

# Nuvo-9000 series

## Rugged Embedded Computer supporting Intel® 13th/12th-Gen Core™ processor

### Features

- Supports Intel® 13th/12th-Gen Core™ 24C/ 32T 35W/ 65W CPU
- Patented Cassette for PCI/PCIe add-on card accommodation
- MezIO® interface for easy function expansion
- VGA/ DVI/ DP triple independent display (supporting 4K2K)
- Rugged design with -25°C to 70°C fanless operation

### System

<b>CPU</b>	Supporting Intel® 13th-Gen Core™ CPU (LGA1700 socket, 65W/35W TDP)
	- Intel® Core™ i9-13900E/ i9-13900TE
	- Intel® Core™ i7-13700E/ i7-13700TE
	- Intel® Core™ i5-13500E/ i5-13400E/ i5-13500TE
<b>CPU</b>	Supporting Intel® 12th-Gen Core™ CPU (LGA1700 socket, 65W/35W TDP)
	- Intel® Core™ i9-12900E/ i9-12900TE
	- Intel® Core™ i7-12700E/ i7-12700TE
	- Intel® Core™ i5-12500E/ i5-12500TE
<b>CPU</b>	- Intel® Core™ i3-12100E/ i3-12100TE
	- Intel® Pentium® G7400E/ G7400TE
	- Intel® Celeron® G6900E/ G6900TE
	<b>Chipset</b>
<b>Graphics</b>	Integrated Intel® UHD Graphics 770 (32EU) / 730 (24EU)
<b>RAM</b>	Up to 64 GB DDR5 4800 SDRAM (two SODIMM slots)
<b>Storage Capacity</b>	2x internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/ 1 (Nuvo-9000E/ 9000P/ 9000DE)
	1x hot-swappable 2.5" HDD tray (7mm HDD/ SSD) and 1x internal 2.5" SATA port (Nuvo-9000LP)
	1x M.2 2280 M key NVMe socket (PCIe Gen4x4) for NVMe SSD
<b>AMT / TPM</b>	Supports Intel vPro/ AMT 16.0 // Supports dTPM 2.0

### I/O

<b>USB</b>	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 2x USB 2.0
<b>Ethernet*</b>	1x 2.5G Ethernet by I225-IT and 1x Gigabit Ethernet by I219-LM (Nuvo-9002E/ P/ DE/ LP) with screw-lock
	5x 2.5G Ethernet by I225-IT and 1x Gigabit Ethernet by I219-LM (Nuvo-9006E/ P/ DE/ LP) with screw-lock
<b>PoE+</b>	Optional IEEE 802.3at PoE+ PSE for Port 3 ~ Port 6 (2.5GbE) 100 W total power budget
<b>Serial Ports</b>	2x software-programmable RS-232/ 422/ 485 ports (COM1/ COM2) 2x RS-232 ports (COM3/ COM4)
<b>Video</b>	1x VGA, supporting 1920 x 1200 resolution
	1x DVI-D, supporting 1920 x 1200 resolution
	1x DisplayPort, supporting 4096 x 2304 resolution
<b>Audio</b>	1x 3.5 mm jack for mic-in and speaker-out
<b>Expansion Slots</b>	1x PCIe x16 slot@Gen3, 8-lanes PCIe signals in Cassette (Nuvo-9002E/ 9006E)
	2x PCIe x16 slots@Gen3, 8-lanes PCIe signals in Cassette (Nuvo-9002DE/ 9006DE)
	1x PCI slot in Cassette (Nuvo-9002P/ 9006P)
	1x full-size mini PCI Express socket
	1x M.2 2242/3052 B key socket with SIM slot for M.2 5G/ 4G module 1x MezIO® expansion port for Neosys MezIO® modules

Front



Rear



# Nuvo-9000 series

## Mechanical

<b>DC Input</b>	1x 3-pin pluggable terminal block for 8 to 48V DC input
<b>Remote Control &amp; LED Output</b>	1x 3-pin pluggable terminal block for remote control and PWR LED output
<b>Dimensions</b>	240 mm (W) x 225 mm (D) x 90 mm (H) (Nuvo-9000E/ P series) 240 mm (W) x 225 mm (D) x 110.5 mm (H) (Nuvo-9000DE series) 240 mm (W) x 225 mm (D) x 79 mm (H) (Nuvo-9000LP series)
<b>Weight</b>	3.58 kg (Nuvo-9000E/ P series) 3.89 kg (Nuvo-9000DE series) 3.36 kg (Nuvo-9000LP series)
<b>Mounting</b>	Wall-mount (standard) or DIN-rail mount (optional)

