reServer J2032
Datasheet

Edge AI Server with

NVIDIA Jetson Xavier NX 16GB

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Introduction

reServer for Jetson is a powerful inference server on edge powered by the NVIDIA Jetson NX 16GB. With rich extension modules, industrial peripherals, and thermal management combined with decades of Seeed's hardware expertise, reServer J2032   is ready to help you accelerate and scale the next-gen AI product emerging diverse AI scenarios. reServer J2032   is compatible with the entire NVIDIA Jetson software stack, cloud-native workflows, and industry-leading AI frameworks, helping deliver seamless AI integration.

Part list

reServer J2032	**X1**
- NVIDIA® Jetson Xavier™ NX 16GB	X1
- Carrier Board	X1
- Pre-installed 2.5 inch 256GB SSD	X1
- RTC Battery	X1
- Aluminum Heatsink Cooling Fan	X1
- Bottom Fan	X1
- Aluminum Case	X1
12V/5A Power Adapter(without Power Cord)	**x1**
User Manual	**x1**
Screwdriver	**x1**

Category

Spec

Processor	Module	Jetson Xavier NX 16GB
	AI Perf	21 TOPS
	GPU	NVIDIA Volta architecture with 384 NVIDIA CUDA® cores and 48 Tensor cores
	CPU	6-core NVIDIA Carmel ARM®v8.2 64-bit CPU 6 MB L2 + 4 MB L3
	Memory	8 GB 128-bit LPDDR4x @ 51.2GB/s
	Storage	16 GB eMMC 5.1
	Video Encoder	2x 4K60 | 4x 4K30 | 10x 1080p60 | 22x 1080p30 (H.265) 2x 4K60 | 4x 4K30 | 10x 1080p60 | 20x 1080p30 (H.264)
	Video Decoder	2x 8K30 | 6x 4K60 | 12x 4K30 | 22x 1080p60 | 44x 1080p30 (H.265) 2x 4K60 | 6x 4K30 | 10x 1080p60 | 22x 1080p30 (H.264)
	Co-processor	Raspberry Pi® RP2040
External I/O	2.5G Ethernet Port	Converted from PCIe
	1000M Ethernet Port	Native Ethernet interface of Jetson Xavier NX
	HDMI Interface	Support up to HDMI2.0
	DisplayPort Interface	Support up to DP1.4
	USB3.1 GNE2 Interface x2	Support up to 10Gbit
	DC jack Power interface	DC 12V @5A, 2.5mm center pin
Internal I/O	M.2 KEY B connector	With USB3.1 GEN2，Support 5G/4G wireless module
	MiNi-PCIe connector	support LoRa/Series wireless module
	SIM card slot	Top layer for Mini-PCIe
		Bottom layer for M.2
	RTC battery connector	RTC battery already installed
	SATA power connector x2，data connector x2	Support 2.5inch or 3.5inch HDD/SSD,up to SATA3
	USB TYPE-C connector for NX	for NX programming

	2x5Pin debug Header	
	Active Buzzer	
Network	Giga Ethernet	2.5G Ethernet Port
		1000M Ethernet Port
	Wireless Connection	M.2 KEY B connector，Support 5G/4G wireless module
		Mini-PCIe connector，support LoRa/Series wireless module
Storage	Support 2x 2.5''/3.5" SATA (HDD/SSD)	2.5 inch 256GB SSD x1，up to SATA3 already installed
LED	LED1: SATA0 status LED	Sleep mode or no SSD/HDD inserted ----- LED OFF SSD/HDD inserted and PHY ready ----- LED ON Data transfer status ----- LED blinks
	LED2: SATA1 status LED	
	LED3	M.2 wireless module status LED
Power	DC jack Power Adapter	DC 12V @5A
	Power button and restart button	
Dimensions	132mm*124mm*233mm	
Operating Environment	0℃~60℃	

