**Backplane Systems Technology Pty Ltd**
TEL 02 9457 6400
sales@backplane.com.au
www.backplane.com.au

**NEOUSYS TECHNOLOGY**

# Nuvo-5000E/P Series

Intel® 6th-Gen Core™ i7/ i5/ i3 Fanless Controller with 6x GbE, Expansion Cassette and MezIO™ Interface



## Key Features

· Intel® 6th-Gen Core™ i7/ i5/ i3 35W/65W LGA1151 CPU
· Patented Cassette* for PCI/ PCIe add-on card
· 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
· Up to 32 GB, DDR4-2133 SO-DIMM
· Accommodates two 2.5" SATA HDD/ SSD with RAID 0/ 1 support
· VGA/ DVI/ DP triple independent display, supporting 4K2K resolution

*R.O.C Patent No. M456527*

## Introduction

Integrating cutting-edge technologies, Nuvo-5000 is Neousys' next-generation rugged fanless embedded controller with performance and versatility. It supports socket-type 6th-Gen Core™ processors so one can choose a CPU according to application performance needs while Neousys' efficient heat-dissipating design offers true -25°C to 70°C wide-temperature operation.

With plenty of embedded I/O connections for applications including Gigabit Ethernet, USB3.0/ USB2.0, COM ports, VGA/ DVI/ DP triple display outputs and if that's not enough, Neousys' patented Cassette offers I/O expansion by installing an off-the-shelf PCIe/PCI card.

On top of all that, Nuvo-5000 also incorporates Neousys MezIO™ interface. The patented design enhances Neousys' embedded system with a cost-effective and reliable way for I/O expansion. The MezIO™ module can deliver application-oriented functions for diversified vertical markets.

Neousys Nuvo-5000 features 6th-Gen Intel® CPU, patented Cassette and MezIO™ to create a powerful and yet diverse controller for all your industrial application needs!
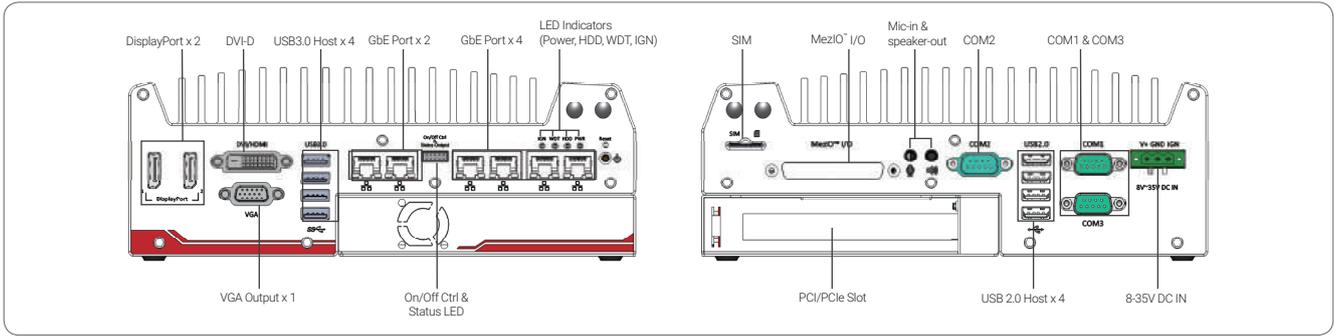
## Specifications

### System Core

| | |
|---|---|
| Processor | Intel® Core™ i7-6700 (8M Cache,3.4/ 4.0 GHz, 65W TDP)*<br>Intel® Core™ i5-6500 (6M Cache, 3.2/ 3.6 GHz, 65W TDP)*<br>Intel® Core™ i3-6100 (3M Cache, 3.7 GHz, 51W TDP)*<br>Intel® Pentium® G4400 (3M Cache, 3.3 GHz, 54W TDP)*<br>Intel® Celeron® G3900 (2M Cache, 2.8 GHz, 51W TDP)*<br>Intel® Core™ i7-6700TE (8M Cache, 2.4/ 3.4 GHz, 35W TDP)<br>Intel® Core™ i5-6500TE (6M Cache, 2.3/ 3.3 GHz, 35W TDP)<br>Intel® Core™ i3-6100TE (4M Cache, 2.7 GHz, 35W TDP)<br>Intel® Pentium® G4400TE (3M Cache, 2.4 GHz, 35W TDP)<br>Intel® Celeron® G3900TE (2M Cache, 2.3 GHz, 35W TDP) |
| Chipset | Intel® Q170 platform controller hub |
| Graphics | Integrated Intel® HD graphics 530/ 510 |
| Memory | Up to 32GB DDR4-2133 SDRAM (two SO-DIMM slots) |
| AMT | Supports AMT 11.0 |
| TPM | Supports TPM 2.0 |

