

# Nuvo-3000E/3000P Series

Intel® 3rd-Gen Core™ i7/i5/i3 Fanless Controller  
with 5x GbE, 4x USB 3.0 and Expansion Cassette



## Features

- Intel® 3rd-Gen i7 quad-core superb performance
- Patented Cassette\* design for PCIe/PCI add-on card expansion
- Up to 5x GigE ports, supporting 9.5 KB jumbo frame
- Rugged, -25°C to 70°C fanless operation
- Optional intelligent ignition power control for in-vehicle applications
- VGA/DVI/HDMI dual display outputs
- 4x USB 3.0 ports + 4x USB 2.0 ports
- Optional isolated DIO with Change-of-State interrupt support

## Introduction

Discover a leaping of embedded controller design with Neosys Nuvo-3000E/3000P series!

Nuvo-3000E/3000P incorporates the cutting-edge processor technology and Neosys' innovative Cassette architecture to construct a truly reliable and versatile embedded controller. Its 3rd-Gen i7 quad-core processor delivers tremendous boost of computing power as well as significant improvement of graphics performance. This platform also natively supports new features such as USB 3.0, DDR3-1600 and SATA3. Inheriting the heritage of proven Nuvo series, Nuvo-3000E/3000P is extremely reliable mechanically and allows -25°C to 70°C operating temperature. Moreover, it comes with Neosys' patented Cassette design. This unique expansion Cassette offers PCI/PCIe slot with minimal thermal interference between system and add-on card, so that your system can always operate in expected thermal condition.

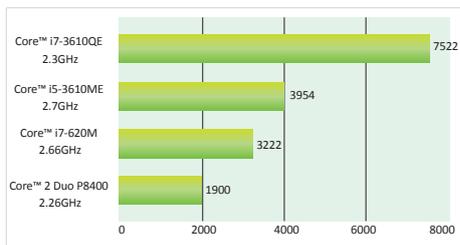
I/O functions on Nuvo-3000E/3000P are versatile. Gigabit Ethernet, USB 3.0 and dual display outputs are natively supported on Nuvo-3000E/3000P. Its optional isolated digital I/O now supports Change-of-State interrupt to give more usability. We also introduce the function of intelligent ignition control to Nuvo-3000E/3000P to make it suitable for in-vehicle applications.

As the quad-core processor boosting performance, innovative Cassette increasing expandability, and ignition control bringing in-vehicle mobility, Nuvo-3000E/3000P is ready for various application requirements.

## Product Highlights

### Quad-core Superb Performance

Nuvo-3000E/3000P supports Intel® 3rd-Gen i7 processor to offer superb computing power. Its 4-cores/8-threads architecture has 233% performance increase compared to previous i7-620M processor. In addition, the integrated Intel® HD 4000 Graphics engine also significantly advances the graphics performance.



\* The CPU benchmark is performed using Passmark PerformanceTest 7 based on Win7 64bit OS.

### Intelligent Ignition Control with Adjustable On/off Delay

A common requirement for in-vehicle applications is to correlate system on/off with vehicle ignition signal and predefined delay. Nuvo-3000E/P features a SoC-based implementation that monitors the ignition signal and reacts to turn on/off the system



according to predefined on/off delay. Its built-in algorithm supports further features such as ultra-low standby power, battery-low protection, system hard-off and etc. With intelligent ignition control, Nuvo-3000E/3000P can be deployed seamlessly for a diverse range of in-vehicle applications.

### Innovative Expansion Cassette

Providing an expansion slot inside a fanless controller is easy, but the real challenge is to deal with the heat generated by add-on card. That's why we invent our patented expansion Cassette for Nuvo-3000. By creating an isolated chamber to accommodate add-on card separately, Nuvo-3000 can effectively minimize the thermal interference and maintain system stability.

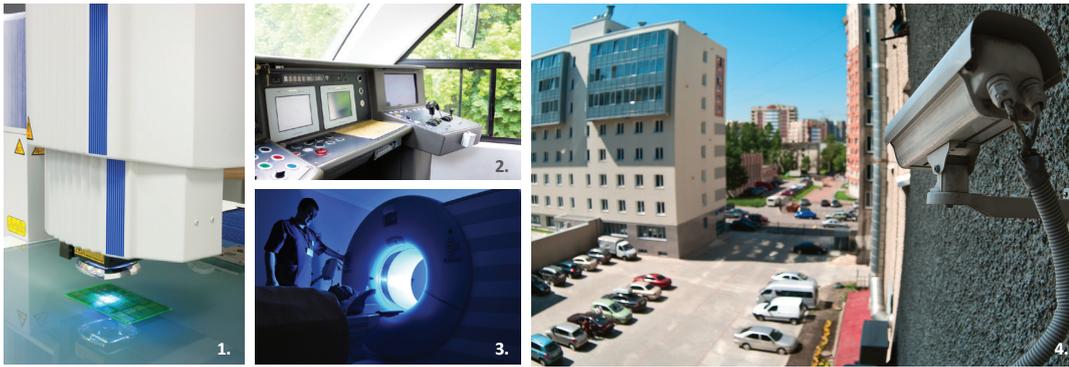


This expansion cassette also innovates a better way of cooling for add-on cards. An optional fan is the general solution for most add-on cards. Neosys also provides shaped heat-spreaders for selected cards. As the shaped heat-spreader contacts both components and surface of Cassette, the heat generated is brought out and a stable thermal condition is maintained inside Cassette. Currently shaped heat-spreader are available for

