

# Nuvo-7000E/ 7000DE/ 7000P Series

Intel® 9th/ 8th-Gen Core™ i7/ i5/ i3 Fanless Controller with 6x GbE Ports, Patented Cassette and MeziO™ Interface



## Key Features

- Intel® 9th/ 8th-Gen Core™ i hexa-core 35W/ 65W LGA1151 CPU
- Patented Cassette for PCI/PCIe add-on card accommodation\*
- MeziO™ interface for easy function expansion
- Rugged, -25°C to 70°C fanless operation
- Up to 6x GigE ports, supporting 9.5 KB jumbo frame
- M.2 2280 M key socket (Gen3 x4) supporting NVMe SSD or Intel® Optane™ memory
- 4x USB 3.1 Gen2 ports and 4x USB 3.1 Gen1 ports
- VGA/ DVI/ DP triple independent display, supporting 4K2K resolution



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\*R.O.C Patent No. M456527

## Introduction

The Neosys Nuvo-7000 series is powered by Intel® 9th/ 8th-Gen Core™ i processors with up to 6-core/ 8-core architecture that offer significant performance improvement over previous 6th and 7th-Gen platforms.

Nuvo-7000 series includes Neosys' track-proven technologies for superior ruggedness and versatility, such as effective fanless design, patented expansion Cassette and proprietary MeziO™ interface. It also incorporates cutting-edge computer I/O like USB 3.1 Gen2 with up to 10 Gbps throughput and M.2 2280 M key socket for NVMe SSD or Intel® Optane™ memory for ultimate system performance. The plethora of on-board I/O ports (GbE, USB and COM) feature sophisticated protection circuits to endure stress from ESD and power surge. This makes Nuvo-7000 series one of the most solid embedded controller on the market.

Flexible and versatile for a variety of applications, Nuvo-7000 variants are available with different Cassette expansion options. With Neosys Nuvo-7000 series, you get a true rugged platform that can accommodate a single PCIe card (Nuvo-7000E), dual PCIe cards (Nuvo-7000DE) or a single PCI card (Nuvo-7000P) according to your application needs.

