Wi-Fi, M.2 Key M for SSD, RTC, CAN, Raspberry Pi GPIO 40-pin and more. It is also equipped with an aluminum case, a cooling fan with a heatsink, and a pre-installed JetPack System. As part of the NVIDIA Jetson ecosystem, reComputer J40 series is ready for your next AI application development and deployment.

**Features**
- Cooling Fan
- M.2 Key E
- M.2 Key M
- Pre-installed JetPack 5.1
- 128GB NVMe SSD
- 1x RJ45 for GbE
- 4x USB3.2

**Applications**
- Industry 4.0
- Traffic Management
- Robotics
- Retail

**Price from:** $699

- reComputer J4011 Orin NX 8GB 70TOPS
- reComputer J4012 Orin NX 16GB 100TOPS
reComputer Industrial Series

Product Name: reComputer Industrial J20 / J30 / J40

Dimensions: 170mm x 100mm

Module Compatibility:
- Jetson Xavier NX
- Jetson Orin NX
- Jetson Orin Nano

Certification: RoHS, CE, FCC

Introduction:
reComputer Industrial series are the edge AI computers based on NVIDIA Jetson modules. It is suitable for the application deployment of edge AI inferencing and processing in complex field environment. Support Nvidia Jetson Xavier NX, Nano, Orin NX, Orin Nano versions.

Features:
- Pre-installed Jetpack 5.1
- Fanless Design
- 3x USB3.2
- PoE
- RS232/422/485
- 1xCAN
- NVMe M.2
- Dual GbE

Applications:
- Package and Label Detection
- Manufacturing Defects Detection

J20 Xavier NX: 21TOPS
Price from: $999
Release Date: 2023.Q2

J30 Orin Nano: 40TOPS

J40 Orin NX: 100TOPS

alwaysAI
EDGE IMPULSE
NVIDIA Jetson Modules
Embedded Mini PCs

AGX Orin/AGX Xavier/Xavier NX SoM
Pre-installed Jetpack AloT
AGX Orin - Industrial

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Mini AI Computer T906</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module Embedded</td>
<td>Jetson AGX Orin 32GB</td>
</tr>
<tr>
<td>Dimensions</td>
<td>196.7mmx196mmx74mm</td>
</tr>
<tr>
<td>SKU</td>
<td>114110168</td>
</tr>
</tbody>
</table>

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 IPSS 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

<table>
<thead>
<tr>
<th><strong>Product Name</strong></th>
<th>Mini AI Computer T5065</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Module</strong></td>
<td>Jetson Xavier NX 8GB</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>155mm × 165mm × 52.5mm</td>
</tr>
<tr>
<td><strong>SKU</strong></td>
<td>114110167</td>
</tr>
</tbody>
</table>

**Introduction**

Mini AI Computer T5065 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

**Product Name**  
A205E Mini PC

**Module Embedded**  
Jetson Xavier NX 8GB

**Dimensions**  
209mm x 130mm x 66 mm

**SKU**  
111410148

**Introduction**  
Designed for industrial use, A205-E 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. It 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
- Wi-Fi/Bluetooth
- 2x HDMI
- 4x USB3.0
- 2x GbE

**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>
</tr>
<tr>
<td>SKU</td>
<td>114110147</td>
</tr>
</tbody>
</table>

**Introduction**

A203 Mini PC is a powerful and extremely small intelligent edge computer to bring modern AI to the edge. It has a smaller form factor compared to Jetson Xavier NX Developer Kit, and delivers same AI performance 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
- Wi-Fi/Bluetooth
- 2x HDMI

**Applications**

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

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Jetson SUB Mini PC V2 - Blue</th>
</tr>
</thead>
<tbody>
<tr>
<td>Module Embedded</td>
<td>Jetson Xavier NX</td>
</tr>
<tr>
<td>Dimensions</td>
<td>130mm x 120mm x 50mm</td>
</tr>
<tr>
<td>SKU</td>
<td>[110061461]</td>
</tr>
</tbody>
</table>

### Introduction
Jetson SUB Mini PC V2 is a hand-size edge AI box built with Jetson Xavier NX module which delivers up to 21 TOPS AI performance and equipped with a reComputer J202 carrier board. It is preinstalled with Jetpack 5.0.2, simplifies development, and fits for deployment for edge AI solution providers.

### Features
- 1 x USB Type-C
- 128GB (M.2 key M) NVMe SSD
- Mounting hole design
- HDMI port + DP port
- Wi-Fi module and antenna
- 4 USB 3.1
- Removable acrylic cover
- NVIDIA JetPack 5.0.2

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

### NVIDIA JetPack 5.0.2
Jetson Xavier NX

Product Name: Jetson SUB Mini PC-Black

Module Embedded: Jetson Xavier NX

Dimensions: 205mm x 130mm x 65mm

SKU: 102110641

Introduction: Consists of an NVIDIA® Jetson Xavier™ NX Module, a carrier board, and a fully sealed Aluminum 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
Jetson Xavier NX

**Product Name**
Jetson SUB Mini PC-Silver

**Module Embedded**
Jetson Xavier NX

**Dimensions**
130mm x 90mm x 60mm

**SKU**
102110642

**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**
- Education
- IoT
- Traffic Management
- Smart Home/Office
- Light Outdoor Application
Jetson AGX Xavier

Product Name
Jetson AGX Xavier H01 Kit

Module Embedded
Jetson AGX Xavier 32GB

Dimensions
130mm x 105mm x 77mm

SKU
110991666

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 NVIDIA Jetson
Inference center for the edge

- Local Intelligent Video Analytics
- Jetson Xavier NX/ Orin NX  1 GbE
- Pre-installed Jetpack  2.5 GbE
- 2.5 inches 256GB SSD  PoE
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**

![Certification logos]

**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)
reServer J30/J40 series

Local inference center for video intelligences

reServer J2032  
20TOPS

reServer J30 Orin Nano  
40TOPS

reServer J40 Orin NX  
100TOPS

Price from: $1099  
Release Date: 2023.Q3

Intelligent Video Analytics

- 4 x PoE video input.
- Expand local storage with SATA HDD/SSD.
## Jetson Nano full system comparison