- Neosys PCIe-PoE2+/4+
- Neosys PCIe-USB380/340
- Selected nVidia graphics cards



## Applications



1. Machine Vision
2. In-vehicle Monitoring & Management
3. Medical Imaging
4. Surveillance/Security

## Specifications

System Core		Expansion Bus	
Processor	Intel® Core™ i7-3610QE (2.3/3.3 GHz, 6 MB cache) Intel® Core™ i5-3610ME (2.7/3.3 GHz, 3 MB cache) Intel® Celeron™ 1020E (2.2 GHz, 2 MB cache)	PCI/PCI Express	1x PCI slot in Cassette (Nuvo-3003P/3005P) 1x PCIe x16 slot @ 8-lanes PCIe signals in Cassette (Nuvo-3003E/3005E)
Chipset	Intel® HM76 Platform Controller Hub	Power Supply & Ignition Control	
Graphics	Integrated Intel® HD Graphics 4000 Controller (i7/i5) Integrated Intel® HD Graphics Controller (Celeron)	DC Input	1x 4-pin power connector for 8~25V DC input (for AC adapter) 1x 3-pin pluggable terminal block for 8~25V DC input (for direct DC wiring)
Memory	2x 204-pin SO-DIMM sockets, up to 16 GB DDR3 1333/1600 MHz SDRAM	Ignition Control	Optional ignition power control with configurable on/off delay
I/O Interface		Remote Ctrl. & Status Output	1x 10-pin (2x5) wafer connector for remote on/off control and status LED output
Ethernet	5x Gigabit Ethernet ports by Intel® i210 (Nuvo-3005E/P) 3x Gigabit Ethernet ports by Intel® i210 (Nuvo-3003E/P)	Power Consumption	With i7-3610QE : 72.96W (3.84A@19V) With i5-3610ME : 48.83W (2.57A@19V)
Video Port	1x DB-15 connector for analog RGB, supporting 2048x1536 resolution 2x DVI-D connectors for DVI/HDMI outputs, supporting 1920x1200 resolution <b>(Supporting dual independent display outputs)</b>	Mechanical	
USB	4x USB 3.0 ports and 4x USB 2.0 ports	Dimension	240 mm (W) x 225 mm (D) x 89.7 mm (H)
Serial Port	2x software-programmable RS-232/422/485 (COM1 & COM2)	Weight	4.4 Kg (including 2.5" HDD and DDR3 SO-DIMM)
Isolated DIO	8x isolated DI with COS interrupt and 8x isolated DO (Optional)	Mounting	Wall-mounting (standard) or DIN-Rail mounting (optional)
KB/MS	1x 6-pin mini-DIN connector for PS/2 keyboard/mouse	Environmental	
Audio	1x Mic-in and Speaker-out	Operating Temperature	-25°C ~ 70°C **/*** (with i5-3610ME & Celeron 1020E) -25°C ~ 60°C **/*** (with i7-3610QE)
Storage Interface		Storage	-40°C ~ 85°C
SATA HDD	1x Internal SATA port for 2.5" HDD/SSD installation	Humidity	10%~90% , non-condensing
CFast	1x CFast socket	Vibration	Operating, 5 Grms, 5-500 Hz, 3 Axes (w/ SSD, according to IEC60068-2-64)
Expansion Bus		Shock	Operating, 50 Grms, Half-sine 11 ms Duration (w/ SSD, according to IEC60068-2-27)
Mini PCI-E	1x internal mini PCI Express socket with USIM socket 1x internal mini PCI Express socket	EMC	CE/FCC Class A, according to EN 55022 & EN 55024

\*100% CPU loading is applied using Intel® Thermal Analysis Tool. For detail testing criteria, please contact Neosys Technology.

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

## Order Information

### Nuvo-3005P-I7QC

Intel® Core™ i7-3610QE fanless controller with 5x GbE and PCI Cassette

### Nuvo-3005E-I7QC

Intel® Core™ i7-3610QE fanless controller with 5x GbE and x16 PCI Express Cassette

### Nuvo-3005P-I5DC

Intel® Core™ i5-3610ME fanless controller with 5x GbE and PCI Cassette

### Nuvo-3005E-I5DC

Intel® Core™ i5-3610ME fanless controller with 5x GbE and x16 PCI Express Cassette

**Option of isolated DIO(8DI + 8DO) (Nuvo-3005E/P only)**

**Option of ignition power control**

**Option of DIN-Rail mounting kit**

**PCIe-PoE4P Cassette module**

**nVidia GT730 Cassette module**

**PCIe-USB380 Cassette module**

**120W AC/DC power adapter**