Module-Jetson Xavier NX (16GB)
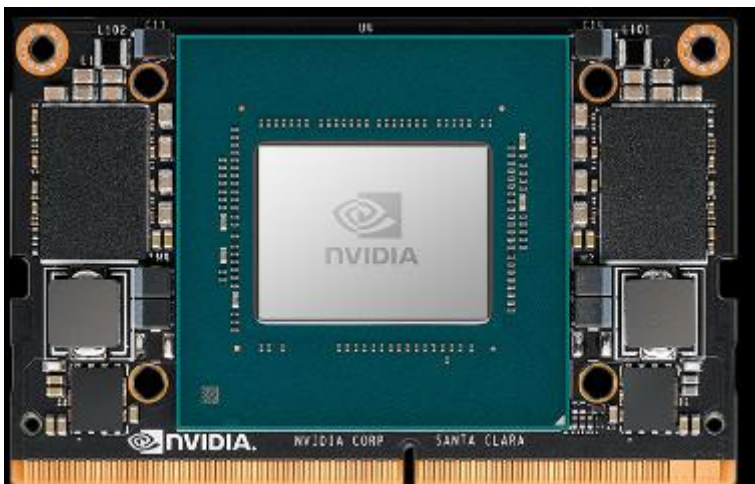
Module Technical Specifications

Jetson Xavier NX 16GB Module Technical Specifications	
AI Performance	21 TOPS
GPU	384-core NVIDIA Volta™ GPU with 48 Tensor Cores
CPU	6-core NVIDIA Carmel ARM®v8.2 64-bit CPU 6MB L2 + 4MB L3
Memory	16 GB 128-bit LPDDR4x 59.7GB/s
Storage	16 GB eMMC 5.1
Power	10W | 15W | 20W
PCIe	1 x1 (PCIe Gen3) + 1 x4 (PCIe Gen4), total 144 GT/s*
CSI Camera	Up to 6 cameras (24 via virtual channels) 14 lanes (3x4 or 6x2 or 3x4 + 1x2 or 5x2 + 1x4) MIPI CSI-2 D-PHY 1.2 (up to 30 Gbps)
Video Encode	2x 4K60 | 4x 4K30 | 10x 1080p60 | 22x 1080p30 (H.265) 2x 4K60 | 4x 4K30 | 10x 1080p60 | 20x 1080p30 (H.264)
Video Decode	2x 8K30 | 6x 4K60 | 12x 4K30 | 22x 1080p60 | 44x 1080p30 (H.265) 2x 4K60 | 6x 4K30 | 10x 1080p60 | 22x 1080p30 (H.264)
Display	2 multi-mode DP 1.4/eDP 1.4/HDMI 2.0
DL Accelerator	2x NVDLA
Vision Accelerator	2x PVA
Networking	10/100/1000 BASE-T Ethernet

More detail information about **Nvidia Jetson Xavier NX module** please check Nvidia Official website.

Seeed Carrier Board

External I/O

DC jack Power interface

The whole power supply should provide power 12V/5A.

The DC JACK interface supports an input voltage range of 11.5V<Vin<12.8V, more than 12.8V will enter the over-voltage protection state, at which time the whole power supply will automatically disconnect, and when the input voltage is lower than 12.8V will automatically resume normal power supply.

When inserted into the power supply error, the buzzer will alarm if the voltage is too high or too low. With over-voltage protection, just unplug the power supply and use the correct power.

When the input power of the whole machine is less than 12V/3A, it may cause the mechanical hard disk to start/work abnormally.

USB3.1 GNE2 Interface x2

Support up to 10Gbit (with Xavier NX module).

Attention: USB current carrying capacity is 1A

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The two USB TYPE-A ports support output currents of 5V/1A respectively, when the USB TYPE-A port peripheral pulls a current greater than 1A, it will enter the over-current protection state, re-inserting the USB device can automatically exit the over-current protection state.

The two USB TYPE-A port states are independent of each other.

HDMI Interface

Support up to HDMI2.0.