<table>
<thead>
<tr>
<th>Production Module</th>
<th>Jetson Nano</th>
</tr>
</thead>
<tbody>
<tr>
<td><img src="image1.jpg" alt="Image" /></td>
<td><img src="image2.jpg" alt="Image" /></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Product Name</th>
<th>reComputer J1010</th>
<th>reComputer J1020 v2</th>
<th>NVIDIA® Jetson Nano Developer Kit-B01</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKU</td>
<td>110061362</td>
<td>110061441</td>
<td>102110417</td>
</tr>
<tr>
<td>AI Performance</td>
<td>472 GFLOPS</td>
<td></td>
<td></td>
</tr>
<tr>
<td>GPU</td>
<td>NVIDIA Maxwel™ architecture with 128 NVIDIA CUDA® cores</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CPU</td>
<td>NVIDIA Quad-core Arm® Cortex®-A57 MPCore processor</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Memory</td>
<td>4 GB 64-bit LPDDR4, 1600MHz 25.6 GB/s</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Storage</td>
<td>16 GB eMMC 5.1</td>
<td>16 GB eMMC 5.1</td>
<td>microSD slot</td>
</tr>
<tr>
<td>Video Decode</td>
<td>1*4K60</td>
<td>2*4K30</td>
<td>4*1080p60</td>
</tr>
<tr>
<td>Networking</td>
<td>1*RJ45 Gigabit Ethernet Connector (10/100/1000)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>USB</td>
<td>1*USB 3.0 Type A</td>
<td>4*USB 3.0 Type-A</td>
<td>4*USB 3.0 Type-A</td>
</tr>
<tr>
<td></td>
<td>2*USB 2.0 Type A</td>
<td>1*USB Type-C for device mode</td>
<td>1*USB 2.0 Micro-B for device mode</td>
</tr>
<tr>
<td></td>
<td>1*USB Type-C for 5V power input</td>
<td></td>
<td></td>
</tr>
<tr>
<td>CSI Camera</td>
<td>2*CSI camera connectors (15 pos, 1mm pitch, MIPI CSI-2)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Display</td>
<td>1*HDMI 2.0 Type A</td>
<td>1*HDMI 2.0 Type A</td>
<td>1*HDMI 2.0 Type A</td>
</tr>
<tr>
<td>Fan</td>
<td>1*Fan Connector(5V PWM)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>M.2 Key E</td>
<td>1*M.2 Key E connector to support WiFi/Bluetooth</td>
<td>1*M.2 Key E (disabled)</td>
<td>1*M.2 Key E connector to support WiFi/Bluetooth</td>
</tr>
<tr>
<td>Multifunctional header</td>
<td>1*40-Pin header (GPIO, I2C, I2S, SPI, UART)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power Adapter</td>
<td>USB Type-C 5V/3A</td>
<td>DC Barrel Jack 12V/2A</td>
<td>DC Barrel Jack 5V/4A Micro-USB 5V/2A</td>
</tr>
<tr>
<td>Power</td>
<td>5W</td>
<td>10W</td>
<td></td>
</tr>
<tr>
<td>Dimensions</td>
<td>130mmx120mmx50mm (with case)</td>
<td>130mmx120mmx50mm (with case)</td>
<td>100mmx80mmx29mm</td>
</tr>
<tr>
<td>Production Module</td>
<td>Jetson Xavier NX</td>
<td></td>
<td></td>
</tr>
<tr>
<td>-------------------</td>
<td>-----------------</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>SKU</strong></td>
<td>110061381</td>
<td>110061402</td>
<td>110110188</td>
</tr>
<tr>
<td><strong>AI Performance</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>GPU</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>CPU</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>8 GB 128-bit LPDDR4 x 59.7GB/s</td>
<td>16 GB 128-bit LPDDR4x 59.7GB/s</td>
<td>8GB 128-bit LPDDR4 x 59.7GB/s</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>16 GB eMMC 5.1 1*M.2 Key M connector</td>
<td>16GB eMMC 5.1, M.2 Key M PCIe Gen4.0 SSD (M.2 NVMe 2280 SSD 128G included)</td>
<td>16 GB eMMC 5.1 256GB SATA III SSD 2* SATA III data connectors 2* SATA III power connectors</td>
</tr>
<tr>
<td><strong>Video Encode</strong></td>
<td>2*4K60</td>
<td>4*4K30</td>
<td>10*1080p60</td>
</tr>
<tr>
<td><strong>Video Decode</strong></td>
<td>2*8K30</td>
<td>6*4K60</td>
<td>12*4K30</td>
</tr>
<tr>
<td><strong>Networking</strong></td>
<td>1*RJ45 Gigabit Ethernet Connector (10/100/1000)</td>
<td>1* LAN1 RJ45 GbE PoE(PSE 802.3 af 15 W)</td>
<td>1* LAN2 RJ45 GbE (10/100/1000Mbp) Optional WiFi/Bluetooth module support</td>
</tr>
<tr>
<td><strong>USB</strong></td>
<td>4<em>USB 3.1 Type A Connector; 1</em>USB Type-C for device mode</td>
<td>3* USB3.2 Gen1, 1* USB2.0 Type C(Device mode), 1* USB2.0 Type C For Debug UART &amp; RP2040</td>
<td>Optional WiFi/Bluetooth module support</td>
</tr>
<tr>
<td><strong>CSI Camera</strong></td>
<td>2*CSI camera connectors (15 pos, 1mm pitch, MIPI CSI-2)</td>
<td>2*CSI (2-lane 15pin)</td>
<td>-</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>1<em>HDMI 2.0 Type A; 1</em>DP</td>
<td>1*HDMI 2.0 Type A</td>
<td>1<em>HDMI 2.0 Type A; 1</em>DPI1.4</td>
</tr>
<tr>
<td><strong>Fan</strong></td>
<td>1*Fan (5V PWM)</td>
<td>Fanless, passive heatsink, 1*Fan connectors(5V PWM)</td>
<td>1*Jetson Xavier NX Fan (5V PWM)</td>
</tr>
<tr>
<td><strong>M.2</strong></td>
<td>1*M.2 Key E connector to support WiFi/4B</td>
<td>M.2 Key B support 4G/5G (Module optional)</td>
<td>-</td>
</tr>
<tr>
<td><strong>Mini PCIe</strong></td>
<td>-</td>
<td>1* Mini PCIe for 4G/LoRa</td>
<td>-</td>
</tr>
<tr>
<td><strong>Multifunctional header/IO</strong></td>
<td>1*40-Pin header (GPIO, I2C, I2S, SPI, UART)</td>
<td>DI/DO/CAN/RS232, RS422 and RS485/TPM 2.0 header</td>
<td>1*40-Pin header (GPIO, I2C, I2S, SPI, UART)</td>
</tr>
<tr>
<td><strong>Power Adapter</strong></td>
<td>DC Barrel Jack 12V/5A (5.5/2.1mm)</td>
<td>19V Power Adapter(without power cord)</td>
<td>DC Barrel Jack 12V @5A</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>130mmx120mmx50mm (with case)</td>
<td>159mm x 155mm x 57mm</td>
<td>132mmx124mmx233mm (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>A203</td>
</tr>
<tr>
<td><strong>SKU</strong></td>
<td>11410147</td>
</tr>
<tr>
<td><strong>AI Performance</strong></td>
<td>21 TOPS</td>
</tr>
<tr>
<td><strong>GPU</strong></td>
<td>384-core NVIDIA Volta™ GPU with 48 Tensor Cores</td>
</tr>
<tr>
<td><strong>CPU</strong></td>
<td>6-core NVIDIA Carmel ARM®v8.2 64-bit CPU, 6MB L2 + 4MB L3</td>
</tr>
<tr>
<td><strong>Networking</strong></td>
<td>1*RJ45 GbE (10/100/1000)</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>8 GB 128-bit LPDDR4x 59.7GB/s</td>
</tr>
<tr>
<td><strong>USB</strong></td>
<td>2*USB3.0 Type A</td>
</tr>
<tr>
<td><strong>Camera</strong></td>
<td>1*CSI camera connector (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>M.2 Key E</strong></td>
<td>1*M.2 Key E connector to support WiFi/BT (module included)</td>
</tr>
<tr>
<td><strong>mini PCIe</strong></td>
<td>/</td>
</tr>
<tr>
<td><strong>IO</strong></td>
<td>1<em>RS232, 1</em>CAN, 2<em>SPI, 2</em>I2C Link(+3.3V I/O), 5<em>GPIO, 1</em>I2S(3.3V Level)</td>
</tr>
<tr>
<td><strong>Multifunctional header</strong></td>
<td>1*40-Pin header (GPIO, I2C, I2S, SPI, UART)</td>
</tr>
<tr>
<td><strong>FAN</strong></td>
<td>1* Fan (5V PWM)</td>
</tr>
<tr>
<td><strong>Power Input</strong></td>
<td>9V - 19V DC</td>
</tr>
<tr>
<td><strong>Power Adapter</strong></td>
<td>DC Jack 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>