## Specifications

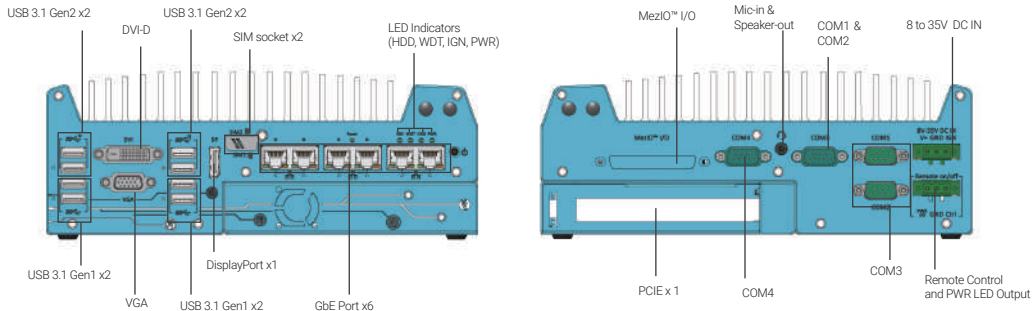
| System Core                             |  | Expansion Bus                        |  |
|---|--|--------------------------------------|--|
| <b>Processor</b>                        | Supporting Intel® 9th/ 8th-Gen CPU (LGA1151 socket, 65W/ 35W TDP)<br>- Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T<br>- Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T<br>- Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T<br>- Intel® Pentium® G5400/ G5400T<br>- Intel® Celeron® G4900/ G4900T | <b>PCI/PCI Express</b>               | 1x PCIe x16 slot@Gen3, 8-lanes PCIe signals in Cassette (Nuvo-7002E/ 7006E)<br>2x PCIe x16 slots@Gen3, 8-lanes PCIe signals in Cassette (Nuvo-7002DE/ 7006DE)<br>1x PCI slot in Cassette (Nuvo-7002P/ 7006P) |
| <b>Chipset</b>                          | Intel® Q370 platform controller hub  | <b>Mini PCI Express</b>              | 1x full-size mini PCI Express socket with internal SIM socket (mux with mSATA)   |
| <b>Graphics</b>                         | Integrated Intel® UHD graphics 630   | <b>M.2</b>                           | 1x M.2 2242 B key socket with dual front-accessible SIM sockets, supporting dual SIM mode with selected M.2 LTE module   |
| <b>Memory</b>                           | Up to 64 GB DDR4 2666/ 2400 SDRAM (two SODIMM slots)   | <b>Expandable I/O</b>                | 1x MeziO™ expansion port for Neosys MeziO™ modules   |
| <b>AMT</b>                              | Supports AMT 12.0  | <b>Power Supply</b>                  |  |
| <b>TPM</b>                              | Supports TPM 2.0   | <b>DC Input</b>                      | 1x 3-pin pluggable terminal block for 8 to 35V DC input  |
| <b>I/O Interface</b>                    |  | <b>Remote Ctrl. &amp; LED Output</b> | 1x 3-pin pluggable terminal block for remote control and PWR LED output  |
| <b>Ethernet</b>                         | 2x Gigabit Ethernet ports by I219 and I210 (Nuvo-7002E/ P/ DE)<br>6x Gigabit Ethernet ports by I219 and 5x I210 (Nuvo-7006E/ P/ DE)  | <b>Mechanical</b>                    |  |
| <b>PoE+</b>                             | Optional IEEE 802.3at PoE+ PSE for Port 3 ~ Port 6<br>100 W total power budget   | <b>Dimension</b>                     | 240 mm (W) x 225 mm (D) x 90 mm (H) (Nuvo-7000E/ P series)<br>240 mm (W) x 225 mm (D) x 110.5 mm (H) (Nuvo-7000DE series)  |
| <b>USB 3.1</b>                          | 4x USB 3.1 Gen2 (10 Gbps) ports<br>4x USB 3.1 Gen1 (5 Gbps) ports  | <b>Weight</b>                        | 3.58 kg (Nuvo-7000E/ P series)<br>3.7 kg (Nuvo-7000DE series)  |
| <b>Video Port (Integrated Graphics)</b> | 1x VGA, supporting 1920 x 1200 resolution<br>1x DVI-D, supporting 1920 x 1200 resolution<br>1x DisplayPort, supporting 4096 x 2304 resolution  | <b>Mounting</b>                      | Wall-mount (standard) or DIN-rail mount (optional)   |
| <b>Serial Port</b>                      | 2x software-programmable RS-232/ 422/ 485 ports (COM1/ COM2)<br>2x RS-232 ports (COM3/ COM4)   | <b>Environmental</b>                 |  |
| <b>Audio</b>                            | 1x 3.5 mm jack for mic-in and speaker-out  | <b>Operating Temperature</b>         | with 35W CPU<br>-25°C ~ 70°C **<br>with 65W CPU<br>-25°C ~ 70°C */** (configured as 35W TDP)<br>-25°C ~ 50°C */** (configured as 65W TDP)  |
| <b>Storage Interface</b>                |  | <b>Storage Temperature</b>           | -40°C ~ 85°C   |
| <b>SATA HDD</b>                         | 2x internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/ 1   | <b>Humidity</b>                      | 10%~90%, non-condensing  |
| <b>M.2</b>                              | 1x M.2 2280 M key socket (PCIe Gen3 x4) for NVMe SSD or Intel® Optane™ memory installation   | <b>Vibration</b>                     | Operating, MIL-STD-810G, Method 514.6, Category 4  |
| <b>mSATA</b>                            | 1x full-size mSATA port (mux with mini-PCIe)   | <b>Shock</b>                         | Operating, MIL-STD-810G, Method 516.6, Procedure I, Table 516.6-II   |
|   |  | <b>EMC</b>                           | CE/FCC Class A, according to EN 55032 & EN 55024   |
|   |  | <b>Safety</b>                        | UL62368-1, IEC62368-1  |

\* For i7-9700E and i7-8700 running 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 obtain higher operating temperature.

