# Nuvis-5306RT Series

Intel® 6th-Gen Skylake Vision Controller with Vision-Specific I/O, Real-time Control and GPU-Computing

## Key Features

- **Intel® 6th Gen Core™ i7/i5 65W/35W CPU, up to 32 GB DDR4**
- **Integrated vision-specific I/O**
  - **4-CH CC/CV lighting controller**
  - **4-CH camera trigger outputs**
  - **1-CH quadrature encoder input**
  - **8-CH isolated DI and 8-CH isolated DO**
- **Patented MCU-based, real-time I/O control by DTIO* V2 and NuMCU**
- **Built-in camera interfaces**
  - **4-CH IEEE 802.3at Gigabit PoE+ ports**
  - **4-CH USB 3.0 ports**
- **Supports nVidia GTX 950/1050 for GPU-accelerated MV**
- **Patented ventilation hole* for graphic card**

**R.O.C Patent No. I526834/ M534371 / M456527*

## Introduction

Introducing the most powerful vision controller ever created! Nuvis-5306RT integrates every single function you need for machine vision applications in a compact footprint, including exceptional computing power, built-in camera interfaces and real-time vision-specific I/O control.

To ensure high quality images, a MV system requires accurate interaction between lighting, camera, actuator and sensor devices. Nuvis-5306RT integrates LED lighting controller, camera trigger, encoder input, PWM output and digital I/O, to connect and control all the vision devices. All the vision-specific I/O are managed by Neousys' patented MCU-based architecture and DTIO/NuMCU firmware to guarantee microsecond-scale real-time I/O control.

Computing power is another crucial requirement for a vision system. In addition to the remarkable performance brought by its Intel® 6th Gen Core™ i7/i5 CPU, Nuvis-5306RT can further accommodate nVidia® GeForce® GTX 950/1050 GPU to leverage CPU-accelerated vision library or deep-learning vision software. Combining built-in PoE+ and USB 3.0 interfaces and the expandability for CameraLink and CoaXPress, Nuvis-5306RT is the ideal platform for demanding MV applications.

## Specifications

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| **System Core** | |
| Processor | Supports Intel® 6th-Gen Core™ LGA1151 CPU<br>- 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™ 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) |
| Chipset | Intel® Q170 Platform Controller Hub |
| Graphics | Integrated Intel® HD Graphics 530 |
| Memory | Up to 32 GB DDR4-2133 SDRAM by two SODIMM sockets |
| AMT | Supports AMT 11.0 |
| TPM | Supports TPM 2.0 |
| **Vision-Specific I/O Interface** | |
| LED Lighting Controller | 4-CH LED lighting controller output , supporting<br>- Constant current mode (up to 1 A per channel, 100 kHz dimming control)<br>- Constant voltage mode (24 VDC, 100 kHz dimming control) |
| Camera Trigger | 4-CH camera trigger output (12 VDC output) |
| Encoder Input | 1-CH quadrature encoder input (A/B/Z) |
| Isolated Digital Output | 4-CH isolated high-speed DO (<2 us transient time, for strobe/PWM)<br>4-CH isolated high-current DO (up to 500 mA rated current) |
| Isolated Digital Input | 8-CH isolated high-speed digital input (<2 us transient time) |
| Real-time I/O Control | Patented MCU-based real-time I/O control with DTIO V2 or NuMCU firmware |
| **General I/O Interface** | |
| Ethernet port | 6x Gigabit Ethernet ports by Intel® 1x I219 and 5x I210 |
| PoE+ | IEEE 802.3at PoE+ PSE on GigE Port 3 ~ Port 6, 80 W total power budget |
| USB 3.0 | 4x USB 3.0 ports via native XHCI controller, 1000 MB/s total bandwidth |
| USB 2.0 | 4x USB 2.0 ports |
| Video Port | 1x stacked VGA + DVI-D connector<br>2x DisplayPort connectors, supporting 4K2K resolution |
| Serial Port | 2x software-programmable RS-232/422/485 port (COM1 & COM2)<br>1x RS-232 port (COM3) |
| Audio | 1x Mic-in and 1x Speaker-out |