Hot Plug Support.

DisplayPort Interface

Support up to DP1.4.

Hot Plug Support.

2.5G Ethernet Port

Plug and Play.

Converted from PCIe.

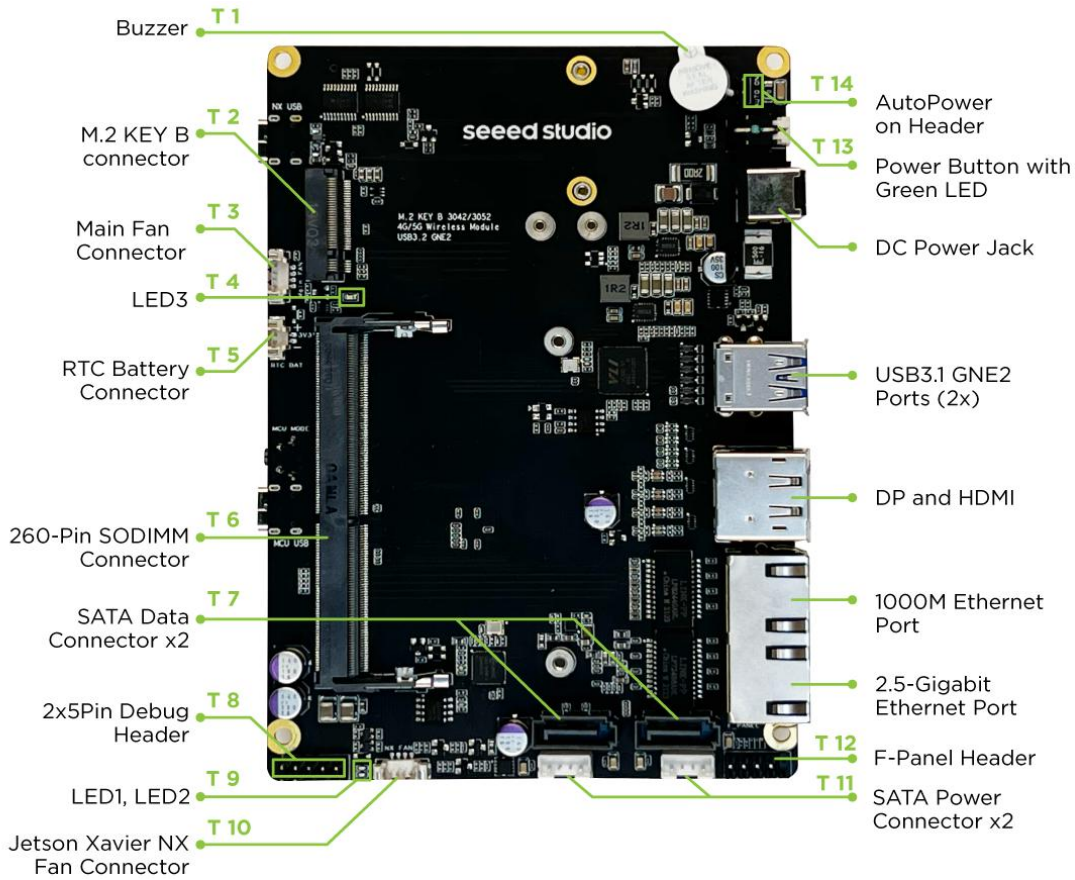RX: 2.35 Gbits/sec

TX: 1.4 ~ 1.6 Gbits/sec

1000M Ethernet Port
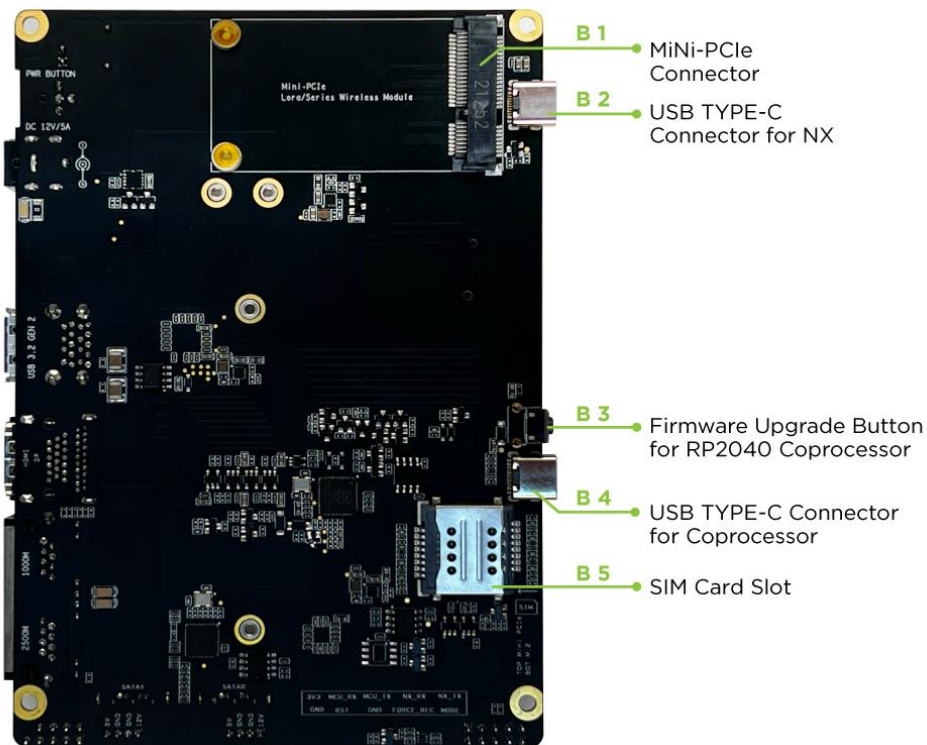
Plug and Play.

Supports 10/100/1000 Gigabit Ethernet.

Internal I/O

Top view:

Buzzer — **T 1**

T 14 — AutoPower on Header

M.2 KEY B connector — **T 2**

T 13 — Power Button with Green LED

Main Fan Connector — **T 3**

DC Power Jack

LED3 — **T 4**

RTC Battery Connector — **T 5**

USB3.1 GNE2 Ports (2x)

DP and HDMI

260-Pin SODIMM Connector — **T 6**

1000M Ethernet Port

SATA Data Connector x2 — **T 7**

2.5-Gigabit Ethernet Port

2x5Pin Debug Header — **T 8**

T 12 — F-Panel Header

LED1, LED2 — **T 9**

T 11 — SATA Power Connector x2

Jetson Xavier NX Fan Connector — **T 10**

Bottom view

B 1 — MiNi-PCIe Connector

B 2 — USB TYPE-C Connector for NX

B 3 — Firmware Upgrade Button for RP2040 Coprocessor

B 4 — USB TYPE-C Connector for Coprocessor

B 5 — SIM Card Slot

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260Pin SODDR4 connector   --T6

To install the Jetson Xavier NX module correctly, follow the suggested assembly guidelines.

1. Assemble any required thermal solution on the module.

2. Install the module

Insert module fully at an angle of 25-35 degree into the SODIMM connector.

Arc down the module board until the SODIMM connector latch engages.