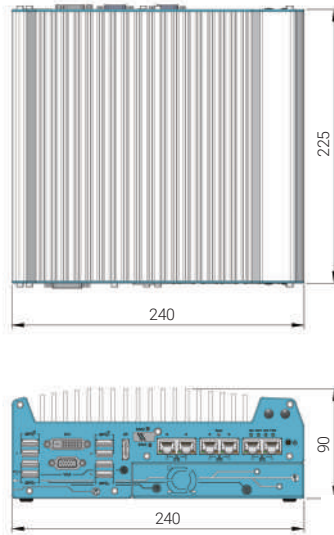
\*\* For sub-zero operating temperature, a wide temperature HDD or Solid State Disk (SSD) is required.

## Appearance

### Nuvo-7000E/P



## Dimensions



Unit : mm

Nuvo-7000E/P

## Ordering Information

| Model No.  | Product Description   |
|------------|---|
| Nuvo-7002E | Intel® 9th/ 8th-Gen Core™ fanless controller with 2x GbE, single-slot PCI Express Cassette and MeziO™ interface |
| Nuvo-7002P | Intel® 9th/ 8th-Gen Core™ fanless controller with 2x GbE, single-slot PCI Cassette and MeziO™ interface         |
| Nuvo-7006E | Intel® 9th/ 8th-Gen Core™ fanless controller with 6x GbE, single-slot PCI Express Cassette and MeziO™ interface |
| Nuvo-7006P | Intel® 9th/ 8th-Gen Core™ fanless controller with 6x GbE, single-slot PCI Cassette and MeziO™ interface         |

*Optional IEEE 802.3at PoE+ for GbE ports 3 ~ 6*

## Optional Accessories

|                         |   |
|-------------------------|---|
| DINRAIL-O               | DIN-rail mount assembly for Nuvo-7000 series  |
| Dmpbr-Nuvo5000_7000     | Neosys' patented damping brackets assembly for Nuvo-7000E/DE/P  |
| Fankit-25               | Fan assembly for 1-slot Cassette, 25x25x10 mm   |
| PA-160W-OW              | 160W AC/DC power adapter 20V/8A;18AWGx4C/120cm, cord end terminals for terminal block, operating temperature : -30°C to 70°C. |
| ETHY-100-2008S          | Ethernet I/O expansion module with 8 isolated digital inputs and outputs  |
| ETHY-100-2604S          | Ethernet I/O expansion module with 8 isolated digital inputs and 4 relays outputs (coming soon)                               |
| <b>Cassette Modules</b> |   |
| CSM-PoE354              | Cassette module with PCIe-PoE354at and pre-installed passive heat-spreader  |
| CSM-R800                | Cassette module accommodating four 2.5" HDD/ SSD (support RAID 0/ 1/ 10)  |