### I/O Interface

| | |
|---|---|
| Ethernet | 2x Gigabit Ethernet ports by Intel® 1x I219 and I210 (Nuvo-5002E/P)<br>6x Gigabit Ethernet ports by Intel® 1x I219 and 5x I210 (Nuvo-5006E/ P) |
| PoE+ | Optional IEEE 802.3at PoE+ PSE for GbE Ports 3 ~ 6, 80W total power budget |
| USB | 4x USB3.0 ports via native xHCI controller<br>4x USB2.0 ports |
| Video Port | 1x stacked VGA + DVI-D connector<br>2x DisplayPort connectors, supporting 4K2K resolution (triple-independent display support) |
| Serial Port | 2x software-programmable RS-232/ 422/ 485 port (COM1 & COM3)<br>1x RS-232 port (COM2) |
| Audio | 1x Mic-in and 1x speaker-out |

### Storage Interface

| | |
|---|---|
| SATA HDD | 2x internal SATA port for 2.5" HDD/ SSD installation, supporting RAID 0/1 |
| mSATA | 1x full-size mSATA port (mux with mini-PCIe) |

### Expansion Bus

| | |
|---|---|
| PCI/PCI Express | 1x PCI slot in Cassette (Nuvo-5002P/5006P)<br>1x PCIe x16 slot @ Gen3, 8-lanes PCIE signals in Cassette (Nuvo-5002E/ 5006E) |
| Mini PCI-E | 1x internal Mini PCIe socket with front-accessible SIM socket<br>1x internal Mini PCIe socket with internal SIM socket (mux with mSATA) |
| Expandable I/O | 1x MezIO™ expansion port for Neousys' MezIO™ modules |

### Power Supply

| | |
|---|---|
| DC Input | 1x 3-pin pluggable terminal block for 8~35VDC DC input |
| Remote Ctrl. & Status Output | 1x 10-pin (2x5) wafer connector for remote on/off control and status LED output |

### Mechanical

| | |
|---|---|
| Dimension | 240mm (W) x 225mm (D) x 90mm (H) |
| Weight | 3.6kg (incl. CPU, memory and HDD) |
| Mounting | Wall-mounting (standard) or DIN-rail mounting (optional) |

