

Expandable Industrial PCs

Powerful, Scalable, and AI-Ready



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Expand Your Horizons

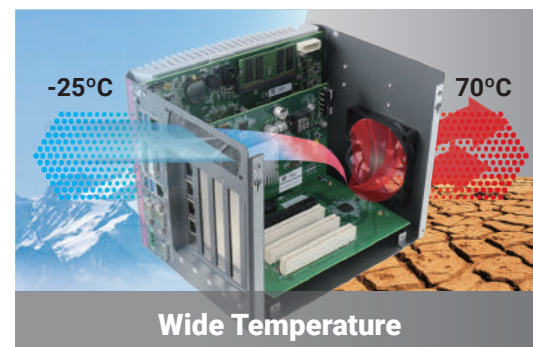
Neosys Expansion Box PCs with Up to 7 PCIe/ PCI Slots

Why Choose Neosys ?



Compact Footprint

Saves installation space, allowing room for other devices.



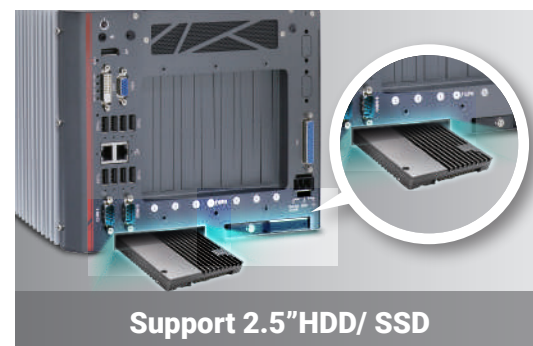
Wide Temperature

Supports wide-temperature operation to meet industrial requirements in various harsh environments.



Screw-Lock USB/ GbE

Screw-lock mechanisms prevent abrupt disconnections and potential damage to the system for GbE and USB connections.



Support 2.5" HDD/ SSD

Accommodates 2.5" SATA SSD/ HDD with RAID 0/1 support, ensuring efficient data read/write, backup, and system data integrity.



Front-Access Design

Front-accessible layout offers convenient connections for peripheral equipment while ensuring durable connectivity.



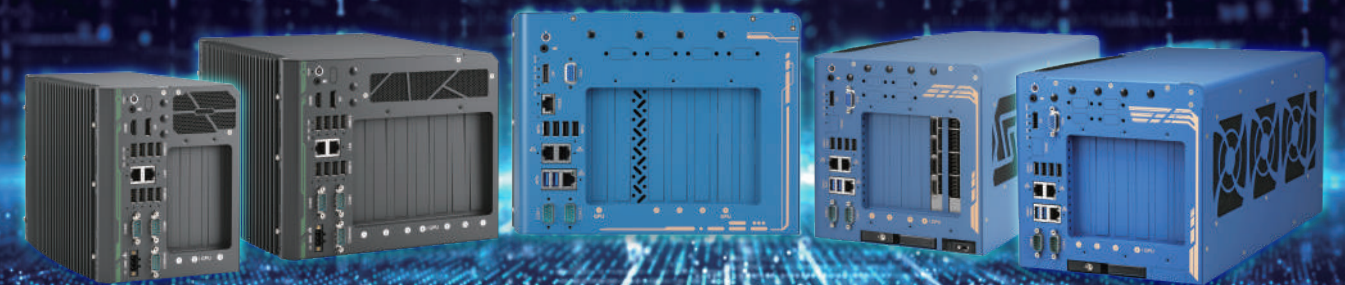
24/ 7 Stable Operation

Ensures long-term stable operation to safeguard system security and prevent abnormalities that could impact uptime.

Neosys rugged industrial Box PCs deliver high processing power, stability, and expandability, supporting up to seven PCIe/ PCI slots for applications such as automation, machine vision, and autonomous vehicles. Their advanced thermal design—featuring unique heat sinks, module-dedicated cooling, and optional fans—ensures reliable operation under extreme temperatures.

With PCIe expansion supporting GPUs up to 350W, Neosys systems enable demanding AI and real-time visual workloads. A patented locking mechanism secures expansion cards against vibration and shock, making these Box PCs ideal for harsh in-vehicle and industrial environments. GPU-equipped models excel in autonomous driving, image analysis, and security monitoring.

Highly customizable, Neosys Box PCs easily integrate AI accelerators and sensors, supporting smart manufacturing, intelligent transportation, and edge AI with reliable performance and flexibility.