<table>
<thead>
<tr>
<th>Production Module</th>
<th>Jetson Xavier NX</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Name</strong></td>
<td>A205 E</td>
</tr>
<tr>
<td><strong>SKU</strong></td>
<td>11410148</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*RJ45 GbE (10/100/1000)</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td></td>
</tr>
<tr>
<td><strong>USB</strong></td>
<td></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></td>
</tr>
<tr>
<td><strong>Power Adapter</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Operating temperature</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Operating System</strong></td>
<td>Pre-installed JetPack 5.0.2</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Production Module</th>
<th>Jetson Xavier NX</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Name</strong></td>
<td>T506S</td>
</tr>
<tr>
<td><strong>SKU</strong></td>
<td>11410167</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>4*PoE(PSE) GbE Ports</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td></td>
</tr>
<tr>
<td><strong>USB</strong></td>
<td></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></td>
</tr>
<tr>
<td><strong>Power Adapter</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Operating temperature</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Operating System</strong></td>
<td>Pre-installed JetPack 4.6</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Production Module</th>
<th>Jetson Sub Black</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Name</strong></td>
<td></td>
</tr>
<tr>
<td><strong>SKU</strong></td>
<td>10211064</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>2*RJ45 GbE (10/100/1000)</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td></td>
</tr>
<tr>
<td><strong>USB</strong></td>
<td></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></td>
</tr>
<tr>
<td><strong>Power Adapter</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Operating temperature</strong></td>
<td></td>
</tr>
<tr>
<td><strong>Operating System</strong></td>
<td>Pre-installed JetPack 4.6</td>
</tr>
</tbody>
</table>
## Jetson AGX Xavier full system comparison