## Environmental

<b>Operating Temperature</b>	<b>with 35W CPU</b> -25°C ~ 70°C ** <b>with 65W CPU</b> -25°C ~ 70°C **/*** (configured as 35W TDP) -25°C ~ 50°C **/*** (configured as 65W TDP)
<b>Storage Temperature</b>	-40°C ~ 85°C
<b>Humidity</b>	10%~90% , non-condensing
<b>Vibration</b>	MIL-STD-810H, Method 514.8, Category 4
<b>Shock</b>	MIL-STD-810H, Method 516.8, Procedure I
<b>Certification</b>	CE/FCC Class A, according to EN 55032 & EN 55035

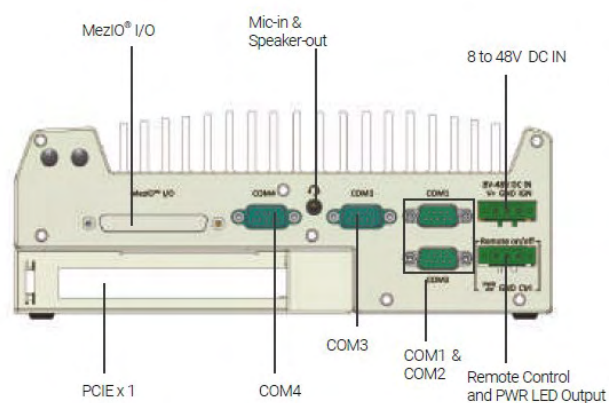
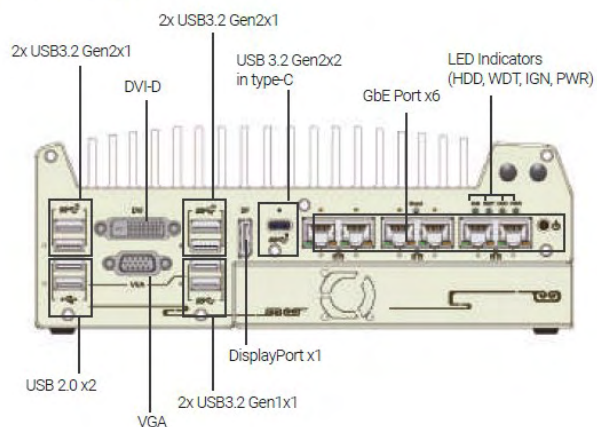
\*Due to I225-IT specification limitation, for systems running 2.5G Ethernet link speeds, please limit the operating temperature to 60 C.

\*\* 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.

