Nuvo-9160GC Series

Ruggedized AI Inference Platform supporting 130W NVIDIA® RTX GPU and Intel® 12th-Gen Core™ Processor

Preliminary

Key Features

- Supports Intel® 12th-Gen Alder Lake Core™ up to 16C/ 24T 35W/ 65W CPU
- Support NVIDIA® RTX series GPU card up to 130W TDP
- -25°C to 60°C wide temperature rugged operation
- 5x 2.5GbE and 1xGbE with optional PoE+ (ports 3~6)
- 1x USB 3.2 Gen2x2 type-C and 6x USB 3.2 type-A ports
- M.2 2280 M key socket (Gen4x4) supporting NVMe SSD
- Accommodates two 2.5" SATA HDD/ SSD with RAID 0/ 1 support
- MezIO™ interface for add-on expansion

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R.O.C Patent No. M534371/ M456527

Introduction

Nuvo-9160GC is a rugged edge AI computer that delivers superior CPU and GPU performance by leveraging Intel's 12th Gen platform and NVIDIA's 130W RTX GPU card.

Benefiting from the cutting-edge Intel® 7 photolithography, Intel's 12th Gen processors can offer up to 16 cores/ 24 threads with 1.8x the performance improvement compared to previous Intel 11th/ 10th Gen platforms. The latest NVIDIA® 130W RTX GPU contributes nearly 9 TFLOPS of FP32 performance to fuel real-time AI inference applications involving multiple cameras such as production line vision inspection, intelligent video analytics for surveillance or ITS, or autonomous mobile robot (AMR).

Nuvo-9160GC has a proven thermal design to guarantee reliable system operation from -25°C to 60°C. It features a passive-cooling design for the motherboard and segregated patented ventilation design* for the 130W GPU card within Neousys' patented expansion Cassette*. The support of six GigE cameras (or IP cameras) and six USB3 cameras makes Nuvo-9160GC ideal for various vision-based AI application deployments. It also provides flexible data storage options, including one M.2 2280 Gen4x4 NVMe providing up to 7000 MB/s extreme read/write speeds and two 2.5" SATA HDD/SSD to expand storage capacity.

With performance enhancements and comprehensive I/Os, Nuvo-9160GC is the perfect edge AI inference platform for industrial environments from factory automation, smart agriculture, and autonomous machines.

Specifications

System Core

Processor	Supporting Intel® 12th-Gen Alder Lake Core™ CPU (LGA1700 socket, 35W/ 65W TDP) - Intel® Core™ i9-12900E/ i9-12900TE - Intel® Core™ i7-12700E/ i7-12700TE - Intel® Core™ i5-12500E/ i5-12500TE - Intel® Core™ i3-12100E/ i3-12100TE - Intel® Pentium® G7400E/ G7400TE - Intel® Celeron® G6900E/ G6900TE
Chipset	Intel® Q670E Platform Controller Hub
Graphics	Integrated Intel® UHD Graphics 770 (32EU)
Memory	Up to 64 GB DDR5 4800 SDRAM (two SODIMM slots)
AMT	Supports Intel vPro/ AMT 16.0
TPM	Supports dTPM 2.0

I/O Interface

Ethernet	5x 2.5G Ethernet by I225-IT and 1x Gigabit Ethernet by I219-LM with screw-lock
PoE+	Optional IEEE 802.3at PoE+ PSE for Port 3 ~ Port 6. 100W total power budget
USB 3.2	1x USB 3.2 Gen2x2 (20 Gbps) port in type-C connector with screw-lock 4x USB 3.2 Gen2x1 (10 Gbps) ports in type-A connectors 2x USB 3.2 Gen1x1 (5 Gbps) ports in type-A connectors
USB 2.0	2x USB 2.0 ports
Video Port (Integrated Graphics)	1x VGA connector, supporting 1920 x 1200 resolution 1x DVI-D connector, supporting 1920 x 1200 resolution 1x DisplayPort connector, supporting 4096 x 2304 resolution
Serial Port	2x software-programmable RS-232/ 422/ 485 ports (COM1/COM2) 2x RS-232 ports (COM3/COM4)
Audio	1x 3.5 mm jack for mic-in and speaker-out

Storage Interface

SATA HDD	2x internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/ 1
M.2	1x M.2 2280 M key socket (PCIe Gen4 x4) for NVMe SSD

Expansion Bus

PCI Express	1x PCIe x16 slot@Gen3, 16-lanes PCIe signals in Cassette for installing an NVIDIA® graphics card up to 130W TDP (Max. graphics card dimension is 188 mm(L) x 131 mm(W), dual slot allocation)
Mini PCI Express	1x full-size mini PCI Express socket
M.2	1x M.2 3042/3052 B key socket with SIM slot for M.2 4G/ 5G module
Expandable I/O	1x MezIO™ expansion port for Neousys MezIO™ modules

