SEEED-110110145

PRODUCT DETAILS

reComputer J4012 is built with Jetson Orin NX 16GB a powerful and compact intelligent edge box to bring up to 100 TOPS modern AI performance to the edge, which offers up to 5X the performance of Jetson Xavier NX and up to 3X the performance of Jetson AGX Xavier. Combining the NVIDIA Ampere™ GPU architecture with 64-bit operating capability, Orin NX integrates advanced multi-function video and image processing, and NVIDIA Deep Learning Accelerators.

The full system includes one NVIDIA Jetson Orin™ NX 16GB production module, a heatsink, and a power adapter. reComputer J4012 is preinstalled with JetPack 5.1 on the included 128GB NVMe SSD, simplifies development, and fits for deployment for edge AI solution providers working in video analytics, object detection, natural language processing, medical imaging, and robotics across industries of smart cities, security, industrial automation, smart factories.

Features

- **Brilliant AI Performance for production:** on-device processing with up to 100 TOPS AI performance with low power and low latency
- **Hand-size edge AI device:** compact size at 130mm x120mm x 58.5mm, includes NVIDIA Jetson Orin™ NX 16GB production module, a cooling fan with a heatsink, enclosure, and a power adapter. Support desktop, wall mount, fit in anywhere
- **Expandable with rich I/Os:** 4x USB 3.2, HDMI 2.1, 2xCSI, 1xRJ45 for GbE, M.2 Key E, M.2 Key M, CAN, and GPIO.
- **Accelerate solution to market:** pre-installed Jetpack with NVIDIA JetPack™ 5.1 on the included 128GB NVMe SSD, Linux OS BSP, 128GB SSD, support Jetson software and leading AI frameworks and software platforms
- **Comprehensive certificates:** FCC, CE, RoHS, UKCA

Description

reComputer series for Jetson are compact edge computers built with NVIDIA advanced AI embedded systems: J10 (Nano 4GB) and J20 (Jetson Xavier NX 8GB and Jetson Xavier 16GB). Now we introduce the reComputer J4012 which is powered by Jetson Orin™ NX 16GB module and reComputer J401 carrier board.

With rich extension modules, industrial peripherals, and thermal management, reComputer for Jetson is ready to help you accelerate and scale the next-gen AI product by deploying popular DNN models and ML frameworks to the edge and inferencing with high performance, for tasks like real-time classification and object detection, pose estimation, semantic segmentation, and natural language processing (NLP).

At Seeed Studio, you will find everything you want to work with the NVIDIA Jetson Platform – official NVIDIA Jetson Dev Kits, Seeed-designed carrier boards, edge devices, as well as accessories.
We have prepared abundant guides to get started with NVIDIA Jetson using leading AI frameworks and software. For example, with Deepstream and TensorRT, developers can deploy custom YOLOv5 models on Jetson Orin at over 100FPS
Welcome to check out our free Edge AI partner program. We are looking forward to leveraging local and global resources to accelerate next-gen AI products together with you.

Developers Tools

Pre-installed Jetpack for fast development and edge AI integration

Jetson software stack begins with NVIDIA JetPack™ SDK which provides a full development environment and includes CUDA-X accelerated libraries and other NVIDIA technologies to kickstart your development. JetPack includes the Jetson Linux Driver package which provides the Linux kernel, bootloader, NVIDIA drivers, flashing utilities, sample filesystem, and toolchains for the Jetson platform. It also includes security features, over-the-air update capabilities, and much more.

Computer Vision and embedded machine learning

- NVIDIA DeepStream SDK delivers a complete streaming analytics toolkit for AI-based multi-sensor processing and video and image understanding on Jetson.
- NVIDIA TAO tool kit, built on TensorFlow and PyTorch, is a low-code version of the NVIDIA TAO framework that accelerates the model training
- alwaysAI: build, train, and deploy computer vision applications directly at the edge of reComputer. Get free access to 100+ pre-trained Computer Vision Models and train custom AI models in the cloud in a few clicks via enterprise subscription. Check out our wiki guide to get started with alwaysAI.
- Edge Impulse: the easiest embedded machine learning pipeline for deploying audio, classification, and object detection applications at the edge with zero dependencies on the cloud.