Secure the module to the baseboard with screws into the standoff/spacer.
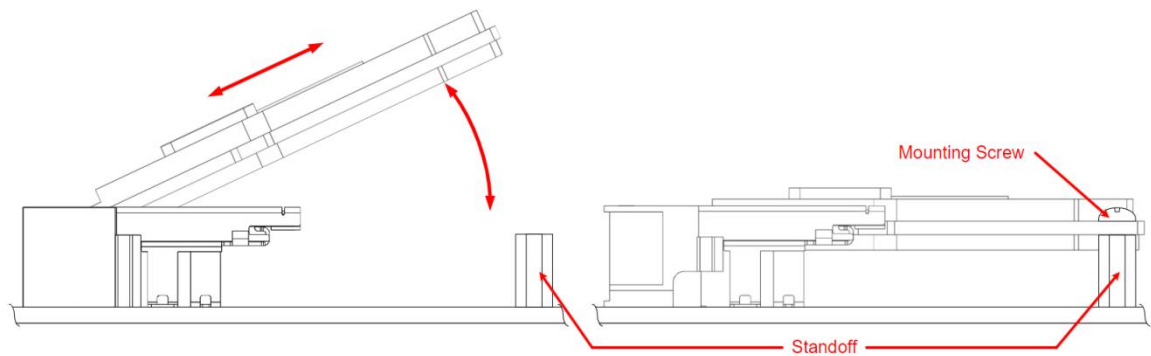
To remove the module correctly, follow the reverse of the installation sequence.

M.2 KEY B connector   --T2

With M.2 USB3.1 GEN2, UART0, M.2 I/O, support 5G/4G wireless module.

M.2 and Mini PCIe can be used at the same time, these two signals are independent.

Mini-PCIe connector   --B1

With Mini PCIe USB2.0, SPI, I2C, I/O, UART1, support LoRa/Series wireless module

M.2 and Mini PCIe can be used at the same time, these two signals are independent.

SIM card slot   --B5

Top layer for Mini-PCIe

Bottom layer for M.2

Communication modules need to be used with sim card, 3G/4G/5G modules need SIM card to register on the network, without SIM card, it can not register on the network or communicate.

Main Fan connector   --T3

For enclosure bottom fan, only supports 12V fans.

The bottom fan is already installed.

Main FAN (Bottom fan) and Jetson Xavier NX FAN must be connected properly, otherwise, the fan will be damaged.

These two fans are self-starting at power on and can be controlled by the program.

Jetson Xavier NX Fan Connector   --T10

Only supports 5V fans, Aluminum heatsink cooling fan already installed

Main FAN (Bottom fan) and Jetson Xavier NX FAN must be connected properly, otherwise, the fan will be damaged.

These two fans are self-starting at power on and can be controlled by the program.

RTC battery connector   --T5

It can accommodate RTC backup battery with 1.25mm pitch connector, one RTC battery (JST 1.0 CR2032 3V) already installed.

This RTC battery keeps the SBC's real-time clock powered and counting.

SATA power connector x2, SATA data connector x2   --T11, T7

Support 2.5inch or 3.5inch HDD/SSD, up to SATA3.

reServer's SATA theoretically does not support hot-swapping.

Power off and then plug in the drive and power it up again.

If you use hot-swapping there is no guarantee that data will not be lost.

USB TYPE-C connector for NX   --B2

For installing NVIDIA System Jetpack.

USB TYPE-C connector for coprocessor   --B3

For coprocessor RP2040 firmware upgrade.

AutoPower on Header   --T14

Short-circuit to enter key-on mode, Float into auto power-on mode.

Power Button with Green LED   --T13

When using the carrier board alone and Short-circuit to enter key-on mode, press this key to power on.

2x5Pin debug Header   --T8

Install NVIDIA System: Connect FC REC and GND using jumpers to enter forced recovery mode when installing NVIDIA System

Works as a terminal: Connects TX and RX, connects to computer and works as a terminal.

Detailed operation please check wiki.

F-Panel Header   --T12

Connect to reServer J2032 Power Button.

Active Buzzer   --T1

The buzzer will alarm when the power is inserted incorrectly and the voltage is too high or too low.

Its status can be changed by programming.

LED   --T4, T9

LED1: SATA0 status LED	Sleep mode or no SSD/HDD inserted-----LED OFF
	SSD/HDD inserted and PHY ready ----- LED ON
LED2: SATA1 status LED	Data transfer status ----- LED blinks
LED3	M.2 wireless module status LED

Coprocessor

Raspberry Pi® RP2040 32-Bit Dual ARM Cortex-M0+ @ 133MHz.