<table>
<thead>
<tr>
<th>Production Module</th>
<th>Jetson AGX Xavier</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Name</strong></td>
<td>Jetson AGX Xavier H01 Kit</td>
</tr>
<tr>
<td><strong>SKU</strong></td>
<td>110991666</td>
</tr>
<tr>
<td><strong>AI Performance</strong></td>
<td>32TOPS</td>
</tr>
<tr>
<td><strong>GPU</strong></td>
<td>NVIDIA Volta™ architecture S12 NVIDIA CUDA® and 64 Tensor cores</td>
</tr>
<tr>
<td><strong>CPU</strong></td>
<td>8-core NVIDIA Carmel Arm® v8.2 64-bit CPU 8MB L2 + 4MB L3</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>32 GB 256-bit LPDDR4x 136.5GB/s</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>32 GB eMMC 5.1 SD/UFS and microSD card slot; 1*M.2 Key M connector</td>
</tr>
<tr>
<td><strong>Video Encode</strong></td>
<td>4*4K60</td>
</tr>
<tr>
<td><strong>Video Decode</strong></td>
<td>2*8K30</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>2*USB 3.0 Type-A;</td>
</tr>
<tr>
<td><strong>Camera</strong></td>
<td>Camera connector (Compatible with MIPI CSI and GMSL)</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>1x HDMI2.0 Type A</td>
</tr>
<tr>
<td><strong>Fan</strong></td>
<td>1*12V Fan</td>
</tr>
<tr>
<td><strong>M.2 Key E</strong></td>
<td>1*M.2 Key E connector</td>
</tr>
<tr>
<td><strong>PCle</strong></td>
<td>PCIe X16 (x8 PCIe Gen4 / x8 SLVS-EC)</td>
</tr>
<tr>
<td><strong>Multifunctional header</strong></td>
<td>1*40 Pin header</td>
</tr>
<tr>
<td><strong>Power Adapter</strong></td>
<td>DC Jack 19V 4.74A (MAX 90W)</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>10W</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>130mmx105mmx77mm(with case)</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>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Product Name</strong></td>
<td>reComputer 33010</td>
<td>reComputer Industrial 33010</td>
<td>reComputer Industrial 33010</td>
</tr>
<tr>
<td><strong>SKU</strong></td>
<td>110110146</td>
<td>110120152</td>
<td>110101492</td>
</tr>
<tr>
<td><strong>Module</strong></td>
<td>Jetson Orin Nano 4GB</td>
<td>Jetson Orin Nano 8GB</td>
<td>Jetson AGX Orin 32GB</td>
</tr>
<tr>
<td><strong>AI Performance</strong></td>
<td>20 TOPS, 40 TOPS, 20 TOPS, 40 TOPS, 70 TOPS, 100 TOPS, 70 TOPS, 100 TOPS, 200 TOPS</td>
<td>20 TOPS, 40 TOPS, 20 TOPS, 40 TOPS, 70 TOPS, 100 TOPS, 70 TOPS, 100 TOPS, 200 TOPS</td>
<td>200 TOPS</td>
</tr>
<tr>
<td><strong>GPU</strong></td>
<td>6-core Arm® Cortex®-A78 v2.64-bit CPU L1 + L2 + 4MB L3, 8-core Arm® Cortex®-A78 v2.64-bit CPU L1 + L2 + 4MB L3</td>
<td>6-core Arm® Cortex®-A78 v2.64-bit CPU L1 + L2 + 4MB L3</td>
<td>7792-core NVIDIA Ampere architecture GPU with 56 Tensor Cores</td>
</tr>
<tr>
<td><strong>CPU</strong></td>
<td>6-core Arm® Cortex®-A78 v2.64-bit CPU L1 + L2 + 4MB L3, 8-core Arm® Cortex®-A78 v2.64-bit CPU L1 + L2 + 4MB L3</td>
<td>6-core Arm® Cortex®-A78 v2.64-bit CPU L1 + L2 + 4MB L3, 8-core Arm® Cortex®-A78 v2.64-bit CPU L1 + L2 + 4MB L3</td>
<td>6-core Arm® Cortex®-A78 v2.64-bit CPU L1 + L2 + 4MB L3</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>4GB 64-bit LPDDR5 34 GB/s, 8GB 128-bit LPDDR5 68 GB/s</td>
<td>4GB 64-bit LPDDR5 34 GB/s, 8GB 128-bit LPDDR5 68 GB/s</td>
<td>16GB 128-bit LPDDR5 102.4 GB/s</td>
</tr>
<tr>
<td><strong>Storage</strong></td>
<td>1*M.2 Key M (32GB NVMe SSD included)</td>
<td>1*M.2 Key M (32GB NVMe SSD included)</td>
<td>32GB 256-bit LPDDR5 204.8 GB/s</td>
</tr>
<tr>
<td><strong>Video Encode</strong></td>
<td>1080p@30 supported by 1.2 CPU cores</td>
<td>1080p@30 supported by 1.2 CPU cores</td>
<td>1*M.2 Key M connector</td>
</tr>
<tr>
<td><strong>Video Decode</strong></td>
<td>1*M.2 Key M</td>
<td>1*M.2 Key M</td>
<td>64GB 4MMIC 5.1</td>
</tr>
<tr>
<td><strong>Networking</strong></td>
<td>1*RJ45 Gigabit Ethernet Connector (10/100/1000)</td>
<td>1*RJ45 Gigabit Ethernet Connector (10/100/1000)</td>
<td>1*RJ45 Gigabit Ethernet Connector (10/100/1000)</td>
</tr>
<tr>
<td><strong>USB</strong></td>
<td>6-core Arm® Cortex®-A78 v2.64-bit CPU L1 + L2 + 4MB L3</td>
<td>6-core Arm® Cortex®-A78 v2.64-bit CPU L1 + L2 + 4MB L3</td>
<td>6-core Arm® Cortex®-A78 v2.64-bit CPU L1 + L2 + 4MB L3</td>
</tr>
<tr>
<td><strong>Camera</strong></td>
<td>2*CSI Cameras (5 pos, 1mm pitch, MIPI CSI-2)</td>
<td>2*CSI Cameras (5 pos, 1mm pitch, MIPI CSI-2)</td>
<td>2*CSI Cameras (5 pos, 1mm pitch, MIPI CSI-2)</td>
</tr>
<tr>
<td><strong>Display</strong></td>
<td>1*HDMI 2.0 Type A</td>
<td>1*HDMI 2.0 Type A</td>
<td>1*HDMI 2.0 Type A</td>
</tr>
<tr>
<td><strong>Fan</strong></td>
<td>1*Fan (PWM/DFM) (Fan included)</td>
<td>1*Fan (PWM/DFM) (Fan included)</td>
<td>2*Fan (PWM)</td>
</tr>
<tr>
<td><strong>M.2</strong></td>
<td>1*M.2 Key E (WiFi/Bluetooth included)</td>
<td>1*M.2 Key E (WiFi/Bluetooth included)</td>
<td>1*M.2 Key E (WiFi/Bluetooth included)</td>
</tr>
<tr>
<td><strong>Mini PCIe</strong></td>
<td>/</td>
<td>/</td>
<td>/</td>
</tr>
<tr>
<td><strong>Multifunctional header / IO</strong></td>
<td>1*40.9-pin header</td>
<td>1*40.9-pin header</td>
<td>1*40.9-pin header</td>
</tr>
<tr>
<td><strong>Power</strong></td>
<td>7W - 10W</td>
<td>7W - 15W</td>
<td>15W - 40W</td>
</tr>
<tr>
<td><strong>Power Adapter</strong></td>
<td>DC Jack 12V 5A</td>
<td>19V Power Adapter (without power cord)</td>
<td>DC Jack 19V 4.74A</td>
</tr>
<tr>
<td><strong>Dimensions</strong></td>
<td>110mm x 120mm x 50mm (with case)</td>
<td>159mm x 155mm x 57mm</td>
<td>Jetson AGX Orin 196.7mm x 196mm x 74mm</td>
</tr>
</tbody>
</table>

## Additional Specifications

- **AI Performance**: The AI performance of Jetson Orin Nano includes 20 TOPS, 40 TOPS, 20 TOPS, 40 TOPS, 70 TOPS, 100 TOPS, 70 TOPS, 100 TOPS, and 200 TOPS. Jetson Orin NX includes 20 TOPS, 40 TOPS, 20 TOPS, 40 TOPS, 70 TOPS, 100 TOPS, 70 TOPS, 100 TOPS, and 200 TOPS. Jetson AGX Orin includes 200 TOPS.
- **Multifunctional header / IO**: The Jetson Orin Nano has a 1*40.9-pin header, Jetson Orin NX has a 1*40.9-pin header, and Jetson AGX Orin has a 3*CAN (with CAN chip) 2*GPIO.
- **Power**: The power adapter specifications include DC Jack 12V 5A for Jetson Orin Nano, 19V Power Adapter (without power cord) for Jetson Orin NX, and DC Jack 19V 4.74A for Jetson AGX Orin.
**Powerful Edge AI selection guide**