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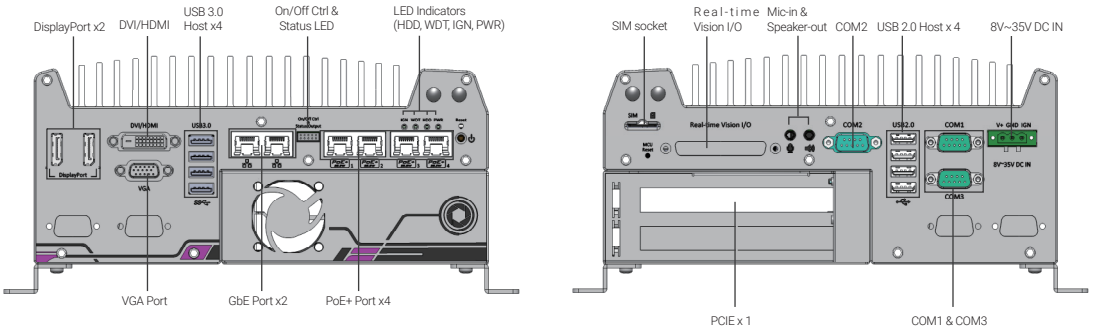
| **Storage Interface** | |
| SATA HDD | 2x Internal SATA port for 2.5" HDD/SSD installation, supporting RAID 0/1 |
| mSATA | 1x full-size mSATA port (mux with mini-PCIe) |
| **Expansion Bus** | |
| PCI/PCI Express | 1x PCIe x16 slot @ Gen3, 8-lanes PCIe signals in Cassette, supporting<br>- 75W nVidia® GeForce® GTX 950/1050 GPU card<br>- COTS CameraLink and CoaXPress camera interface card |
| Mini PCI-E | 1x internal mini PCI Express socket with front-accessible SIM socket<br>1x internal mini PCI Express socket with internal SIM socket (mux with mSATA) |
| **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 | 240 mm (W) x 225 mm (D) x 111 mm (H) |
| Weight | 4.5 kg (incl. CPU, memory and HDD) |
| Mounting | Wall-mount by mounting bracket |
| **Environmental** | |
| Operating Temperature | with i7-6700TE, i5-6500TE (35W TDP)<br>-25°C ~ 60°C **<br>with i7-6700, i5-6500, i3-6100 (65W/51W TDP)<br>-25°C ~ 60°C **/*** (configured as 35W CPU mode)<br>-25°C ~ 50°C **/*** (configured as 65W/51W CPU mode) |
| Storage Temperature | -40°C ~85°C** |
| Humidity | 10%~90% , non-condensing |
| Vibration | Operating, 5 Grms, 5-500 Hz, 3 Axes (w/ SSD, according to IEC60068-2-64) |
| Shock | Operating, 50 Grms, Half-sine 11 ms Duration (w/ SSD, according to IEC60068-2-27) |
| EMC | CE/FCC Class A, according to EN 55022 & EN 55024 |

** 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.*

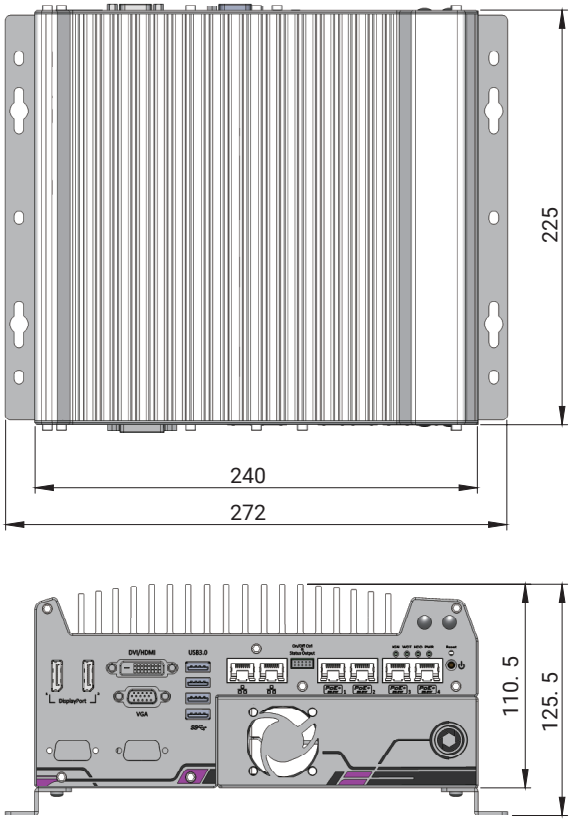
*** For sub-zero operating temperature, a wide temperature HDD drive or Solid State Disk (SSD) is required.*

## Appearance




## Dimensions

Unit : mm




## Ordering Information

| Model No. | Product Description |
|---|---|
| ***Nuvis-5306RT-DTIO*** | Intel® 6th-Gen Skylake Vision Controller with Vision-Specific I/O, Real-time Control by DTIO V2 and GPU-Computing |
| ***Nuvis-5306RT-NuMCU*** | Intel® 6th-Gen Skylake Vision Controller with Vision-Specific I/O, Real-time Control by NuMCU and GPU-Computing |

## Optional Accessories

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| 20V, 160W AC/DC power adapter |
| Cable-S68MM-100, SCSI-68(M) to SCSI-68(M) cable, 100 cm |
| TB-10, terminal board with 68-pin SCSI-II female connector and 68-pole terminal block |