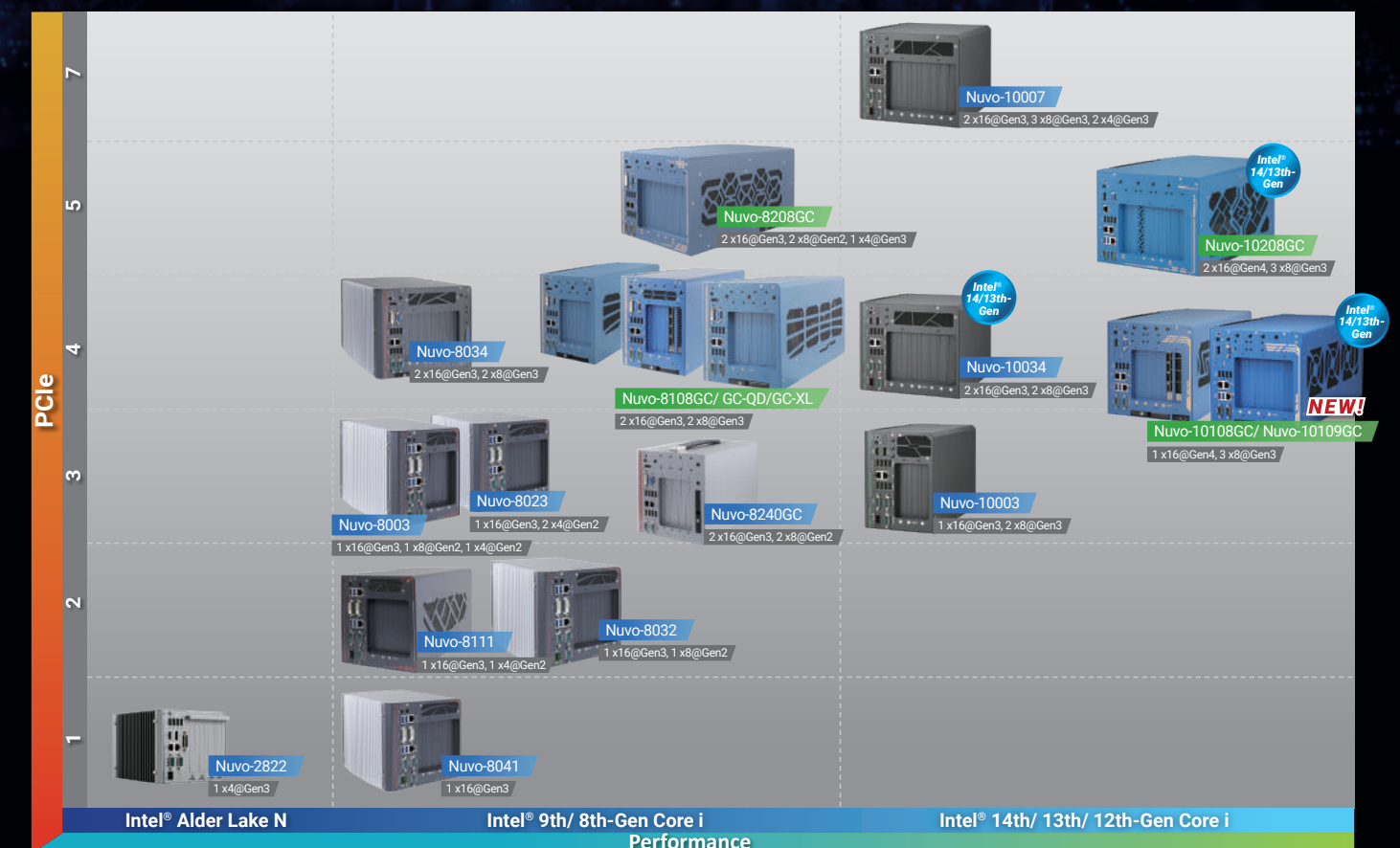
Vibration

Wide-temp.

Edge AI

Expansion

Bus Interface



Embedded Platform Providing Consistency, Accuracy, and Efficiency in Powder Metallurgy Inspection

Overview

Powder metallurgy enables efficient mass production of small components with minimal material waste. Metal powders, either mixed to specific proportions or pre-alloyed, are pressed into “compacts” with green strength sufficient for handling. These are sintered in a furnace under tightly controlled conditions—temperature, time, cooling rate, and atmosphere—to bond particles and ensure structural strength.