### Environmental

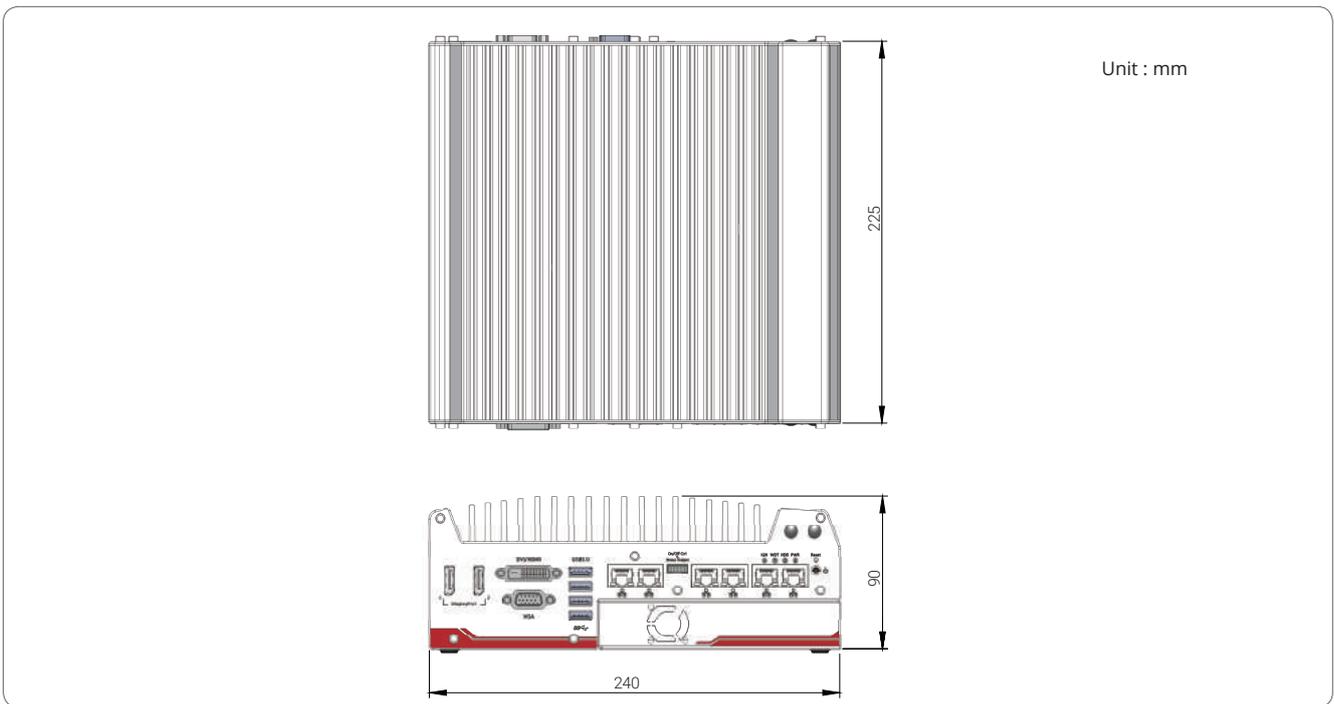| | | |
|---|---|---|
| Operating Temperature | -25°C ~ 70°C ** | i7-6700TE (35W TDP)<br>i5-6500TE (35W TDP)<br>i3-6100TE (35W TDP)<br>Pentium G4400TE (35W TDP) |
| | -25°C ~ 70°C */** (configured as 35W CPU mode)<br>-25°C ~ 50°C */** (configured as 65W/ 51W CPU mode) | i7-6700 (65W/51W TDP)<br>i5-6500 (65W/51W TDP)<br>i3-6100 (65W/51W TDP) |
| Storage Temperature | -40°C ~ 85°C | |
| Humidity | 10%~90% , non-condensing | |
| Vibration | Operating, 5Grms, 5-500 Hz, 3 Axes (w/ SSD, according to IEC60068-2-64) | |
| Shock | Operating, 50Grms, Half-sine 11ms Duration (w/ SSD, according to IEC60068-2-27) | |
| EMC | CE/FCC Class A, according to EN 55022, EN 55024, EN 55032 & EN 60950 | |

*   For i7-6700 running at 65W mode, the high 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 drive or Solid State Disk (SSD) is required.

## Appearance



DisplayPort x 2, DVI-D, USB3.0 Host x 4, GbE Port x 2, GbE Port x 4, LED Indicators (Power, HDD, WDT, IGN), SIM, MezIO™ I/O, Mic-in & speaker-out, COM2, COM1 & COM3

VGA Output x 1, On/Off Ctrl & Status LED, PCI/PCIe Slot, USB 2.0 Host x 4, 8-35V DC IN

## Dimensions



Unit : mm

225

90

240

## Ordering Information

| Model No. | Product Description |
|---|---|
| Nuvo-5002E | Intel® 6th-Gen Core™ fanless controller with 2x GbE, PCI Express Cassette and MezIO™ interface |
| Nuvo-5002P | Intel® 6th-Gen Core™ fanless controller with 2x GbE, PCI Cassette and MezIO™ interface |
| Nuvo-5006E | Intel® 6th-Gen Core™ fanless controller with 6x GbE, PCI Express Cassette and MezIO™ interface |
| Nuvo-5006P | Intel® 6th-Gen Core™ fanless controller with 6x GbE, PCI Cassette and MezIO™ interface |
| *Optional IEEE 802.3at PoE+ for GbE ports 3 ~ 6* | |

## Optional Accessories

| | |
|---|---|
| DINRAIL-O | DIN-rail mounting assembly for Nuvo-5000 series |
| Fankit-25 | Fan assembly for 1-slot Cassette, 25x25x10mm |
| PA-120W-OW | 120W AC/DC power adapter 20V/6A; 18AWG/120cm; cord end terminals for terminal block,operating temperature : -30 to 70 °C. |
| DmpbrNuvo5000_7000 | Neousys' patented damping bracket assembly for Nuvo-7000E/DE/P |

**Cassette Modules**

| | |
|---|---|
| CSM-PoE354 | Cassette module with PCIe-PoE354at and pre-installed passive heat-spreader |
| CSM-USB380 | Cassette module with PCIe-USB380 and pre-installed passive heat-spreader |
| CSM-NV750 | Cassette module with NVIDIA® GTX 750 Ti graphics card, pre-installed heat-spreader and fan |
| 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 USB3.0 ports |
| MezIO™-G4 | MezIO™ module with 4x GigE ports |
| MezIO™-G4P | MezIO™ module with 4x IEEE 802.3at PoE+ ports |