<table>
<thead>
<tr>
<th>AI NVR</th>
<th>Industrial</th>
<th>Classic</th>
<th>NVIDIA Jetson Modules</th>
</tr>
</thead>
<tbody>
<tr>
<td>reServer J20 Series</td>
<td>reComputer Industrial J20 Series</td>
<td>reComputer J1010/J1020</td>
<td>Nano 4GB 0.5TFLOPs</td>
</tr>
<tr>
<td>reServer J30 Series</td>
<td>reComputer Industrial J30 Series</td>
<td>reComputer J3010</td>
<td>Orin Nano 4GB 20TOPs</td>
</tr>
<tr>
<td>reServer J40 Series</td>
<td>reComputer Industrial J40 Series</td>
<td>reComputer J2021/J2022</td>
<td>Xavier NX 8GB/16GB 21TOPs</td>
</tr>
<tr>
<td>NEW</td>
<td>NEW</td>
<td>NEW</td>
<td>40TOPs 40TOPs</td>
</tr>
<tr>
<td>NEW</td>
<td>NEW</td>
<td>reComputer J3011</td>
<td>Orin Nano 8GB 70TOPs</td>
</tr>
<tr>
<td>NEW</td>
<td>NEW</td>
<td>reComputer J4011</td>
<td>Orin NX 8GB 100TOPs</td>
</tr>
<tr>
<td></td>
<td>NEW</td>
<td>reComputer J4012</td>
<td>Orin NX 16GB</td>
</tr>
</tbody>
</table>
NVIDIA Jetson Compatible Accessories

Heatsink, Case, Camera, and RPLiDAR
## Accessory – Camera

<table>
<thead>
<tr>
<th>Product Name</th>
<th>SKU</th>
<th>Introduction</th>
</tr>
</thead>
<tbody>
<tr>
<td>NVIDIA Jetson module compatible camera</td>
<td></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>

### High Quality Camera for Raspberry Pi CM3/ CM3 Lite/ CM3+/ CM3+ Lite & Jetson Nano with 12.3MP IMX477 Sensor
SKU [114992442](#)

### IMX219-200 8MP Camera with 200° FOV
SKU [114992265](#)

### IMX219-77IR 8MP IR Night Vision Camera with 77° FOV
SKU [114992261](#)

### IMX219-77 8MP Camera with 77° FOV
SKU [114992260](#)

### IMX219-160 8MP Camera with 160° FOV
SKU [114992263](#)

### IMX219-130 8MP Camera with 130° FOV
SKU [114992262](#)

### IMX219-83 8MP 3D Stereo Camera Module
SKU [114992270](#)

### IMX219-160IR 8MP Camera with 160° FOV
SKU [114992264](#)
Accessory – Camera

Product Name

e-con Systems cameras compatible with Seeed Jetson carrier boards

Introduction

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%.

- **e-CAM131_CUNX** -
  4K Camera for NVIDIA® Jetson Xavier™
  NX/NVIDIA® Jetson Nano™

- **e-CAM81_CUNX** -
  4K HDR Camera for NVIDIA® Jetson Xavier™
  NX / TX2 NX / Nano

- **e-CAM80_CUNX** -
  Sony 4K Camera for NVIDIA® Jetson Xavier™
  NX / Nano

- **e-CAM50_CUNX** -
  5.0 MP NVIDIA® Jetson Xavier™
  NX/NVIDIA® Jetson Nano™ Camera

- **e-CAM24_CUNX** -
  Color Global shutter Camera for NVIDIA® Jetson Xavier™
  NX / TX2 NX / Nano

Learn more at e-con Systems: [www.e-consystems.com/seedstudio-cameras.aso](http://www.e-consystems.com/seedstudio-cameras.aso)
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.

**Product Name**

- RPLiDARA 1M8-R6 360 Degree Laser Scanner Kit - 12M Range
  - SKU 114992561

- RPLiDARA 2M8 360 Degree Laser Scanner Kit - 12M Range
  - SKU 110991066

- RPLiDARA 3M13 60 Degree Laser Scanner Kit - 25M Range
  - SKU 110991068

- RPLiDARS 1 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

- RPLiDARA 2M6 360 Degree Laser Scanner Kit - 18M Range
  - SKU 110991067

- RPLiDARS 2 Low Cost 360 Degree Laser Range Scanner - 30M Range
  - SKU 114992738

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

<table>
<thead>
<tr>
<th>Product Name</th>
<th>LiDAR &amp; Camera</th>
</tr>
</thead>
</table>

## Introduction

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.

<table>
<thead>
<tr>
<th>TFmini S LiDAR module - Short- Range ToF LIDAR Range Finder</th>
<th>DepthEye S2 -H67°x V51° VGA Camera with Sony IMX556PLR DepthSense</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKU 101990620</td>
<td>SKU 101990866</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>DepthEye Wide - H100° x V75° VGA ToF Camera with Sony IMX556PLR DepthSense™</th>
<th>DepthEye Turbo - VGA ToF with Sony IMX556PLR DepthSense</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKU 114992563</td>
<td>SKU 114991967</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>OakSense H60Q-QVGA resolution ToF camera</th>
<th>OakSense H67V-VGA resolution TOF camera supported C++ and Python</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKU 114992757</td>
<td>SKU 114992753</td>
</tr>
</tbody>
</table>
## Accessory - Heatsink

<table>
<thead>
<tr>
<th>Product Name</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>SKU 114992686</td>
<td>NVIDIA Jetson module compatible aluminum heatsink</td>
</tr>
</tbody>
</table>

**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.

### Aluminum Heatsink for Jetson Nano Module
- SKU 114992686

### Aluminum Heatsink with Fan for Jetson Xavier NX Module
- SKU 114992687

### Aluminum Heatsink with Fan for Jetson TX2 NX Module
- SKU 114992731

### Jetson Nano Module Active Heat Sink
- SKU 101110061

### Aluminum Heatsink with bigger Fan for Jetson Xavier NX Module with Long Cable
- SKU 114992746

### Aluminum Heatsink with Fan for Jetson Orin NX/Xavier NX Module
- SKU 110991904
## Accessory - Case

**Product Name**

<table>
<thead>
<tr>
<th>SKU</th>
<th>Product Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>110991384</td>
<td>Case for NVIDIA Jetson modules</td>
</tr>
</tbody>
</table>

**Introduction**

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 - X8624105, 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 11006132

- **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
Customization services for NVIDIA Jetson Series

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

In addition, we are open to hearing your new Jetson-based product development idea. If you can't find the off-the-shelf Jetson hardware solution for your needs, Seeed Studio's in-house R&D engineering team with over a decade of experience in SBCs and industrial computing can design for your specific application demands.

Check out our customization services at https://www.seeedstudio.com/odm, and submit a new product inquiry to us at produce@seeed.cc for evaluation.

**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 NVIDIA 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.
Transform Your Business Delivering Real-World AI Together

Integrate your unique AI technique into our current hardwares: Build your next-gen AI product powered by the NVIDIA Jetson module and bring your product concept to the market with Seeed Studio’s Agile Manufacturing 0-∞.
Work with Amazing Ecosystem

Seeed Studio is an Elite Partner of NVIDIA Partner Network (NPN), 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 accelerate industry digital transformation.