However, inspecting these high-volume components poses challenges. Manual inspection is slow and inconsistent, especially given the fatigue and subjective judgment of workers, compounded by workforce availability from unforeseen reasons.

Automated inspection offers a solution but must overcome environmental challenges such as shock, vibration, high temperatures, and airborne metal powder. These factors can impact the reliability and durability of inspection systems, emphasizing the need for robust solutions to maintain production quality and efficiency.

Challenge

Slow inspection rate

The powder metallurgy production generally produces small single shaped components in high volume that require inspection before they can be delivered to customers. But with production in high volume, the human eye inspection is just not fast enough to meet demands.

Human inspection consistency/ accuracy

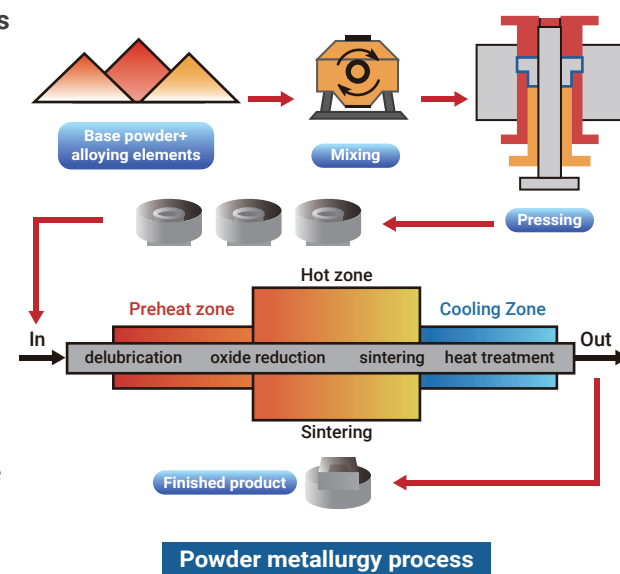
With the high production volume, the ability to consistently and accurately pick out the defects by the human is often affected by one’s objectivity on what is considered to be a defect and fatigue after long work hours.

Automated inspection deployment environmental challenges

The thought of implementing automated inspection came to mind but was immediately met with environmental challenges such as shock and vibration from machines, high temperature and metal powder dispersed in the air that may find its way into the computer

Solution

Nuvo-8000 series, a rugged & reliable design featuring MIL-STD-810G certification, shock and vibration dampening brackets, fanless architecture to prevent dust accumulation, and wide temperature operation from -25°C up to 60°C. Coupled with detection software, PoE cameras, lighting controllers, and detection software, the system can identify defects like indents, scratches, and discolorations, storing results in a database to enhance accuracy through continuous learning.



Product Selection



Nuvo-8000

- Intel® 9th/ 8th-Gen Core™ i CPU
- Up to 5 PCIe/ PCI slots
- Rich I/Os. 2x GbE, 4x USB 3.1 and 5x COM ports



Nuvo-8034

- Intel® 9th/ 8th-Gen Core™ i CPU
- 7 PCIe/ PCI slots
- Supports single NVIDIA® GPU card with up to 180W TDP
- 8-ch isolated DI and 8-ch isolated DO

Rugged Embedded System for Parking Management Solution

Overview

Traditional parking systems required attendants to manually log entry times and calculate fees based on departure times, often causing inefficiencies. Token-based systems improved automation by issuing tokens at entry and calculating fees upon exit. However, tokens were often misplaced, leading to delays or misuse, such as others using already-paid tokens. Modern advancements have introduced machine vision systems that use license plate recognition to automate the entire process. These systems eliminate the need for tokens and attendants, reducing human errors and operational issues. Upon entry, the system records the license plate, and when exiting, drivers simply input their license plate number to calculate and pay the fee. Once paid, the system recognizes the license plate (payment made) and automatically lifts the gate, streamlining the parking experience. This approach offers greater convenience, efficiency, and security for users and operators.

