Nuvo-9000 series

BRESSNER
A ONE STOP SYSTEMS COMPANY

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

Front

Rear

System	
CPU	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 - Intel® Core™ i3-13100E/ i3-13100TE 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 - 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) / 730 (24EU)
RAM	Up to 64 GB DDR5 4800 SDRAM (two SODIMM slots)
Storage Capacity	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
AMT / TPM	Supports Intel vPro/ AMT 16.0 // Supports dTPM 2.0

I/O	
USB	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
Ethernet*	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
PoE+	Optional IEEE 802.3at PoE+ PSE for Port 3 ~ Port 6 (2.5GbE) 100 W total power budget
Serial Ports	2x software-programmable RS-232/ 422/ 485 ports (COM1/ COM2) 2x RS-232 ports (COM3/ COM4)
Video	1x VGA, supporting 1920 x 1200 resolution 1x DVI-D, supporting 1920 x 1200 resolution 1x DisplayPort, supporting 4096 x 2304 resolution
Audio	1x 3.5 mm jack for mic-in and speaker-out
Expansion Slots	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 Neousys MezIO® modules

Nuvo-9000 series

BRESSNER
A ONE STOP SYSTEMS COMPANY

Mechanical

DC Input	1x 3-pin pluggable terminal block for 8 to 48V DC input
Remote Control & LED Output	1x 3-pin pluggable terminal block for remote control and PWR LED output
Dimensions	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)
Weight	3.58 kg (Nuvo-9000E/ P series) 3.89 kg (Nuvo-9000DE series) 3.36 kg (Nuvo-9000LP series)
Mounting	Wall-mount (standard) or DIN-rail mount (optional)

Environmental

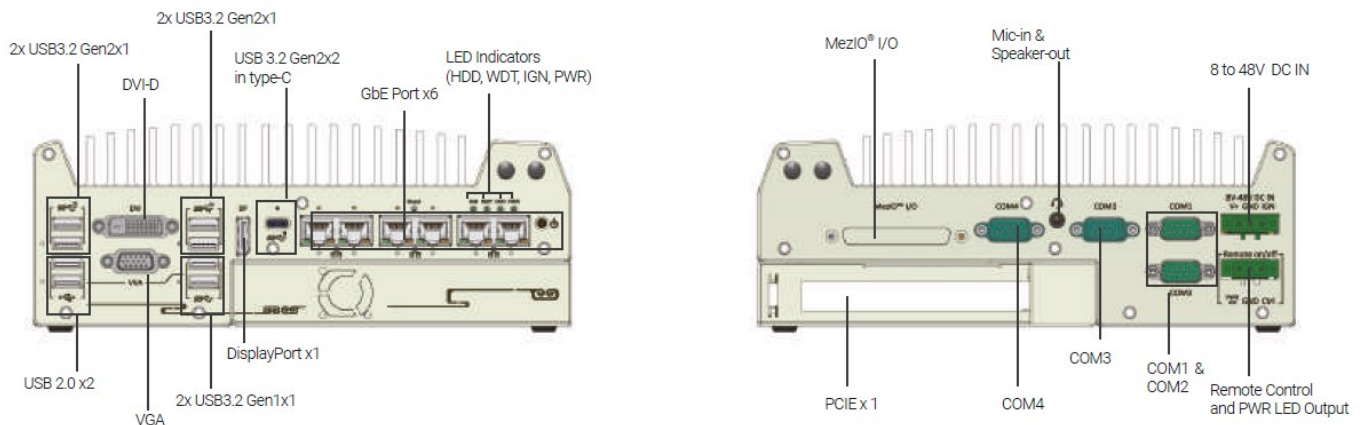|	
Operating Temperature	**with 35W CPU** -25°C ~ 70°C ** **with 65W CPU** -25°C ~ 70°C **/*** (configured as 35W TDP) -25°C ~ 50°C **/*** (configured as 65W TDP)
Storage Temperature	-40°C ~ 85°C
Humidity	10%~90% , non-condensing
Vibration	MIL-STD-810H, Method 514.8, Category 4
Shock	MIL-STD-810H, Method 516.8, Procedure I
Certification	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.
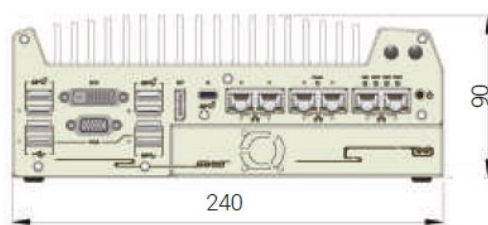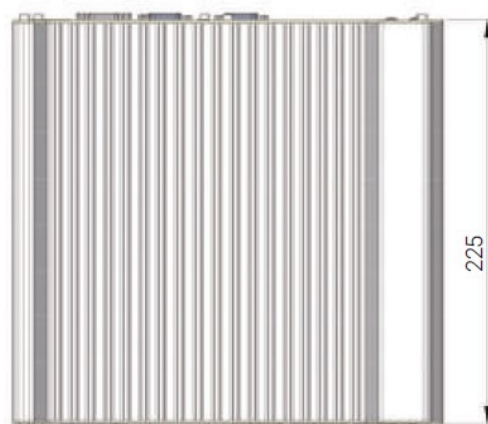
Appearance

