NRU-220S/ NRU-222S

NVIDIA® Jetson AGX Orin™ AI NVR for Intelligent Video Analytics

Key Features

- **Powered by NVIDIA® Jetson AGX Orin™ SoM bundled with JetPack 5.1.1**
  Powered by NVIDIA® Jetson AGX Orin™ Industrial bundled with JetPack 6.0
- **Rugged -25°C to 70°C fanless operation (JAO32/ JAO64)**
  - No throttling at 65°C with JAO64 MAXN Mode
  Rugged -40°C to 75°C fanless operation (JAOi)
  - No throttling at 75°C with JAOi 35W Mode
- **2x 2.5 Gigabit Ethernet + 4x IEEE 802.3at Gigabit PoE+ ports**
- **2x front-accessible 2.5" SSD trays**
- **1x M.2 2280 M key socket for NVMe SSD**
- **2x mini-PCIe sockets for WiFi/ GNSS/ NVMe/ CAN modules**
- **1x 3042/ 3052 M.2 B key socket for 4G/5G mobile communication**
- **1x isolated RS-485 and 2x RS232 ports**
- **8V to 48V wide-range DC input with built-in ignition power control**

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Introduction

NRU-220S series is a one-stop AI NVR real-time inference and video transcoder powered by NVIDIA® Jetson AGX Orin. Its fanless design and wide-temperature operation capability makes it ideal for stationary or mobile deployment applications.

Powered by NVIDIA® Jetson AGX Orin™ 32GB/ 64GB system-on-module (SOM), it comprises an Ampere GPU with up to 2048 CUDA cores, 64 Tensor cores, 2x NVDLA 2.0 Engines that offer a total of 275 sparse TOPS (INT8) AI inference and video transcoding capability of up to twenty-two 1080P video streams simultaneously.

NRU-220S offers four 802.3at PoE+ ports sharing 1 Gigabit bandwidth; each port can supply up to 25.5W of power to IP cameras. The additional two 2.5GbE ports is ideal for surveillance applications requiring more IP camera connections, or higher bandwidth connections to the backend. In addition to 64GB eMMC on the Orin module and an M.2 2280 NVMe socket for fast SSD read/write, NRU-220S is equipped with two front-accessible 2.5" SSD trays for storage expansion. It also has two mini-PCIe sockets for CAN/ COM/ WiFi modules and one M.2 B key socket for 4G LTE/5G NR mobile communications.

In addition to the above mentioned connectivity, the system also includes a wide range of NVIDIA AI tools, and modern deep learning frameworks. NRU-220S brings real-time video inference to the edge for surveillance, predictive maintenance, and intelligent transportation system (ITS) applications. Furthermore, with Neousys' unique damping bracket design, ignition power control, and 8-48V wide-range DC power input, NRU-220S is also ideal for in-vehicle deployment. Last but not least, NRU-220S comes with a derivative model, NRU-222S, incorporating M12 connectors for applications in shock and vibration environments that require extreme rugged connections, such as for agriculture, construction, and mining machinery.

NRU-220S series is Neousys' response to edge AI performance demands in a compact form factor with fanless wide-temperature operation.

Specifications

	NRU-220S	NRU-222S
System Core		
Processor	Supporting NVIDIA® Jetson AGX Orin™ System-on-Module (SOM), comprising NVIDIA® Ampere GPU and Arm Cortex-A78AE CPU	
Memory	32GB/ 64GB LPDDR5 (AGX Orin 32GB/ 64GB) @ 3200 MHz on SOM	
eMMC	64GB eMMC 5.1 on SOM	
Panel I/O Interface		
Ethernet Port	6x RJ45 with screw-lock	6x M12 X-coded 8-pin
	Port 1, Port 2: 2.5 Gigabit Ethernet ports by Intel® I225 Port 3 ~ Port 6: Gigabit ports, share 1 Gbps total bandwidth	
PoE Capability	IEEE 802.3at PoE+ PSE for Port 3 ~ Port 6, 100W total power budget	
USB	1x USB 3.2 Gen2 port 2x USB 2.0 ports 1x USB Type C (Debug Only)	
Video Port	1x DisplayPort, supporting 3840x2160 at 60Hz	
Serial Port	1x Isolated RS-485 port and 2x RS-232 ports	
CAN bus	2x CAN 2.0 ports	
Isolated DIO	4-CH isolated DI and 4-CH isolated DO	
Internal I/O Interface		
Mini PCI Express	1x full-size mini PCI Express socket (PCIe + USB 2.0) for WiFi 6 or CAN 1x full-size mini PCI Express socket (USB 2.0) for GNSS or 4G LTE	
M.2	1x M.2 3042/3052 B key (USB 3.1 Gen 1 + USB 2.0) for LTE/5G module with dual micro SIM support	
Storage		
SATA HDD	2x front-accessible 2.5" 7mm SSD	
M.2 NVMe	1x M.2 2280 M key NVMe socket (PCIe Gen4x4) for NVMe SSD	