Challenge

Environmental conditions

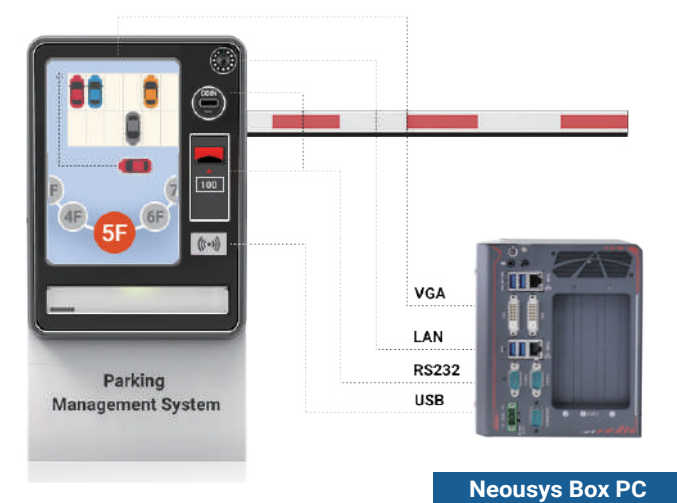
Depending on the location of the carpark, underground carparking environmental conditions may be warm if not hot in summer, which may be a problem (thermal throttling) for parking management computers. If above ground, temperatures in winter may drop to well below 0°C in snowing conditions.

Connectivity

The management computer may need to connect to cameras, touch-input panel, ticketing system, and payment system. Remote wise, it may need to communicate with a central control room, either through wireless 5G/ 4G or land line network.

Solution

Neosys Nuvo box PCs deliver stable performance even in compact parking system enclosures. The fanless design prevents dust accumulation, ensuring reliable operation at temperatures up to 60°C. Featuring expandability and industrial I/O support, it is equipped with PCIe/PCI interfaces, the system supports expansion cards such as motion control cards, frame grabbers, and GPUs. Onboard, industrial-grade I/Os with screw locks including COM, USB 2.0, USB 3.0, and GbE ports ensure secure and stable connections to a variety of peripheral devices.



Product Selection



Nuvo-2822

- Intel® Alder Lake N97 CPU 12W with 4 E-Cores
- Compact size. Support 2x PCIe and 2x PCI slots
- 12 to 24V DC input, ultra-low power consumption during shutdown states



Nuvo-8003

- Intel® 9th/ 8th-Gen Intel® Core™ i CPU
- Rugged, -25 °C to 60 °C fanless operation
- Up to 2x 2.5" SATA HDD/ SSD accommodation and 1x mSATA socket



Edge AI System for Smart Pole Solutions

Overview

Smart poles are versatile urban infrastructure designed to enhance city living by integrating advanced technologies. Installed in public spaces, they provide services such as Wi-Fi hotspots, surveillance, traffic monitoring, and environmental sensing. Wi-Fi hotspots enable high-speed internet access, supporting connectivity for residents and businesses. Integrated surveillance cameras enhance public safety by enabling real-time monitoring and swift incident response. Traffic monitoring systems collect data on vehicle flow and pedestrian movement, optimizing traffic signals and improving mobility. Urban planners also use this data for informed infrastructure development. Environmental sensors track air quality, temperature, and noise, helping cities address pollution and improve living conditions. Data from these systems is centralized and analyzed, allowing city officials to address challenges efficiently and proactively. As a cornerstone of smart city initiatives, smart poles promote connectivity, safety, and sustainability, improving urban life for residents and visitors while supporting efficient city management.

Challenge

Limited and confined installation space

Smart pole hardware installation is often within the pole itself or a nearby cabinet with cable extensions into the pole. Both installation spaces are limited and confined, extremely taxing on the computer

Connectivity

Smart pole functionality varies and may require connection for environmental sensors, cameras, information display, upload/download of real-time data, etc

Solution

Neusys Nuvo-8003 is a rugged computing platform that supports AI Capability. Coupled with a 125W NVIDIA® GPU and BSMI electrical safety certification, the system offers advanced AI inference capabilities, and is a rare attribute for such certifications. Its patented thermal design ensures reliable operation from -25°C to 60°C, even under full CPU load. The system also features versatile connectivity and expandability. It has USB3.1, GbE LAN, COM ports, three display outputs, and PCIe slots to support the transmission of an array sensor data, information displays, real-time data upload and download. With the right peripherals, the pole can also double as a charging station for electronic devices and vehicles, enhancing smart pole applications.



Automated Recyclable Sorting Solution

Overview

Recycling starts with manufacturing, where companies are encouraged to use recyclable materials. In the world we live in today, recycling plays a major role in our everyday lives. By collecting and sorting the products that would otherwise be thrown away as trash to fill landfills or into an incinerator that may pollute the environment, recycling can bring huge benefits to the local economy and the environment.