- Roboflow provides tools to convert raw images into a custom-trained computer vision model of object detection and classification and deploy the model for use in applications. See the full documentation for deploying to NVIDIA Jetson with Roboflow.
- YOLOv5 by Ultralytics: use transfer learning to realize few-shot object detection with YOLOv5 which needs only a very few training samples. See our step-by-step wiki tutorials
- Deci: optimize your models on NVIDIA Jetson Nano. Check the webinar at Deci of Automatically Benchmark and Optimize Runtime Performance on NVIDIA Jetson Nano and Xavier NX Devices

Speech AI

- NVIDIA® Riva is a GPU-accelerated SDK for building Speech AI applications that are customized for your use case and deliver real-time performance.

Remote Fleet Management

Enable secure OTA and remote device management with Allxon. Unlock 90 days free trial with code H4U-NMW-CPK.

Robot and ROS Development

- NVIDIA Isaac ROS GEMs are hardware-accelerated packages that make it easier for ROS developers to build high-performance solutions on NVIDIA hardware. Learn more about NVIDIA Developer Tools
- Cogniteam Nimbus is a cloud-based solution that allows developers to manage autonomous robots more effectively. Nimbus platform supports NVIDIA® Jetson™ and ISAAC SDK and GEMs out-of-the-box. Check out our webinar on connecting your ROS Project to the Cloud with Nimbus.

Comparison among reComputer J40 and J20 series boards

Specifications	reComputer J4011	reComputer J4012	reComputer J2021	reComputer J2022
Module	Jetson Orin NX 8GB	**Jetson Orin NX 16GB**	Jetson Xavier NX 8GB	Jetson Xavier NX 16GB
AI Performance	70 TOPS	**100 TOPS**	21 TOPS	
GPU	1024-core NVIDIA Ampere architecture GPU with 32 Tensor Cores		384-core NVIDIA Volta™ GPU	
GPU Max Frequency	765 MHz	**918 MHz**	1100MHz	
CPU	6-core Arm® Cortex®-A78AE v8.2 64-bit CPU 1.5MB L2 + 4MB L3	**8-core Arm® Cortex®-A78AE v8.2 64-bit CPU 2MB L2 + 4MB L3**	6-core NVIDIA Carmel ARM®v8.2 64-bit CPU 6 MB L2 + 4 MB L3	
CPU Max Frequency	2 GHz		1900MHz	
Memory	8GB 128-bit LPDDR5 102.4GB/s	**16GB 128-bit LPDDR5 102.4GB/s**	8 GB 128-bit LPDDR4x @ 59.7GB/s	16 GB 128-bit LPDDR4x 59.7GB/s
DL Accelerator	1x NVDLA v2	**2x NVDLA v2**	2x NVDLA	
DLA Max Frequency	614 MHz		1100 MHz	

Vision Accelerator	1x PVA v2	1x PVA
Storage	128GB NVMe SSD	16 GB eMMC 5.1
Video Encoder	1x 4K60 (H.265) | 3x 4K30 (H.265) 6x 1080p60 (H.265) | 12x 1080p30 (H.265)	2x 4K60 | 4x 4K30 | 10x 1080p60 | 22x 1080p30 (H.265) 2x 4K60 | 4x 4K30 | 10x 1080p60 | 20x 108p30 (H.264)
Video Decoder	1x 8K30 (H.265) | 2x 4K60 (H.265) | 4x 4K30 (H.265) 9x 1080p60 (H.265) | 18x 1080p30 (H.265)	2x 8K30 | 6x 4K60 | 12x 4K30 | 22x 1080p60 | 44x 1080p30 (H.265) 2x 4K60 | 6x 4K30 | 10x 1080p60 | 22x 1080p30 (H.264)
Display	1* HDMI 2.1	1*HDMI Type A; 1*DP
CSI Camera	2* CSI (2-lane 15pin)	
Networking	1* Gigabit Ethernet (10/100/1000M)	
USB	4* USB 3.2 Type-A (10Gbps); 1* USB2.0 Type-C (Device Mode)	4* USB 3.1 Type A Connector；1* USB Type-C (Device mode)
M.2 Key M	1* M.2 Key M	
M.2 Key E	1* M.2 Key E	
Fan	1* 4 pin Fan Connector(5V PWM)	
CAN	1* CAN	

Multifunctional Port	1* 40-Pin Expansion header,1* 12-Pin Control and UART header	
RTC	RTC 2-pin, RTC socket (supports CR1220 but not included)	
Power	9-19V	9-12V
Power Supply	DC 12V/5A(Barrel Jack 5.5/2.5mm)	
Temperature	-10℃~60℃	
Mechanical	130mm x120mm x 58.5mm	130mm x120mm x 50mm