



# 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.

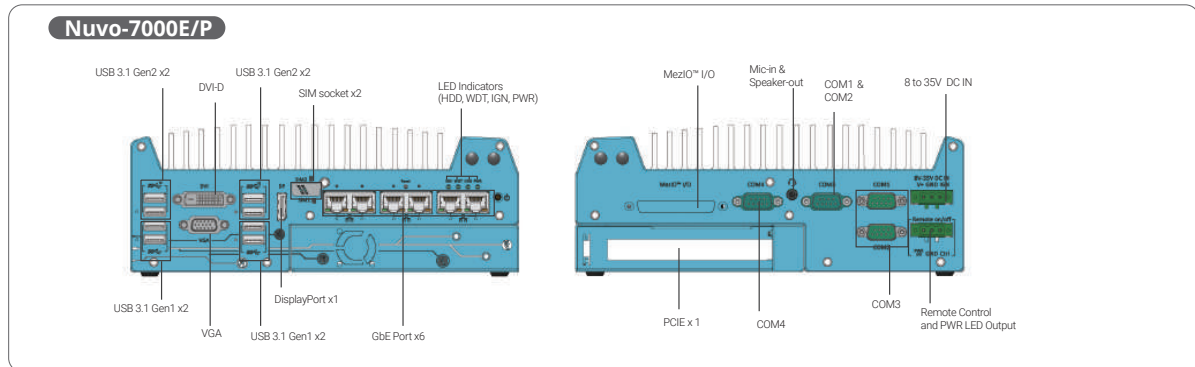
Flexible and versatile for a variety of applications, Nuvo-7000 variants are available with different Cassette expansion options. With Neosys Nuvo-7000 series, you get a true rugged platform that can accommodate a single PCIe card (Nuvo-7000E), dual PCIe cards (Nuvo-7000DE) or a single PCI card (Nuvo-7000P)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

## Specifications

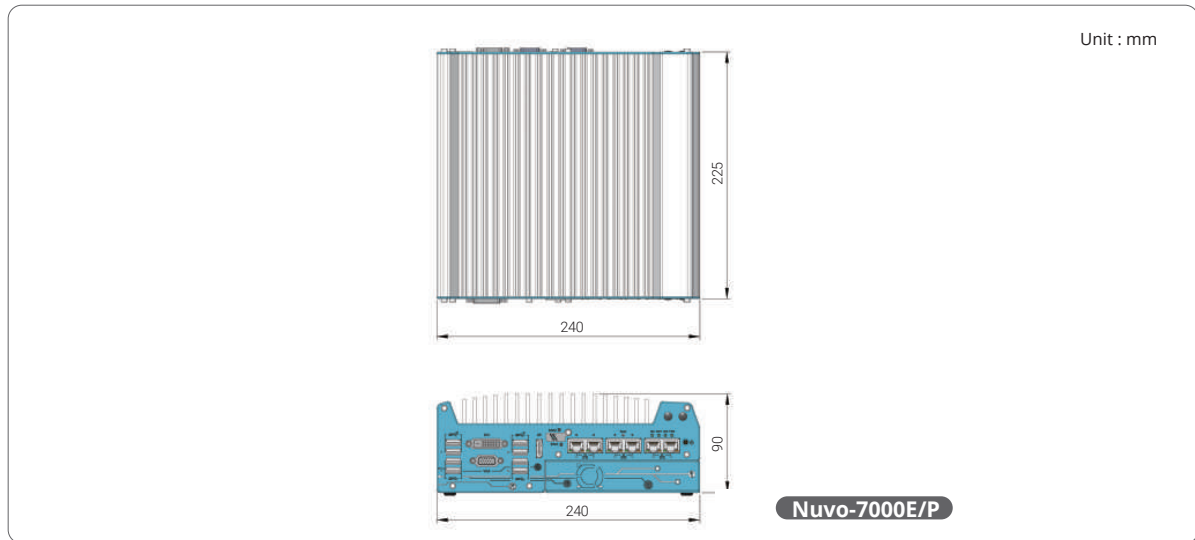
System Core		Expansion Bus	
<b>Processor</b>	Supporting Intel® 9th/ 8th-Gen CPU (LGA1151 socket, 65W/ 35W TDP) - Intel® Core™ i7-9700E/ i7-9700TE/ i7-8700/ i7-8700T - Intel® Core™ i5-9500E/ i5-9500TE/ i5-8500/ i5-8500T - Intel® Core™ i3-9100E/ i3-9100TE/ i3-8100/ i3-8100T - Intel® Pentium® G5400/ G5400T - Intel® Celeron® G4900/ G4900T	<b>PCI/PCI Express</b>	1x PCIe x16 slot@Gen3, 8-lanes PCIe signals in Cassette (Nuvo-7002E/ 7006E) 2x PCIe x16 slots@Gen3, 8-lanes PCIe signals in Cassette (Nuvo-7002DE/ 7006DE) 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) 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 6 100 W total power budget	<b>Dimension</b>	240 mm (W) x 225 mm (D) x 90 mm (H) (Nuvo-7000E/ P series) 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 4x USB 3.1 Gen1 (5 Gbps) ports	<b>Weight</b>	3.58 kg (Nuvo-7000E/ P series) 3.7 kg (Nuvo-7000DE series)
<b>Video Port (Integrated Graphics)</b>	1x VGA, supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution 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) 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 -25°C ~ 70°C ** with 65W CPU -25°C ~ 70°C */** (configured as 35W TDP) -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
* 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.		<b>EMC</b>	CE/FCC Class A, according to EN 55032 & EN 55024
		<b>Safety</b>	UL62368-1, IEC62368-1