We are calling for more ISV and solutions Integrator partners to deliver real-world edge AI solutions together.

- Integrating your unique technology, delivering 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 Studio amazing Ecosystem Partners together, unlocking more AI possibilities.

We are working with:

![Partner Logos]

Buy Seeed Jetson products from NVIDIA partner and distributors

![Partner Logos]
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/ Orin Nano. 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
**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.
Deci

Deci empowers deep learning developers to accelerate inference on edge or cloud, reach production faster, and maximize hardware potential. Led by a team of world-class deep learning experts, Deci lets AI developers focus on what they do best - creating innovative AI-based solutions for our world’s most complex problems.

Find our partner >>  deci.ai

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.

The platform is powered by Deci’s Automated Neural Architecture Construction (AutoNAC) technology, an algorithmic optimization engine that squeezes maximum utilization out of any hardware. The AutoNAC engine contains a Neural Architecture Search (NAS) component that redesigns a given trained model’s architecture to optimally improve its inference performance (throughput, latency, memory, etc.) for specific target hardware while preserving its baseline accuracy.

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.

Find our partner >> allxon.com

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.

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.

YOLOv5

YOLOv5 is a family of compound-scaled object detection models trained on the COCO dataset, and includes simple functionality for Test Time Augmentation (TTA), model ensembling, hyperparameter evolution, and export to ONNX, CoreML and TFLite.

Find our partner >> ultralytics.com

Application

Object Detection

Device Support

All Seeed’s NVIDIA compatible carrier boards and devices, Official NVIDIA dev kit
Seeed Partner with Cogniteam to Bring the Drag and Drop Robotics Development and Deployable Solutions for NVIDIA Jetson Platform

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 get immediate data about back end operations to improve efficiencies and drive more revenue. Retailers are also using alwaysAI to count customers in real-time, track where they go, which products they walk-by and engage with, and monitor wait times at checkouts.

**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. General contractors can get real-time visual data to improve operating margins, reduce liability, and manage direct labor and material costs more efficiently.

**Transportation**

Computer vision in manufacturing provides comprehensive oversight of manufacturing processes to enhance productivity and safety across the entire value-chain, from materials tracking to production and delivery. Computer vision enables manufacturers to automate processes with real-time data tailored to meet their specific needs.
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 to 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.
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.
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 module, 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.

Malamute
Malamute’s mission is to enable efficient communication in the toughest environments. Founded in 2020, the Malamute team sought to combine the industrial communication world with the power of AI, creating the next generation of communication workflow. Malamute has partnered with multiple industry leaders to bring human-centric assisted reality to the front lines.

Find our partner >> malamute.us

Industry
Industry 4.0

Application
Industrial Communications

Edge Device Used
NVIDIA Jetson AGX Orin Dev Kit, reServer J5014

Software
NVIDIA RIVA SDK
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, 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.
AI-Driven Video Analytics for Automotive Dealer Warehouse

Challenge
Deploying an intruder detection system across multiple geographically dispersed sites usually meets these challenges for large organizations: customers want to avoid additional installations to minimize changes to the pre-existing security network, the existing camera system should also be utilized for intrusion detection both in the external perimeter and internal areas across 20 sites, and it’s quite important to ensure that the system only triggers analysis of intrusion events caused by people, excluding false alarms caused by wild animals, particularly at night.

Solution
Magicbox integrates reComputer J2021 powered by NVIDIA Jetson Xavier NX module, Prassel’s proprietary software, object detection, line crossing, privacy mask, smoke and fire detection algorithms. It also speeds up emergency responses and provides valuable business insights by recognizing specific conditions using email notifications with a snapshot or output over Modbus protocol to connected devices such as sirens, intrusion control units, and alarm systems.

Result
- 90% reduction in intrusion attempts
- Timely alerts to prevent tampering and intrusion attempts
- Easier to identify critical areas for video analytics across 20 sites

Prassel
Deployed in: Italy

Prassel is an Italian company with decades of experience in developing software solutions for security and safety. They design video analytics solutions, transfer expertise, and support partners and customers, ensuring cost containment and security investment enhancement.

Find whole solution >> Prassel

Industry
Automotive/ Warehouse

Application
Loss Prevention & Security Management

Edge Device Used
reComputer J2021, powered by NVIDIA Jetson Xavier NX

Software Support
Prassel’s proprietary software interface
Challenge
The potential for unlimited data capture and analysis by smart cameras is undeniable, but the privacy implications of such technology cannot be ignored. Moreover, retail, out-of-home advertisers, and public city departments need to get intelligent insights by analyzing visitor frequency and customer behavior data to help improve local economic growth.

Solution
BAUTA’s blind sensors offer a compromise between data potential and privacy by recording anonymous information that can be analyzed with specially trained neural networks. The system integrates the reComputer J2021 of NVIDIA Jetson Xavier NX module and BAUTA sensors to process and analyze data on gender, age distribution, visitor frequency, dwell time, moving direction, and traffic analysis/count & vehicle categories.

Result
Based on the sensor data, Out of home-marketers can accurately evaluate and price the reach of the advertising spaces (analogous to online advertising) transparently, helping to find the desired target customer group. All of the data is anonymous and are ethical considerations surrounding privacy to create a sustainable future.

Use Case
Sustainable Data for Business Environment Perception in Smart City

Challenge
The potential for unlimited data capture and analysis by smart cameras is undeniable, but the privacy implications of such technology cannot be ignored. Moreover, retail, out-of-home advertisers, and public city departments need to get intelligent insights by analyzing visitor frequency and customer behavior data to help improve local economic growth.

Solution
BAUTA's blind sensors offer a compromise between data potential and privacy by recording anonymous information that can be analyzed with specially trained neural networks. The system integrates the reComputer J2021 of NVIDIA Jetson Xavier NX module and BAUTA sensors to process and analyze data on gender, age distribution, visitor frequency, dwell time, moving direction, and traffic analysis/count & vehicle categories.

Result
Based on the sensor data, Out of home-marketers can accurately evaluate and price the reach of the advertising spaces (analogous to online advertising) transparently, helping to find the desired target customer group. All of the data is anonymous and are ethical considerations surrounding privacy to create a sustainable future.

Industry
Smart City

Application
Visitor Analysis & Pedestrian Count in Privacy

Edge Device Used
reComputer J2021, powered by NVIDIA Jetson Xavier NX
Use Case

Robot Security Guard Patrols in Hong Kong Parking Lot

Challenge

Compared with security guards with human power, collaborative robots are more and more important to provide the highest level of public security in an effective way, dealing with continuous security tasks and adapting to blind ends that humans can’t reach.