Nuvo-9000 series

Apperance

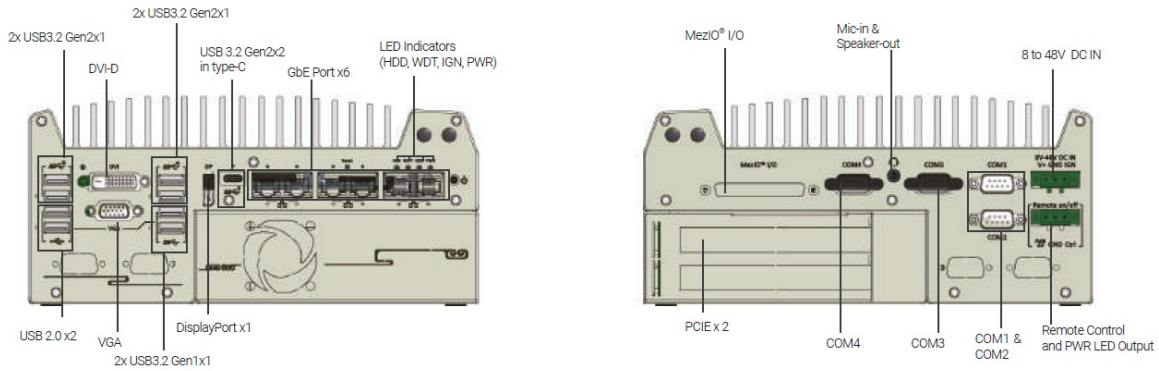| Ordering Information	
Nuvo-9002E	Intel® 13th/12th-Gen Core™ Rugged Embedded Computer with 2x 2.5GbE/ GbE, USB 3.2 Type-C, single-slot PCIe Cassette & MezIO® Interface
Nuvo-9002P	Intel® 13th/12th-Gen Core™ Rugged Embedded Computer with 2x 2.5GbE/ GbE, USB 3.2 Type-C, single-slot PCI Cassette & MezIO®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

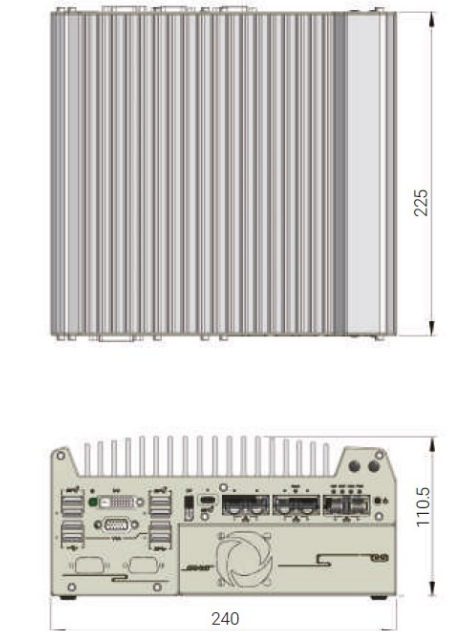| Optional Accessories	
DINRAIL-O	DIN-rail mount assembly for Nuvo-9000 series
Dmpbr-Nuvo5000_7000	Neousys' patented damping brackets assembly for Nuvo-9000 Series
Fankit-25	Fan assembly for 1-slot Cassette, 25x25x10 mm
PA-160W-OW	160W AC-DC power adapter 20V/8A; 18AWG/120cm; cord end terminals for terminal block, operating temperature: -30°C to 70°C. (recommended for 35W CPU)
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. (recommended for 65W CPU or 35W CPU with PoE+ option)
MezIO®-C180	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-232 ports
MezIOÂ®-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
MezIOÂ®-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

Nuvo-9000 series

BRESSNER
A ONE STOP SYSTEMS COMPANY

Appearance

Nuvo-9000DE

2x USB3.2 Gen2x1
2x USB3.2 Gen2x1
DVI-D
USB 3.2 Gen2x2 in type-C
GbE Port x6
LED Indicators (HDD, WDT, IGN, PWR)
USB 2.0 x2
VGA
2x USB3.2 Gen1x1
DisplayPort x1