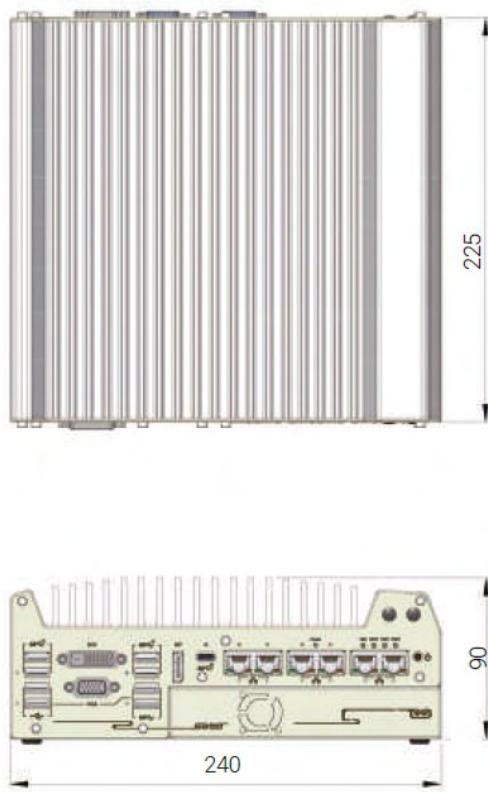
## Appearance

### Nuvo-9000E/P



# Nuvo-9000 series

## Apperance



## Ordering Information

<b>Nuvo-9002E</b>	Intel® 13th/12th-Gen Core™ Rugged Embedded Computer with 2x 2.5GbE/ GbE, USB 3.2 Type-C, single-slot PCIe Cassette & MeziO® Interface
<b>Nuvo-9002P</b>	Intel® 13th/12th-Gen Core™ Rugged Embedded Computer with 2x 2.5GbE/ GbE, USB 3.2 Type-C, single-slot PCI Cassette & MeziO® Interface
<b>Nuvo-9006E</b>	Intel® 13th/12th-Gen Core™ Rugged Embedded Computer with 6x 2.5GbE/ GbE, USB 3.2 Type-C, single-slot PCIe Cassette & MeziO® Interface
<b>Nuvo-9006P</b>	Intel® 13th/12th-Gen Core™ Rugged Embedded Computer with 6x 2.5GbE/ GbE, USB 3.2 Type-C, single-slot PCI Cassette & MeziO® Interface
<b>PoE+ Option</b>	Option of 802.3at PoE+ PSE for 2.5GbE port 3 ~ port 6

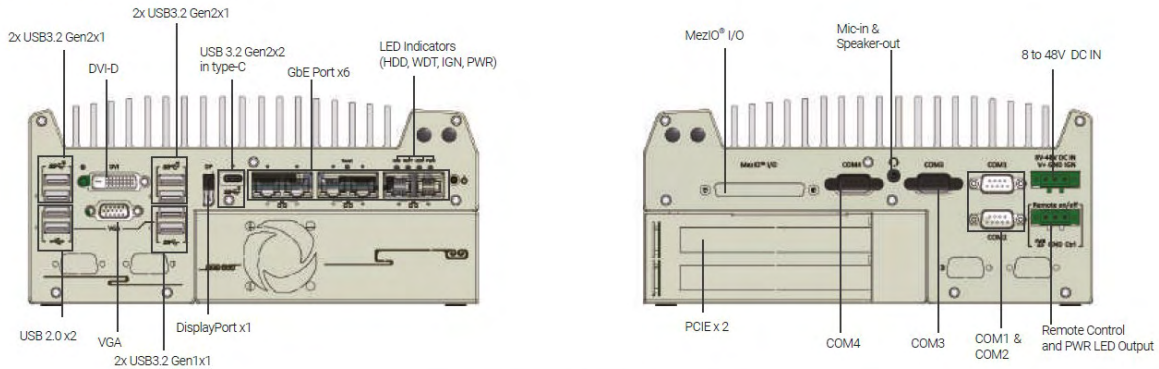
## Optional Accessories

<b>DINRAIL-O</b>	DIN-rail mount assembly for Nuvo-9000 series
<b>Dmpbr-Nuvo5000_7000</b>	Neosys' patented damping brackets assembly for Nuvo-9000 Series
<b>Fankit-25</b>	Fan assembly for 1-slot Cassette, 25x25x10 mm
<b>PA-160W-OW</b>	160W AC-DC power adapter 20V/8A; 18AWG/120cm; cord end terminals for terminal block, operating temperature: -30°C to 70°C. (recommended for 35W CPU)
<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. (recommended for 65W CPU or 35W CPU with PoE+ option)
<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

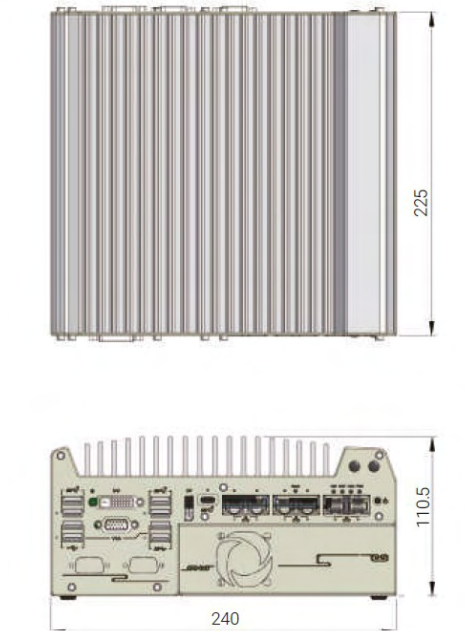
# Nuvo-9000 series

## Appearance

### Nuvo-9000DE



## Dimensions



## Ordering Information

<b>Nuvo-9002DE</b>	Intel® 13th/12th -Gen Core™ Rugged Embedded Computer with 2x 2.5GbE/ GbE, USB 3.2 Type-C, dual-slot PCIe Cassette & MeziO® Interface
<b>Nuvo-9006DE</b>	Intel® 13th/12th -Gen Core™ Rugged Embedded Computer with 6x 2.5GbE/ GbE, USB 3.2 Type-C, dual-slot PCIe Cassette & MeziO® Interface
<b>PoE+ Option</b>	Option of 802.3at PoE+ PSE for 2.5GbE port 3 ~ port 6