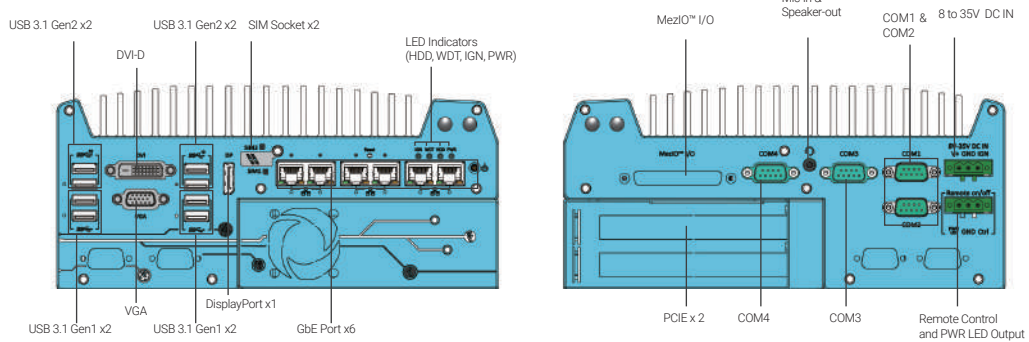
### MeziO™ Modules

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

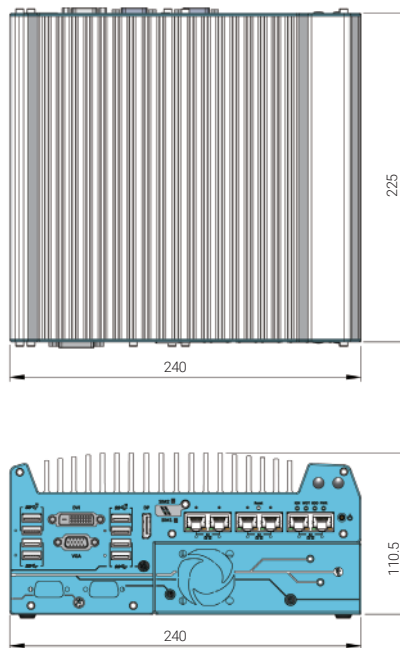
*Only Nuvo-7006E-PoE and Nuvo-7006P-PoE support MeziO-G4P*

## Appearance

### Nuvo-7000DE



## Dimensions



Unit : mm

Nuvo-7000DE

## Ordering Information

| Model No.   | Product Description   |
|---|---|
| Nuvo-7002DE   | Intel® 9th/ 8th-Gen Core™ fanless controller with 2x GbE, dual-slot PCI Express Cassette and MeziO™ interface |
| Nuvo-7006DE   | Intel® 9th/ 8th-Gen Core™ fanless controller with 6x GbE, dual-slot PCI Express Cassette and MeziO™ interface |
| <i>Optional IEEE 802.3at PoE+ for GbE ports 3 ~ 6</i> |   |

## Optional Accessories

|                       |   |
|-----------------------|---|
| PA-160W-OW            | 160W AC/DC power adapter 20V/8A;18AWGx4C/120cm, cord end terminals for terminal block, operating temperature : -30 to 70°C. |
| Dmpbr-Nuvo5000_7000   | Neosys' patented damping brackets assembly for Nuvo-7000E/DE/P  |
| DINRAIL-O             | DIN-rail mount assembly for Nuvo-7000 series  |
| ETHY-100-2008S        | Ethernet I/O expansion module with 8 isolated digital inputs and outputs  |
| ETHY-100-2604S        | Ethernet I/O expansion module with 8 isolated digital inputs and 4 relays outputs (coming soon)                             |
| <b>MeziO™ Modules</b> |   |
| MeziO™-C180           | MeziO™ module with 4x RS-232/ 422/ 485 ports and 4x RS-232 ports  |
| MeziO™-C181           | MeziO™ module with 4x RS-232/ 422/ 485 ports and 4x RS-422/ 485 ports   |
| MeziO™-D220           | MeziO™ module with 8-CH isolated digital input and 8-CH isolated digital output   |
| MeziO™-D230           | MeziO™ module with 16-CH isolated digital input and 16-CH isolated digital output   |
| MeziO™-V20-EP         | MeziO™ module with ignition power control function for in-vehicle application   |
| MeziO™-U4             | MeziO™ module with 4x USB 3.1 ports   |
| MeziO™-G4             | MeziO™ module with 4x GigE ports  |
| MeziO™-G4P            | MeziO™ module with 4x IEEE 802.3at PoE+ ports   |

Only Nuvo-7006DE-PoE supports MeziO-G4P