Key Benefits of Recycling:

- Reduces landfill and incinerator waste
- Conserves natural resources (timber, water, minerals)
- Boosts economic security via domestic materials
- Prevents pollution and saves energy
- Supports manufacturing and job creation

Challenge

Before wastes can be recycled, they need to be sorted, and the common household recyclables are:

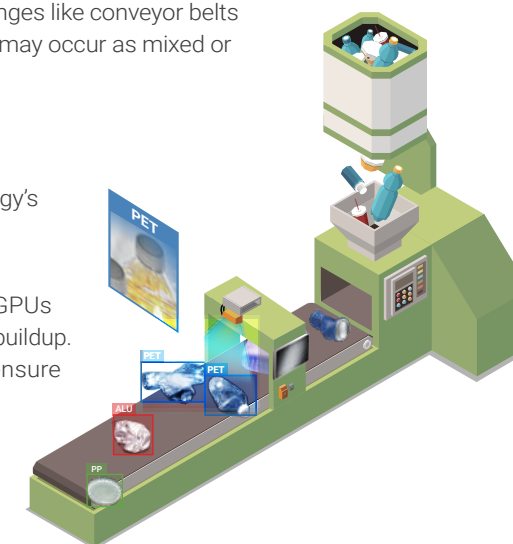
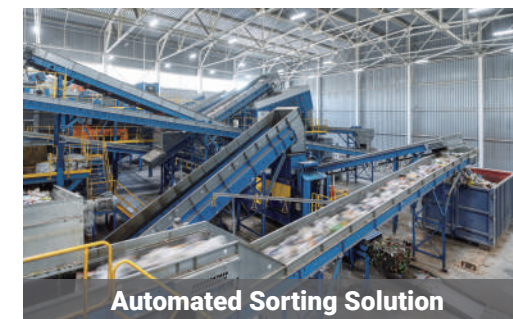
- Newspaper, cardboard (e.g., cereal boxes, egg cartons)
- Aluminum and metal cans
- Plastic bottles (e.g., soft drinks, detergent)
- Glass containers
- Electronics (e.g., PCBA)

The sorting process is not as easy as it seems as it presents several difficulties such as insufficient number of operators to efficiently sort through thousands of tons of daily waste, causing piles that attract pests and delays. The application of heavy machinery is subject to environmental challenges like conveyor belts generating heat and vibrations. And last but not least, sorting inconsistencies may occur as mixed or inseparable items requiring manual disassembly.

Solution

To counter the challenges mentioned, our customer chose Neusys Technology's Nuvo-8108GC series computers whose characteristics serve as the ideal computer in their sorting solution.

- **Efficiency Improvement:** AI-powered machine vision with NVIDIA® RTX GPUs sorts waste with 95% accuracy, enabling 24/7 operation and reducing waste buildup.
- **Durability:** Patented damping brackets and MIL-STD-810G certification ensure stable operation under shock and vibration conditions.
- **Inconsistency Resolution:** AI-driven shredders and ballistic/ air separators break mixed items into components for further automated sorting.



Product Selection



Nuvo-8000

- Intel® 9th/ 8th-Gen Core™ i CPU
- Up to 5 PCIe/ PCI slots
- Rich I/Os: 2x GbE, 4x USB 3.1 and 5x COM ports



Nuvo-10000

- Intel® 14th/ 13th/ 12th-Gen Core i™ CPU
- Up to 7 PCIe/ PCI slots
- Support single NVIDIA® GPU card with up to 115 TDP



Nuvo-8108GC

- Supports an NVIDIA RTX™ 30 series graphics card
- Patented thermal design for -25°C to 60°C rugged operation
- Patented damping brackets to withstand 3 Grms vibration



Nuvo-10208GC

- Support Dual NVIDIA® RTX Ada GPUs
- Intel®14th/ 13th /12th-Gen Core™ CPU
- 8V to 48V wide-range DC input with ignition power control



Autonomous Luggage Towing Vehicle

Overview

With millions of passengers and thousands of flights daily, leading airports worldwide are increasingly turning to automation to boost efficiency. While technologies like automated check-in kiosks and facial recognition for customs have streamlined passenger processes, a major bottleneck remains in baggage handling. The current system relies heavily on human-driven vehicles to move luggage across the tarmac. This manual process limits handling capacity, and a shortage of drivers is a primary cause of flight delays. Therefore, developing an automated solution to efficiently transport large volumes of luggage is crucial to relieving airport congestion and ensuring on-time departures.

Challenge

To address these challenges, our system integrator developed an autonomous luggage towing vehicle requiring a compact, rugged, and high-performance computer to connect cameras and sensors. The system must withstand constant shock and vibration while operating between terminals and aircraft. Reliable wireless connectivity is essential for real-time communication with airport networks, and the computer must maintain stable performance within the vehicle's confined, high-temperature environment.