Nuvo-7000E/ 7000DE/ 7000P Series

## Appearance



## Dimensions



## Ordering Information

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

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

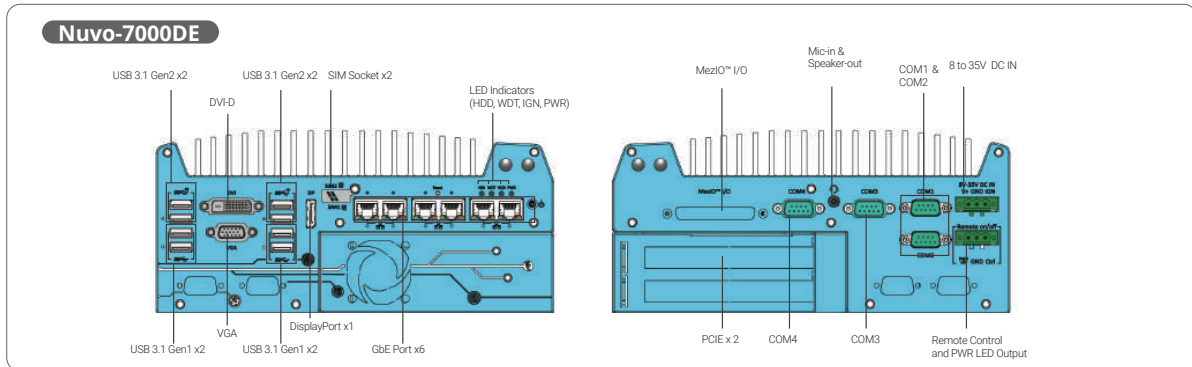
### MeziO™ Modules

<b>MeziO™-C180</b>	MeziO™ module with 4x RS-232/ 422/ 485 ports and 4x RS-232 ports
<b>MeziO™-C181</b>	MeziO™ module with 4x RS-232/ 422/ 485 ports and 4x RS-422/ 485 ports
<b>MeziO™-D220</b>	MeziO™ module with 8-CH isolated digital input and 8-CH isolated digital output
<b>MeziO™-D230</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</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

