

# Nuvo-9160GC Series

Ruggedized AI Inference Platform supporting 130W NVIDIA® RTX GPU and Intel® 14th/13th/ 12th-Gen Core™ Processor

## Key Features

- Supports Intel® 14th/13th/12th-Gen Core™ 24C/ 32T 35W/ 65W LGA1700 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
- MezzIO® 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 14<sup>th</sup>/13<sup>th</sup>/12<sup>th</sup> Gen platform and an NVIDIA® RTX GPU card up to 130W. The system's standard and optional GPU brackets can accommodate selected GPU cards including RTX 3050, RTX 4060, NVIDIA® RTX A2000, RTX 2000 Ada, and RTX 4000 SFF Ada. The GPU bracket is designed to secure the GPU card to provide excellent shock and vibration resistance in volatile conditions.

Benefiting from the cutting-edge Intel® 7 photolithography, Intel®'s 14<sup>th</sup>/13<sup>th</sup>/12<sup>th</sup> Gen processors offer up to 24 cores/ 32 threads to provide up to double the performance when compared to previous Intel® 11<sup>th</sup>/ 10<sup>th</sup> Gen CPUs. The latest NVIDIA® 130W RTX GPU contributes up to 15 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 Neosys' 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                      |   | Expansion Bus  |   |
|----------------------------------|---|--|---|
| Processor                        | Supporting Intel® 14th-Gen Core™ CPU (LGA1700 socket, 65W/ 35W TDP) <sup>[1][2]</sup><br>- Intel® Core™ i9-14900/ i9-14900T<br>- Intel® Core™ i7-14700/ i7-14700T<br>- Intel® Core™ i5-14500/ i5-14400/ i5-14500T<br>- Intel® Core™ i3-14100/ i3-14100T | Supporting Intel® 13th-Gen Core™ CPU (LGA1700 socket, 65W/ 35W TDP) <sup>[1][2]</sup><br>- Intel® Core™ i9-13900E/ i9-13900TE<br>- Intel® Core™ i7-13700E/ i7-13700TE<br>- Intel® Core™ i5-13500E/ i5-13400E/ i5-13500TE<br>- Intel® Core™ i3-13100E/ i3-13100TE | Supporting Intel® 12th-Gen Core™ CPU (LGA1700 socket, 65W/ 35W TDP)<br>- Intel® Core™ i9-12900E/ i9-12900TE<br>- Intel® Core™ i7-12700E/ i7-12700TE<br>- Intel® Core™ i5-12500E/ i5-12500TE<br>- Intel® Core™ i3-12100E/ i3-12100TE<br>- Intel® Pentium® G7400E/ G7400TE<br>- Intel® Celeron® G6900E/ G6900TE |
|                                  | Chipset   | Intel® Q670E Platform Controller Hub   |   |
| Graphics                         | Integrated Intel® UHD Graphics 770 (32EU) / 730 (24EU)  |  |   |
| 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                    |   | Power Supply   |   |
| 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<br>4x USB 3.2 Gen2x1 (10 Gbps) ports in type-A connectors<br>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<br>1x DVI-D connector, supporting 1920 x 1200 resolution<br>1x DisplayPort connector, supporting 4096 x 2304 resolution   |  |   |
| Serial Port                      | 2x software-programmable RS-232/ 422/ 485 ports (COM1/COM2)<br>2x RS-232 ports (COM3/COM4)  |  |   |
| Audio                            | 1x 3.5 mm jack for mic-in and speaker-out   |  |   |
| Storage Interface                |   | Mechanical   |   |
| 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  |  |   |
| 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 MezzIO® expansion port for Neosys MezzIO® modules  |  |   |
| 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   |  |   |
| 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  |   |
| Operating Temperature            | With 35W CPU and 130W GPU<br>-25°C to 60°C <sup>[3]</sup><br>With 65W CPU and 130W GPU<br>-25°C to 60°C <sup>[3][4]</sup> (configured as 35W TDP)<br>-25°C to 50°C <sup>[3][4]</sup> (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)   |  |   |
| Shock                            | Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II (with optional damping bracket)  |  |   |
| EMC                              | CE/FCC Class A, according to EN 55032 & EN 55035  |  |   |