Solution

Our partner chose Neosys rugged embedded computers to address these challenges, leveraging their advanced features to create an efficient autonomous baggage delivery system.

Robust and Reliable Hardware

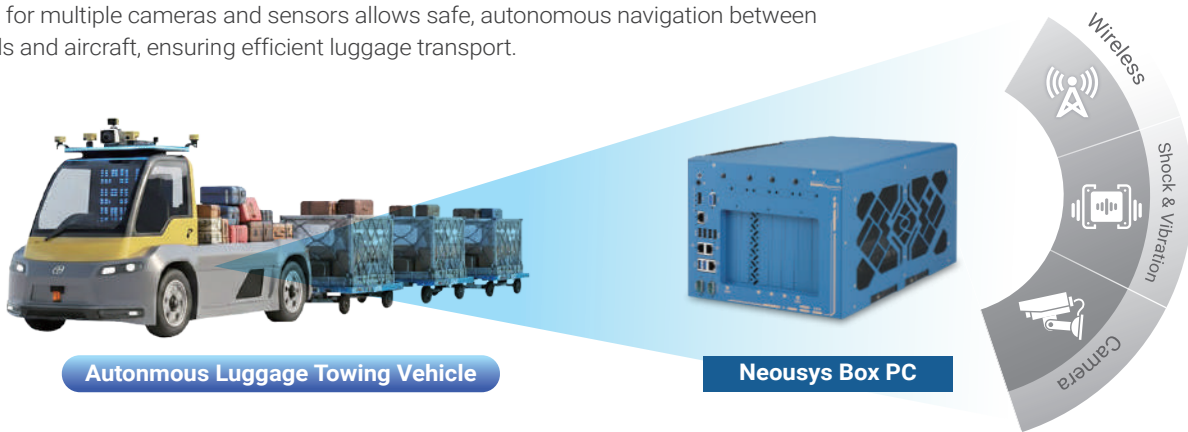
The Nuvo rugged embedded computers, certified for in-vehicle use, ensure reliable operation under constant shock and vibration in airports.

Advanced Fleet Management

Wi-Fi and 5G/ LTE enable real-time communication with central systems for scheduling, priority handling, and predictive maintenance, reducing downtime and extending vehicle life.

Enhanced Autonomy

Support for multiple cameras and sensors allows safe, autonomous navigation between terminals and aircraft, ensuring efficient luggage transport.



Autonomous Middle Mile Delivery Truck for B2B Short-haul Logistics

Overview

Middle mile delivery refers to goods delivery from supplier's warehouse to retail stores. Businesses are seeing this as one of the many methods to slash costs while boosting profits. One of the methods to reduce this is by implementing autonomous driving vehicles to offer safety, reduce operation costs and increase efficiency. Currently, most major retail chain stores have employed such autonomous delivery vehicle technology while some are trying to develop the technology in-house, perhaps to cater to their specific needs to complement and boost their massive middle mile delivery volume.

Challenge

Automating long-haul material delivery poses major challenges. Vehicles need advanced computers to process real-time sensor and LiDAR data, navigate traffic, and recognize signals. Reliable 4G/5G connectivity is essential for location updates and delivery management. High truck temperatures, shock, and vibration further strain system reliability, making long-haul autonomous transport a complex technical challenge.

Solution

With Neosys technology, fleet operators achieve safer driving, lower operational costs, and smarter, more reliable autonomous logistics.

Safety through Pre-Planned Routes and Sensor Integration

Human fatigue remains as a underlying risk. Neosys GPU/ in-vehicle computers integrate LiDAR and sensors to detect traffic, pedestrians, and road conditions on pre-planned routes, handing control back to drivers when needed.

Reduced Operational Costs via Predictive Maintenance

By connecting to onboard sensors, the system enables predictive maintenance, preventing breakdowns, reducing repairs, and minimizing fleet downtime.

High Efficiency with 24/7 Operation and Route Optimization

Autonomous trucks operate 24/7, collecting traffic and route data to optimize schedules, shorten delivery times, and improve overall fleet efficiency.