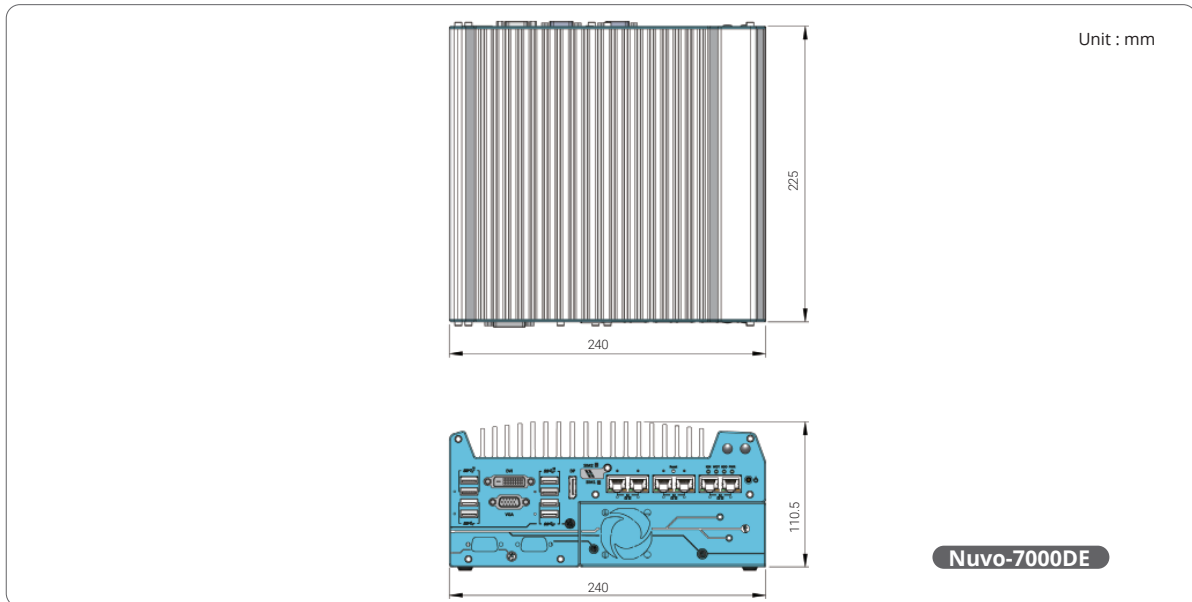
*Only Nuvo-7006E-PoE and Nuvo-7006P-PoE support MeziO-G4P*

Nuvo-7000E/ 7000DE/ 7000P Series

## Appearance



## Dimensions



## Ordering Information

Model No.	Product Description
<b>Nuvo-7002DE</b>	Intel® 9th/ 8th-Gen Core™ fanless controller with 2x GbE, dual-slot PCI Express Cassette and MeziO™ interface
<b>Nuvo-7006DE</b>	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

<b>PA-160W-OW</b>	160W AC/DC power adapter 20V/8A;18AWGx4C/120cm, cord end terminals for terminal block, operating temperature : -30 to 70°C.
<b>Dmpbr-Nuvo5000_7000</b>	Neosys' patented damping brackets assembly for Nuvo-7000E/DE/P
<b>DINRAIL-O</b>	DIN-rail mount assembly for Nuvo-7000 series
<b>ETHY-100-2008S</b>	Ethernet I/O expansion module with 8 isolated digital inputs and outputs
<b>ETHY-100-2604S</b>	Ethernet I/O expansion module with 8 isolated digital inputs and 4 relays outputs (coming soon)
<b>MeziO™ Modules</b>	
<b>MeziO™ -C180</b>	MeziO™ module with 4x RS-232/ 422/ 485 ports and 4x RS-232 ports
<b>MeziO™ -C181</b>	MeziO™ module with 4x RS-232/ 422/ 485 ports and 4x RS-422/ 485 ports
<b>MeziO™ -D220</b>	MeziO™ module with 8-CH isolated digital input and 8-CH isolated digital output
<b>MeziO™ -D230</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</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 <small>Only Nuvo-7006DE-PoE supports MeziO-G4P</small>

## Assured Systems

Assured Systems is a leading technology company with over 1,500 regular clients in 80 countries, deploying over 85,000 systems to a diverse customer base in 12 years of business. We offer high-quality and innovative rugged computing, display, networking and data collection solutions to the embedded, industrial, and digital-out-of-home market sectors.

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