Solution

Armitage provides Patrol Robot solution bringing 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 intervention
- 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

Industry

Smart City

Application

Patrol Robot

Device Support

A206 carrier board compatible with NVIDIA Jetson Xavier NX reComputer J2021, powered by NVIDIA Jetson Xavier NX

Software

DeepStream, PaddleOCR
Use Case

Robot Iroi and Patrovor Integrated with 1:N Simultaneous Monitoring for Security

Challenge
Security patrols includes repetitive work in most of time, but the job can also bring risk 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 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 Patrovor 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 Patrovor will also help with air quality monitoring by integrating with CO2, NO2, SO2, VOC, PM2.5, PM10, temperature, and humidity multiple environmental sensors.
The SOS lab is founded 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.

Find whole solution >> SOS Lab

**SMART OCEAN SYSTEMS LAB**

**Deployed in: U.S.**

**Smart Ocean Systems Laboratory**

The SOS lab is founded 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.

Find whole solution >> SOS Lab

**Industry**

Ocean Research

**Application**

Robotics, ROV

**Edge Device Used**

BlueROV2

Add-on sensors

Jetson Sub Blue mini PC, powered by NVIDIA

Jetson Xavier NX

---

**Use Case**

**Towards Under-ice Sensing Using a Portable ROV**

**Challenge**

Due to the lack of robust under-ice sensing techniques, the research of biogeochemical processes such as gas bubbles, basal ice melting, and drivers of sea ice algal blooms remains limited in the ice-covered area. It is also difficult to perform localization results only based on the basic BlueROV model.

**Solution**

From 2020, SOS 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.

- Capable of running on the flat landfast ice several hundreds meters off the coast stably
- Easy to show visual sensing and navigation results that can depict the ROV trajectory clearly
KEISUUGIKEN

KEISUUGIKEN is a research and development location where advanced technology specialists from various countries gather together. They are working to expand products and services such as robots, artificial intelligence, and VR in collaboration with overseas companies and researchers.

Find whole solution >> Keisuugiken

Use Case

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.

Business Impact
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.
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.” 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.

**Business impact**
The whole solution helps detect and track normal daily animal activities 24/7, recognize special behavior to alert fast, and increase gross revenue by 15% ~ 40% because of the increasing production. Typically 10 EdgeFarm systems can own 4000 animals in the farm. The cost might be around $5,000 - $10,000 based on the farm’s location and condition.
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 whole solution >> Zenus

**Industry**
Retail

**Edge Device Used**
A206 carrier board compatible with NVIDIA Jetson Nano/Xavier NX/TX2 NX

---

Use Case

**Sentiment Analysis in the Retail Industry Becomes More Accessible**

**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.

**Result**

- Improve conversion rates and increase sales by up to 382%
- Assess consumer satisfaction and demographics with over 95% accuracy
Use Case

Automated Pizza Making System with Consistent High-Quality Food Processing and Intelligent

Challenge
The traditional QSR meets a significant hurdle of labor cost reduction and final product delivery standard maintaining. It is usually time-consuming to train employees with flavor combination and ingredient operation. Moreover, the food quality could be various under human check.

Solution
Gopiizza provides full automated system with three core functions:

- GOVIS - Store operation guidance and control cloud-based platform
- Ingredient combination station - Using object detection model to determine topping and flavor combination based on specific menu
- Gobot - a collaborative robot powered by visual data

It also shows food quality score during each grouped recipe step, in order to keep the same standard of the final food quality delivery.

Business impact
Typically, one 5-6 m² quick service restaurant needs one Gopiizza system, including:

- 1 automated topping selection table
- 2 ovens to monitor pizza baking progress
- 1 final product inspection station

Reduce human power from 3-5 employees to 1 for smooth restaurant operating management.
Aivero is a leading software company based in Norway and Denmark. It simplifies the use of 2D and 3D visual information in computer vision and AI applications, enabling high-performance applications that require precise depth perception, delivering its product as a SaaS or an on-premise hosted system that can be used in a variety of applications such as manufacturing, security, and robotics.

Find whole solution >> Aivero

**Industry**
Robotics & Logistics & Manufacturing

**Application**
Depth Video Data Capturing & Management
Environmental Perception

**Edge Device Used**
reServer J2032, powered by NVIDIA Jetson Xavier NX

**Software Support**
Aivero management platform

---

**Use Case**

**High Frame Rate Video Streaming Analytics with 2D&3D Depth Camera**

**Challenge**
One key issue is the bandwidth bottleneck associated with 3D depth image compression. It is usually difficult to accurately capture real-world geometry because of the data rate with RGB-D video streams of ever-increasing resolution and frame rate, which means it could not handle abrupt depth discontinuities based on the traditional methods.

**Solution**
Aivero simplifies the steps of producing a colorful depth map and converting the 2D/3D visual data to a point cloud with various type of camera SDK/data formats. The cloud-based management platform is capable of:
- Camera setting management
- 2D/3D visual data compression, storage, and preview
- Connections to ML training frameworks and AI inferencing tools

**Business impact**
The real-time, low latency streaming solution achieves high image quality level but less computationally expensive, supporting up to 3.072 meters when using a 1 mm/step resolution.
### Use Case

#### Rough Terrain Robot for Farm & Construction Site Deployment

**Challenge**

Challenges occur while dealing with heavy lifting tasks in uneven terrain environments. Traditional human labor is expensive and time-consuming. People also get stuck at the beginning of robot automation development because of lacking hardware technology.

**Solution**

CuboRex delivers CuGo V3 crawlers as the out-of-box robot developer kit.

- Jetson-powered AI/CV processing with object detection, semantic segmentation, and PoseEstimation models
- Customize the NavigationStack-autonomous driving application that comes with ROS/ROS2
- Gather environmental information with a 2D LIDAR (RPLIDAR) and a GNSS (CLAS)

**Business impact**

The robot can handle heavy loads up to 70 kg even in a 20° slope hazardous environment, leading to increased output and potentially reducing labor costs.

---

**Industry**

Agriculture & Robotics Development

**Application**

Rough Terrain Robot

**Edge Device Used**

reComputer J4012, powered by NVIDIA Jetson Orin NX

**Software Support**

OpenCV, TensorFlow, Pytorch, NVIDIA TAO Toolkit

---

CuboRex is a global food tech company revolutionizing the pizza industry with cost-effective, one-person pizzas through ICT-based smart kitchens. With the special parbaking dough and patented automatic oven, they produce pizza quickly and evenly within minimum staffs.