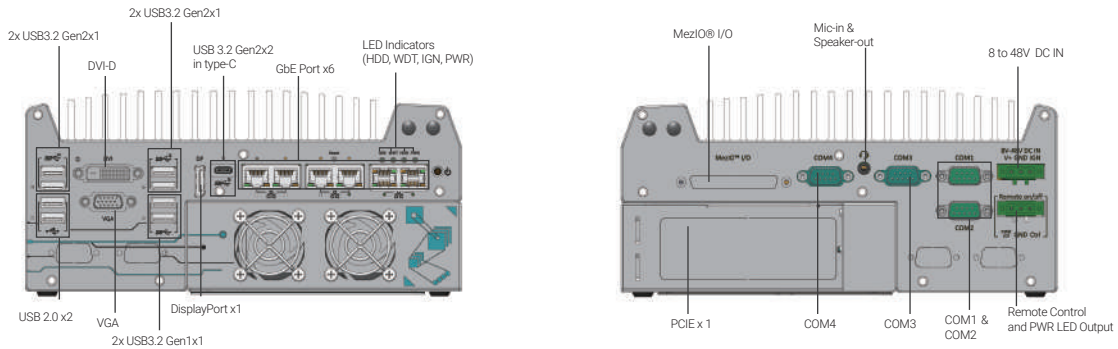
<sup>[1]</sup>A BIOS update may be required for the system to recognize 14th/13th-Gen processors. Please contact Neosys Technology for more information

<sup>[2]</sup>Due to I225-IT specification limitation, for systems running 2.5G Ethernet link speeds, please limit the operating temperature to 60°C.

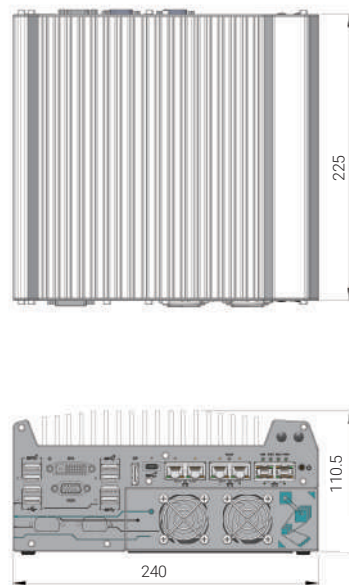
<sup>[3]</sup>For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.

<sup>[4]</sup>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.

## Appearance



## Dimensions



Unit : mm

## Ordering Information

| Model No.          | Product Description  |
|--------------------|--|
| <b>Nuvo-9160GC</b> | Ruggedized AI Inference Platform supporting 130W NVIDIA® RTX GPU and Intel® 14th/ 13th/ 12th-Gen Core™ Processor |
| <b>PoE+ Option</b> | Option of 802.3at PoE + PSE for 2.5GbE port 3 ~ port 6   |

## Optional Accessories

|                          |   |
|--------------------------|---|
| <b>Dmpbr-Nuvo9160</b>    | Neosys' patented damping brackets assembly for Nuvo-9160GC  |
| <b>Gpubr-Nuvo9160-01</b> | Nuvo-9160GC GPU bracket kit for RTX A2000, RTX 2000 Ada, and RTX 4000 SFF Ada   |
| <b>Gpubr-Nuvo9160-02</b> | Nuvo-9160GC GPU bracket kit for selected single fan RTX 4060  |
| <b>PA-280W-ET2</b>       | 280W AC/DC power adapter 24V/11.67A; 16AWG/100cm; cord end terminals for terminal block, operating temperature : -30°C to 60°C. |
| <b>PA-600W-ENC</b>       | 600W AC/DC power adapter 24V/25A; cord end terminals for terminal block, operating temperature : -20°C to 70°C.                 |

### MeziO® Modules

|                        |   |
|------------------------|---|
| <b>MeziO® -C180-50</b> | MeziO® module with 4x RS-232/ 422/ 485 ports and 4x RS-232 ports                  |
| <b>MeziO® -C181-50</b> | MeziO® module with 4x RS-232/ 422/ 485 ports and 4x RS-422/ 485 ports             |
| <b>MeziO® -D220-50</b> | MeziO® module with 8-CH isolated digital input and 8-CH isolated digital output   |
| <b>MeziO® -D230-50</b> | MeziO® module with 16-CH isolated digital input and 16-CH isolated digital output |
| <b>MeziO® -V20-EP</b>  | MeziO® module with ignition power control function for in-vehicle application     |
| <b>MeziO® -U4-50</b>   | MeziO® module with 4x USB 3.1 ports   |
| <b>MeziO® -G4</b>      | MeziO® module with 4x GigE ports  |
| <b>MeziO® -G4P</b>     | MeziO® module with 4x IEEE 802.3at PoE+ ports                                     |

Only Nuvo-9160GC-PoE support MeziO-G4P