Power Supply

DC Input	1x 3-pin pluggable terminal block for 8 to 48V DC input
Remote Ctrl. & LED Output	1x 3-pin pluggable terminal block for remote control and PWR LED output

Mechanical

|	
Dimension	240 mm (W) x 225 mm (D) x 110.5 mm (H)
Weight	3.89 kg
Mounting	Wall-mount (standard) or damping bracket (optional)

Environmental

Operating Temperature	**With 35W CPU and 130W GPU** -25°C to 60°C** **With 65W CPU and 130W GPU** -25°C to 60°C**/*** (configured as 35W TDP) -25°C to 50°C**/*** (configured as 65W TDP)
Storage Temperature	-40°C to 85°C
Humidity	10% to 90% , non-condensing
Vibration	Operating, MIL-STD-810G, Method 514.6, Category 4 (with optional damping bracket) (pending)
Shock	Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II (with optional damping bracket) (pending)
EMC	CE/FCC Class A, according to EN 55032 & EN 55035 (pending)

* Due to I225-IT specification limitation, for systems running 2.5G Ethernet link speeds, please limit the operating temperature to 60°C.
** For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.
*** For CPU operating at 65W mode, the highest operating temperature shall be limited to 50°C and thermal throttling may occur when sustained full-loading applied. Users can configure CPU power in BIOS to allow higher operating temperature.

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TECHNOLOGY

Appearance

Dimensions

Unit : mm

225

110.5

240
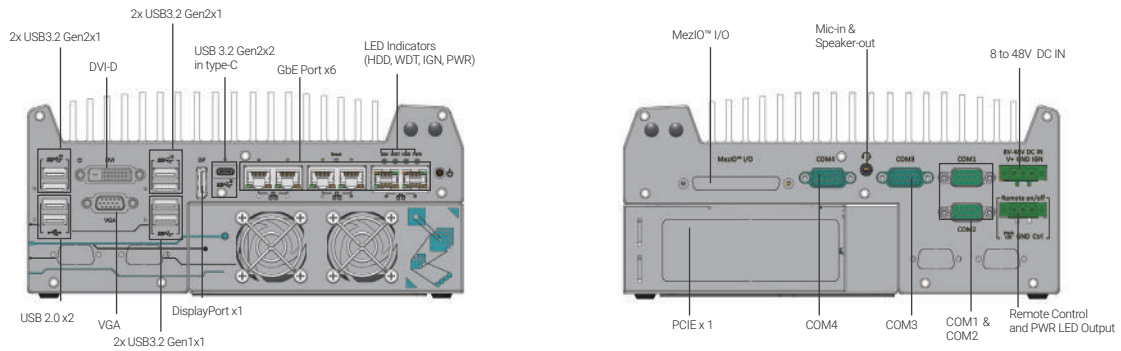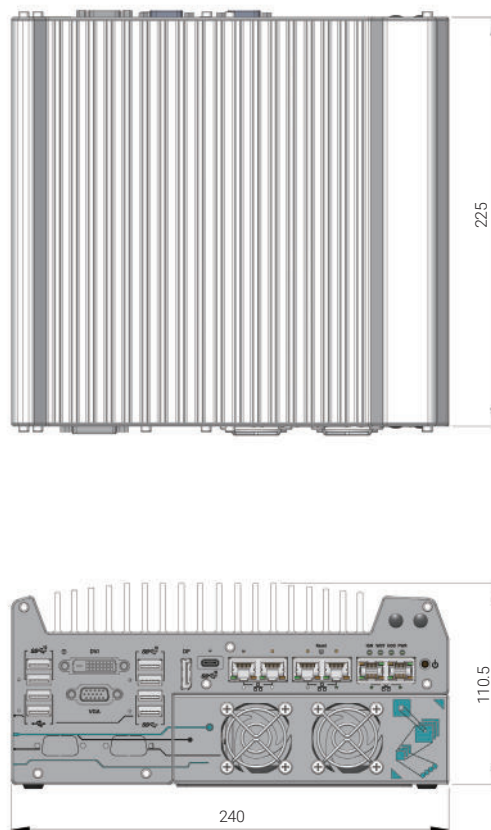
Ordering Information

Model No.	Product Description
Nuvo-9160GC	Ruggedized AI Inference Platform supporting 130W NVIDIA® RTX GPU and Intel® 12th-Gen Core™ Processor
PoE+ Option	Option of 802.3at PoE+ PSE for 2.5GbE port 3 ~ port 6

Optional Accessories

PA-280W-ET2	280W AC/DC power adapter 24V/11.67A; 16AWG/100cm; cord end terminals for terminal block, operating temperature : -30°C to 60°C.
PA-600W-ENC	600W AC/DC power adapter 24V/25A; cord end terminals for terminal block, operating temperature : -20°C to 70°C.
Dmpbr-Nuvo9160	Neousys' patented damping brackets assembly for Nuvo-9160GC