Find whole solution >> CuboRex
**Use Case**

**Smart Transportation for Driver Behavior Detection and Fleet Management**

**Challenge**

Road transportation safety is always the top issue we need to concern about. Accidents are usually caused by driver fatigue, drowsiness, and distractions. It is crucial to keep tracking drivers' status for safety and enhance the fleet management for more efficient business operations.

**Solution**

With deep learning algorithms combining with detection models such as face detection and object detection, Autilent successfully leads to faster and more accurate analysis of driving behavior, road conditions, and potential hazards. The system will count all times that the authorized drivers' abnormal behavior is detected. You can easily check the report of driver/vehicle information, status, and their history data.

![Image of driver behavior analysis](image-url)

**Industry**

Transportation & Fleet Management

**Application**

Abnormal Behavior Detection

**Edge Device Used**

reComputer J101 carrier board compatible with NVIDIA Jetson Nano

**Software Support**

Autilent management platform

[Find whole solution >> Autilent](link-to-website)
AI-powered Video Analytics Solution for Airport Operation Management

“The combination of Isarsoft’s real time video analytics software Isarsoft Perception with the Seeed Studio reComputer Edge AI Device opens the possibility to gain business intelligence from existing security cameras”

- Oskar Haller, CEO of Isarsoft

Challenge
For smooth travel, high safety, and optimal management, airport operating management always meets these challenges such as: monitoring enormous live video data continuously by human labor is time-consuming and expensive; in the meanwhile, it is crucial to prevent large crowds and chaotic situations for customer experience enhancing.

Solution
Infrastructure optimization:
• Create shorter routes for time saving
• Analyze occupancy statistic to optimize queue experience
• Baggage carousel analysis to avoid misplaced

Airport perimeter protection:
• Identify and detect object
• Measure volume and density
• Analyze airplane KPIs such as speed, trajectory, and dwell time
Vive Robotics

Deployed in: Global

Vive Robotics is a robot-developing company that is diving into tennis sports and providing game-changing ball retrieving solutions to improve the tennis experience with autonomous robots.

Find whole solution >> Vive Robotics

Use Case

Edge AI-Enabled Ball Retriever Robot for Tennis Game

Challenge
One of the hurdles could be finding a proper object detection algorithm to spot small tennis ball from distance, and also localizing the robot within the tennis court. In the meanwhile, it is important to make the robot portable and lightweight as a consumer product.

Solution
Vive Robotics delivers this tennis ball retriever robot solution to improve tennis game experience:

- Recognize tennis ball at the beginning, followed by the detection and tracking of players
- Robot kicks the ball back to the player

Business impact

- For players: Reduce 15%-20% chasing down ball time
- For club: Generate a monthly recurring revenue of up to $300/court, operating at only 25% of capacity (60 hours/month)
AI-powered Waste Recycling for Traceability and Management

Challenge
Since waste resources might be highly deformed, jagged, and superimposed after collecting and processing through machine, the identification accuracy could be extremely difficult to maintain. The lighting conditions also influence the recognition capability. Meanwhile, waste recycling needs refined classification of pollutant components, in order to better understand waste quality and its recycling potential.

Solution
- Support more extensive waste materials classification (including PET - color and type of objects, HDPE, PP, LDPE, newspaper, magazine, print, greyboard, cardboard, dangerous or unwanted items, steel, aluminum, and green waste)
- Equipped with a camera near the garbage truck door, capturing three images per second once the door is lifted
- Check geographical analysis report for recycling performance and type of collection
TECHRAIL

Deployed in: Italy

TECHRAIL is an innovative company with more than two decades of experience in the innovation, design, and development of transport technology systems, Defense, telecommunications, and industry.

Find whole solution >> TECHRAIL

Use Case

Utilizing 3D Scene Reconstruction for Individual Distance Identification on Subway

Challenge

The initial idea was born from the pandemic, when government around the world required social distance measures to manage crowds and mitigate the virus’s impact. There is limitation for traditional method to assess people distance accurately in real-time.

Solution

Techrail introduces this innovative solution based on passive stereographic technology:

• Acomplish data processing and inferencing tasks for real-time 3D scene reconstruction
• Detect both people distance in 3D-mapping and the number of people in the subway carriage every 2 seconds, with object detection models
• Provide grids as visible result to show exact people position for distance caculation less than 1m

Business impact

• Typically, one 16m bus can be thoroughly covered by 3 Right Metro boxes
• The margin of identifying accuracy error can be tightly controlled within a mere 1%
• Control staff can manage information on each individual carriage and transfer it to information panels when the train arrives at each station

Industry

Smart Transportation

Application

People Distance Identification
People Counting

Edge Device Used

reComputer J202 carrier board compatible with NVIDIA Jetson Nano/Xavier NX/TX2 NX
Azimorph

Founded in 2021, Azimorph is a group of passionate engineers based in Singapore who aim to make robotics’ delivery the new normal.

Find whole solution >> Azimorph

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. After which, 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
DexForce

DexForce is a start-up AI company focusing on 3D machine vision. The company develops a physics engine named Mixed AI, which can generate synthetic data to train AI models by applying cutting-edge 3D geometric deep learning technology. The company supplies 3D smart cameras and 3D vision solutions to manufacturing customers on the basis of the AI platform. DexSense 3D industrial smart camera adopts advanced active stripe structured light technology.

Find whole solution >> DexForce

Edge Device Used
Jetson Nano module

Application
Industrial 3D camera

Seeed Service
Seeed Fusion PCBA Service

Software
DexForce developed graphical vision algorithm platform

Use Case

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.
Peer Robotics

Peer Robotics is a collaborative mobile robotics company building material handling solutions for manufacturing industries. Peer Robotics mobile robots can learn from humans in real-time, allowing people on the shop floor to integrate and deploy the solutions easily.

Find whole solution >> Peer Robotics

Use Case

Bringing Humans in the Loop to Help SMEs Automate

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.
Theia Scientific, LLC

Theia Scientific is a technology company that provides unclouded machine vision to microscopy instrumentation and quantitative image analysis workflows. The team is built with experts in edge computing architectures for scientific instrumentation, data analytics, and AI model development.

Find whole solution >> Theia Scientific

Application
Object Detection

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

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

Real-time AI-powered Microscopy Image Analysis at the Edge

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.

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.

Business Impact
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.
Seeed Studio

CONTACT US

Take the first step to send us an email at edgeai@seeed.cc to become a part of the amazing ecosystem!
Check out our Latest Success Case Story Catalog
Explore more about Seeed’s NVIDIA Jetson ecosystem
Our office: Shenzhen, China | Nagoya, Japan | Seeed Europe(for Europe, Middle East, and Africa) | Seeed U.S.