RP2040 controls the 5V/SATA power on and off on the board.

Encryption

● Encryption IC

ATECC608A-MAHDA-S encryption IC with I2C interface.

AT24C02C-SSHM-T EEPROM with I2C interface.

Only the chip is provided, the function of encryption needs to be developed by the user.

● Disk Encryption

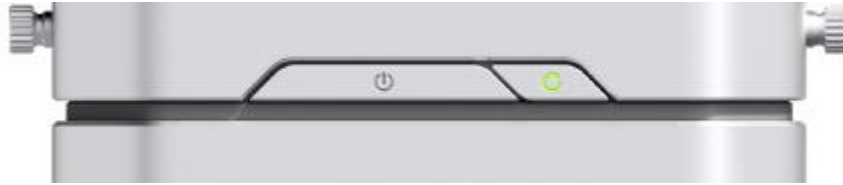Disk encryption encrypts a whole disk or partition to protect the data it contains. Jetson Linux offers disk encryption that is based on Linux Unified Key Setup (LUKS) . For more information, please check Tegra Linux Driver.

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Power

12V/5A Power Adapter(without power cord).

Power Button & Restart button.

Press "Power Button" to boot up reServer J2032.

Pre-installed

- 2.5 inch 256GB SSD x1，up to SATA3 x1
- RTC battery x1
- Aluminum Heatsink Cooling Fan x1
- Bottom Fan x1

OS

- Jetpack4.6.1
- 2.5G network port driver (Depends on the kernel version of L4T. The kernel of jetpack 5.0.2 supports rt8125 driver, you don't need to install it again, but the Jetpack4.6.1 with 4.9 kernel doesn't support it)
- RP2040 Firmware

The above mentioned has been pre-installed, if you need to reflash your device please refer to the wiki.

Accessories Information

Please kindly know that the accessories below are not included in the package. We provide the information here to help you choose the appropriate accessories.

Accessories Information		
Note	Product Name	Remarks
4G module	EC25/EC20	Tested with Quectel (manufacturer) module
5G module	SIM8202G	Tested with Simcom (manufacturer) module
LoRa Module	WM1302 LoRaWAN Gateway Module (USB/SPI) US/EU	WM1302 LoRaWAN Gateway Module

Dimension

ESD

Step	Pin	Voltage	OK/FAIL
1	DC 12V PORT	-4KV	OK
2	DC 12V PORT	+4KV	OK
3	DC 12V PORT	-8KV	OK
4	DC 12V PORT	+8KV	OK
5	ETH PORT	-4KV	OK
6	ETH PORT	+4KV	OK
7	ETH PORT	-8KV	OK
8	ETH PORT	+8KV	OK
9	USB Type A	-4KV	OK
10	USB Type A	+4KV	OK
11	USB Type A	-8KV	OK
12	USB Type A	+8KV	OK
13	Power Button	-4KV	OK
14	Power Button	+4KV	OK
15	Power Button	-8KV	OK
16	Power Button	+8KV	OK
17	DP+HDMI PORT	-4KV	OK
18	DP+HDMI PORT	+4KV	OK
19	DP+HDMI PORT	-8KV	OK
20	DP+HDMI PORT	+8KV	OK
21	USB Type C	-4KV	OK
22	USB Type C	+4KV	OK
23	USB Type C	-8KV	OK
24	USB Type C	+8KV	OK

Contact discharge ±4KV, air discharge ±8KV.

Certification

- FCC
- CE
- UKCA
- ROHS
- REACH

Application

- AI-enabled NVR (Network Video Recorder)
- Intelligent Video Analytics
- AMR
- AIoT Gateway with 5G and Lora

More information

Please check our Wiki and ask question at our Forum or Discord community.

Scan for more information

Wiki   Forum   Discord

For more information, you can also refer to NVIDIA official Jetson Download Center

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