Product Selection



Nuvo-10108GC

- Support single 350W NVIDIA® RTX GPU
- Intel®14th/ 13th /12th-Gen Core™ CPU
- Three x8 PCIe slots with Gen3 x4 signal for add-on cards



Nuvo-10208GC

- Support Dual NVIDIA® RTX Ada GPUs
- Intel®14th/ 13th /12th-Gen Core™ CPU
- 8V to 48V wide-range DC input with ignition power control



Nuvo-8108GC-XL

- Support single NVIDIA® RTX 30 series GPU
- Intel® Xeon® E or 9th/ 8th-Gen Core™ CPU
- 8V to 48V wide-range DC input with ignition power control



Nuvo-10109GC

- Support single NVIDIA® 600W Blackwell GPU
- Intel® 14th/ 13th/ 12th-Gen Core™ CPU
- Three x8 PCIe slots with Gen3 x4 signal for add-on cards

Product Selection

Box PCs Platform Specification Table



Model Name			Nuvo-10000		Nuvo-10108GC / Nuvo-10109GC		Nuvo-10208GC		Nuvo-8000		Nuvo-8111		Nuvo-8034		Nuvo-8108GC		Nuvo-8108GC-XL		Nuvo-8208GC		Nuvo-2822	
Dimensions (W x D x H)			157 x 280 x 188mm (Nuvo-10003) 241 x 280 x 188mm (Nuvo-10034/ Nuvo-100007)		214 x 400 x 196 mm (Nuvo-10108GC) 224 x 400 x 196 mm (Nuvo-10109GC)		268 x 400 x 196 mm		154 x 235 x 174mm (Nuvo-8003) 185 x 235 x 174mm (Nuvo-8023/ Nuvo-8041/ Nuvo-8032)		174 x 330 x 174 mm		259 x 280 x 198 mm		170 x 360 x 198 mm		193 x 388 x 198 mm		235mm x 360mm x 185.6mm		164.6 x 214.6 x 135.6 mm	
Weight			5.2 kg		6.2 kg (Nuvo-10108GC) 7.1 kg (Nuvo-10109GC)		6.5 kg		3 kg/ 3.6 kg		4.5 kg		7 kg		5 kg		5.2 kg		8.6 kg		2.3 kg	
Processor			Intel® 14th/ 13th/ 12th-Gen Core™ CPU					Intel® 9th/ 8th-Gen Core™ CPU					Intel® Xeon® E and 9th/ 8th-Gen CPU							Intel® Alder Lake N97 CPU		
Chipset			Intel® Q670E		Intel® R680E			Intel® H310					Intel® C246							-		
Memory			Up to 128GB DDR5 4800					Up to 32 GB DDR4 2666		Up to 32 GB DDR4 2666			Up to 128 GB DDR4 2133							Up to 16 GB DDR5-4800		
PCI/ PCIe Express			1x PCIe x16 slot @ Gen3, 16-lanes & 2x PCIe x8 slot @ Gen3, 4-lanes (Nuvo-10003) 2x PCIe x16 slot @ Gen3, 8-lanes & 3x PCIe x8 slot @ Gen3, 4-lanes & 2x PCIe x4 slot @ Gen3, 2-lanes (Nuvo-10007) 2x PCIe x16 slot @ Gen3, 8-lanes & 2x PCIe x8 slot @ Gen3, 4-lanes & 3x 33MHz/ 32-bit 5V PCI slots (Nuvo-10034)		1x PCIe x16 slot @ Gen4 Supports GPU cards up to 350W TDP (Nuvo-10108GC), Up to 600W TDP (Nuvo-10109GC) 3x PCIe x8 slots @ Gen3, 4-lanes		2x PCIe x16 slot @ Gen4, 8-lanes 3x PCIe x8 slot @ Gen3, 4-lanes		1x PCIe x16 slot @ Gen3, 16-lanes & 1x PCIe x8 slot @ Gen2, 4-lanes & 1x PCIe x4 slot @ Gen2, 1-lane & 2x 33MHz/ 32-bit 5V PCI slots (Nuvo-8023) 1x PCIe x16 slot @ Gen3, 16-lanes & 1x PCIe x8 slot @ Gen2, 4-lanes & 3x 33MHz/ 32-bit 5V PCI slots (Nuvo-8032) 1x PCIe x16 slot @ Gen3, 16-lanes & 4x 33MHz/ 32-bit 5V PCI slots (Nuvo-8041)		1x PCIe x16 slot @ Gen3, 16-lanes & 1x PCIe x4 slot @ Gen2, 4-lanes & 1x 33MHz/ 32-bit 5V PCI slot			2x PCIe x16 slot @ Gen3, 8-lanes 2x PCIe x8 slots @ Gen3, 4-lanes 3x 33MHz/ 32-bit 5V PCI slots		2x PCIe x16 slot @ Gen3, 8-lanes 2x PCIe x8 slots @ Gen3, 4-lanes 2x PCIe x16 slot @ Gen3, 8-lanes 2x PCIe x8 slots @ Gen3, 4-lanes			2x PCIe x16 slot @ Gen3, 8-lanes 2x PCIe x8 slots @ Gen3, 4-lanes 1x PCIe x4 slot @ Gen3, 1-lane		1x PCIe x4 slot @ Gen3, 4-lanes 1x PCIe x4 slot @ Gen3, 1-lanes 2x 33MHz/ 32-bit 5V PCI slots	