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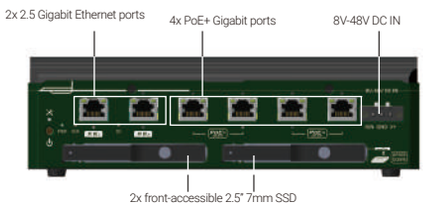
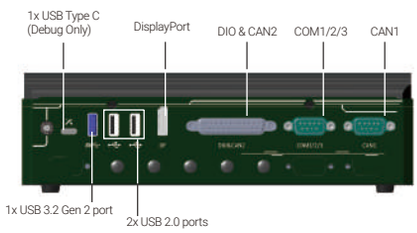
Power Supply		
DC Input	1x 3-pin pluggable terminal block for 8V to 48V DC input and ignition power control (IGN/ GND/ V+)	1x M12 A-coded 5-pin for 8V to 48V DC input and ignition power control (IGN/ GND/ V+)*
Mechanical		
System LED	PWR: System carrier board power status OS: Jetson OS boot status IGN: Ignition power signal	
Dimension	230 mm (W) x 173 mm (D) x 66 mm (H)	
Weight	2.6 kg (excluding the damping bracket)	
Mounting	Wall-mount with the damping bracket	
Environmental		
Operating Temperature	-25°C ~ 70°C with passive cooling (30W TDP mode on JAO32/ JAO64) ** -40°C ~ 75°C with passive cooling (35W TDP mode on JAOi) **	
Storage Temperature	-40°C ~ 85°C	
Humidity	10% ~ 90%, non-condensing	
Vibration	Operating, MIL-STD-810H, Method 514.8, Category 4	IEC61373:2010, Category 1, Class B Body Mounted (part of EN 50155)
Shock	Operating, MIL-STD-810H, Method 516.8, Procedure I	IEC61373:2010, Category 1, Class B Body Mounted (part of EN 50155)
EMC	CE/ FCC Class A, according to EN 55032 & EN 55035 EN 50121-3 (EN 50155:2017, Clause 13.4.8)	CE/ FCC Class A, according to EN 55032 & EN 55035 EN 50121-3 (EN 50155:2017, Clause 13.4.8)

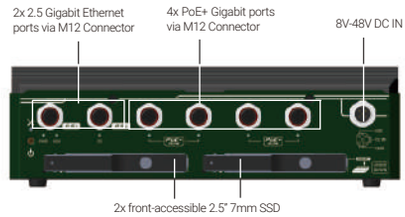
** Due to the M12 DC input current limit, the allowable DC input range of the NRU-222S varies based on the system load: System load under 60W, the required DC input range is 8V to 48V*
System load between 60W to 160W, the required DC input range is 20V to 48V
*** For sub-zero and over 60°C operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.*

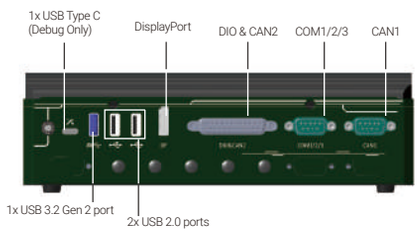
Appearance





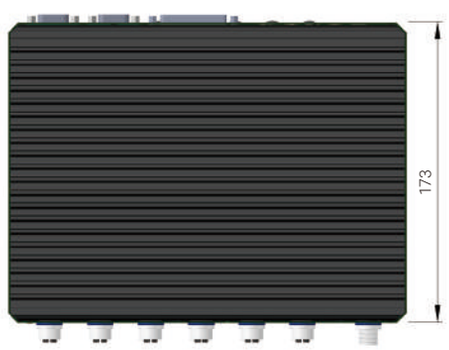
NRU-220S

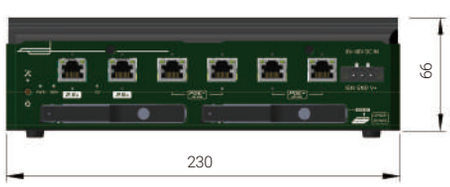




NRU-222S

Dimensions





NRU-220S

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Ordering Information

Model No.	Product Description
NRU-220S-JAO32	NVIDIA® Jetson AGX Orin™ (32GB) AI NVR for Intelligent Video Analytics with RJ45 Ethernet
NRU-220S-JAO64	NVIDIA® Jetson AGX Orin™ (64GB) AI NVR for Intelligent Video Analytics with RJ45 Ethernet
NRU-220S-JAOi	NVIDIA® Jetson AGX Orin™ Industrial AI NVR for Intelligent Video Analytics with RJ45 Ethernet
NRU-222S-JAO32	NVIDIA® Jetson AGX Orin™ (32GB) AI NVR for Intelligent Video Analytics with M12 Ethernet
NRU-222S-JAO64	NVIDIA® Jetson AGX Orin™ (64GB) AI NVR for Intelligent Video Analytics with M12 Ethernet
NRU-222S-JAOi	NVIDIA® Jetson AGX Orin™ Industrial AI NVR for Intelligent Video Analytics with M12 Ethernet

Optional Accessories

PA-160W-OW	160W AC-DC power adapter 20V/8A; 18AWG/120cm; cord end terminals for terminal block, operating temperature: -30 to 70°C.
PA-120W-OW	120W AC/DC power adapter 20V/6A; 18AWG/120cm; cord end terminals for terminal block, operating temperature: -30 to 70°C.
AccsyBx-FAN-NRU-100	Fan kit with 92mm x 92mm fan for NRU-220S series