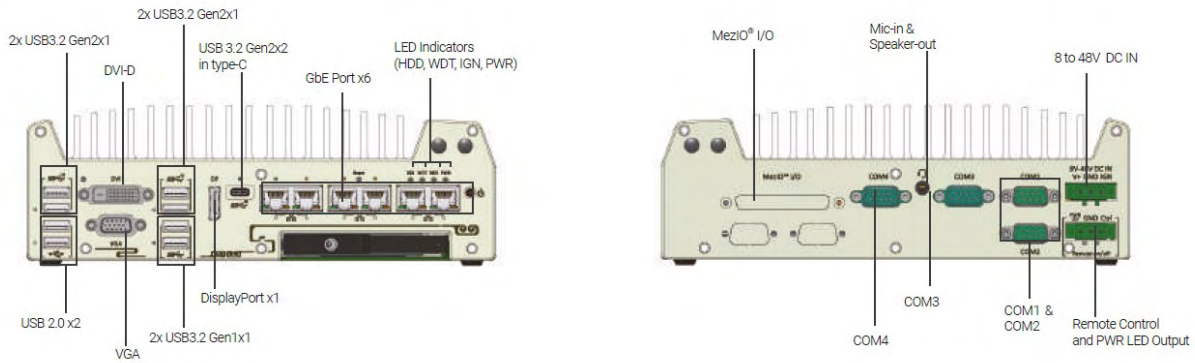
## Optional Accessories

<b>DINRAIL-O</b>	DIN-rail mount assembly for Nuvo-9000 series
<b>Dmpbr-Nuvo5000_7000</b>	Neosus' patented damping brackets assembly for Nuvo-9000 Series
<b>PA-160W-OW</b>	160W AC-DC power adapter 20V/8A; 18AWG/120cm; cord end terminals for terminal block, operating temperature: -30°C to 70°C. (recommended for 35W CPU)
<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. (recommended for 65W CPU or 35W CPU with PoE+ option)
<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

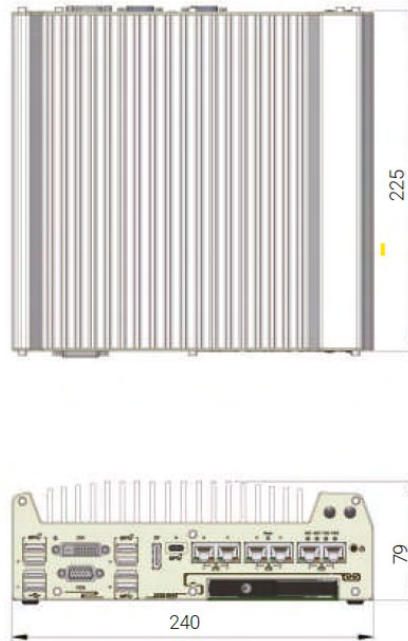
# Nuvo-9000 series

## Appearance

### Nuvo-9000LP



## Dimensions



## Ordering Information

<b>Nuvo-9002LP</b>	Intel® 13th/12th-Gen Core™ Rugged Embedded Computer with 2x 2.5GbE/ GbE, USB 3.2 Type-C, MeziO® Interface & 2.5" HDD tray
<b>Nuvo-9006LP</b>	Intel® 13th/12th-Gen Core™ Rugged Embedded Computer with 6x 2.5GbE/ GbE, USB 3.2 Type-C, MeziO® Interface & 2.5" HDD tray
<b>PoE+ Option</b>	Option of 802.3at PoE+ PSE for 2.5GbE port 3 ~ port 6

## Optional Accessories

<b>DINRAIL-O</b>	DIN-rail mount assembly for Nuvo-9000 series
<b>Dmpbr-Nuvo5000_7000</b>	Neosus' patented damping brackets assembly for Nuvo-9000 Series
<b>PA-160W-OW</b>	160W AC-DC power adapter 20V/8A; 18AWG/120cm; cord end terminals for terminal block, operating temperature: -30°C to 70°C. (recommended for 35W CPU)
<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. (recommended for 65W CPU or 35W CPU with PoE+ option)
<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