Other Expansion Bus			2x full-size mini PCI Express socket		2x full-size mini PCI Express socket, 1x M.2 2242/3052 B key socket			-					1x M.2 2242 B key socket, 2x full-size mini PCI Express socket							-		
I/O Interfacne			1x 2.5G, 1x GbE, 4x USB3.2 Gen2, 4x USB3.2 Gen1, 1x USB2.0, and 5x COM ports		2x 2.5G, 1x GbE, 6x USB3.2 Gen1, 1x USB2.0, 2x COM ports			2x GbE, 4x USB 3.1 Gen1, 3x USB 2.0, and 5x COM ports					2x GbE, 4x USB 3.1 Gen2, 4x USB 3.1 Gen1, 1x USB 2.0, and 2x COM ports							2x GbE, 2x USB 3.2 Gen2, 2x USB 2.0, and 4x COM ports		
Storge Interface			2x SATA ports for internal 2.5" HDD/ SSD installation (support RAID 0/1) 1x M.2 2280 SATA interface		1x front-accessible, hot-swappable HDD trays for 2.5" HDD/ SSD installation 1x M.2 2280 M key socket		2x hot-swappable HDD trays for 2.5" HDD/ SSD installation (support RAID 0/ 1) 1x M.2 2280 M key socket		2x internal SATA ports for 2.5" HDD/ SSD installation 1x full-size mSATA port					2x hot-swappable trays for 2.5" HDD/ SSD installation (support RAID 0/1) 1x M.2 2280 M key socket 2x full-size mSATA port		1x hot-swappable HDD tray for 2.5" HDD/ SSD installation 1x Internal SATA port for 2.5" HDD/ SSD installation (support RAID 0/1) 1x M.2 2280 M key socket 2x full-size mSATA port			2x hot-swappable HDD trays for 2.5" HDD/ SSD installation 1x M.2 2280 M key socket 2x full-size mSATA port		1x M.2 2280 SATA interface	
Power Supply			12V to 35V DC		8V to 48V DC (Nuvo-10108GC) 9V to 32V DC (Nuvo-10109GC)		8V to 48V DC		8V to 35V DC		24V DC		8V to 35V DC		8V to 48V DC			8V to 35V DC		12V to 24V DC		
Operating Temperature			-25°C to 60°C																			
Model Name	Qty x I/O Interface	Bus Interface	Recommended Neousys PCIe Cards																			
PCIe-NX154PoE	4x PoE+	x1, Gen2 PCI Express	V	V	V	V	V	-	-	V	V	V	V	V	V	V	V	V	V	V	V	
PCIe-NX156U3	2x USB 3.2 Gen2 4x USB 3.2 Gen1	x1, Gen2 PCI Express	V	V	V	V	V	-	-	V	V	V	V	V	V	V	V	V	V	V	V	
PCIe-NPL54	4x GMSL2	x4, Gen2 PCI Express	V	V	V	V	V	-	-	V	V	V	V	V	V	V	V	V	V	V	V	
PCIe-PoE572bt	2x PoE+	x4, Gen3 PCI Express	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	-	
PCIe-PoE425bt	4x PoE+	x4, Gen2 PCI Express	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	
PCIe-PoE354at	4x PoE+	x4, Gen2 PCI Express	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	
PCIe-PoE334LP	4x PoE+	x4, Gen2 PCI Express	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	
PCIe-PoE312M	4 x PoE+	x4, Gen2 PCI Express	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	
PCIe-PoE550X	2x PoE+	x4, Gen3 PCI Express	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	-	
PCIe-PoE464at	4x PoE+	x4, Gen3 PCI Express	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	-	
PCIe-USB381F	8x USB 3.2 Gen1	x4, Gen2 PCI Express	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	V	