MezIO® I/O
Mic-in & Speaker-out
8 to 48V DC IN
PCIE x 2
COM4
COM3
COM1 & COM2
Remote Control and PWR LED Output

Dimensions

225

110.5

240

Ordering Information

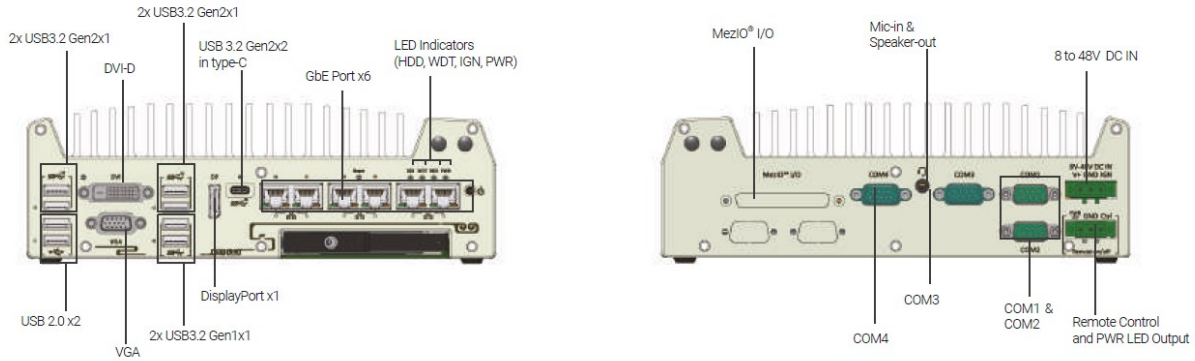|	
Nuvo-9002DE	Intel® 13th/12th -Gen Core™ Rugged Embedded Computer with 2x 2.5GbE/ GbE, USB 3.2 Type-C, dual-slot PCIe Cassette & MezIO® Interface
Nuvo-9006DE	Intel® 13th/12th -Gen Core™ Rugged Embedded Computer with 6x 2.5GbE/ GbE, USB 3.2 Type-C, dual-slot PCIe Cassette & MezIO® Interface
PoE+ Option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

Optional Accessories

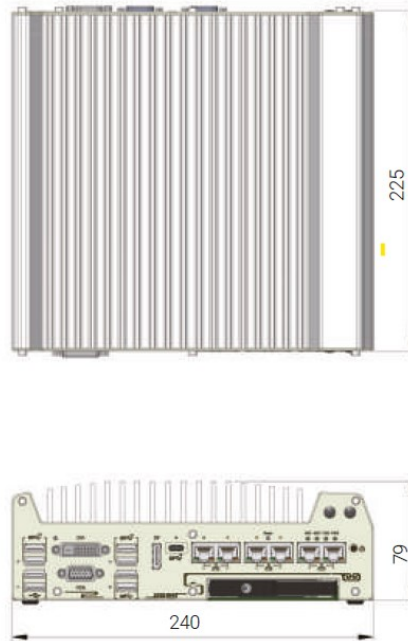|	
DINRAIL-O	DIN-rail mount assembly for Nuvo-9000 series
Dmpbr-Nuvo5000_7000	Neousys' patented damping brackets assembly for Nuvo-9000 Series
PA-160W-OW	160W AC-DC power adapter 20V/8A; 18AWG/120cm; cord end terminals for terminal block, operating temperature: -30℃ to 70℃. (recommended for 35W CPU)
PA-280W-ET2	280W AC/DC power adapter 24V/ 11.67A ; 16AWG/ 100cm; cord end terminals for terminal block, operating temperature : -30℃ to 60℃. (recommended for 65W CPU or 35W CPU with PoE+ option)
MezIO®-C180	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-232 ports
MezIOÂ®-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
MezIOÂ®-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

Nuvo-9000 series

BRESSNER
A ONE STOP SYSTEMS COMPANY

Appearance

Nuvo-9000LP

Dimensions

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

Optional Accessories	
DINRAIL-O	DIN-rail mount assembly for Nuvo-9000 series
Dmpbr-Nuvo5000_7000	Neousys' patented damping brackets assembly for Nuvo-9000 Series
PA-160W-OW	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)
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. (recommended for 65W CPU or 35W CPU with PoE+ option)
MezIO®-C180	MezIO® module with 4x RS-232/ 422/ 485 ports and 4x RS-232 ports
MezIOÂ®-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
MezIOÂ®-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